Walden University

College of Health Sciences

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Renée Marie Huth

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Abstract

Physical Therapists' Cultural Competency and Self-Reported Practice-Related Errors

by

Renée Marie Huth

DPT, Hampton University, 2003

BS, State University of New York at Plattsburgh, 1990

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health, Health Sciences - Community Health 2

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Abstract

Physical therapy practice includes direct access to a multicultural patient population, yet the relationship between physical therapists' (PTs) cultural competency and practice errors remains unclear. The study's purpose was to determine whether relationships exist between PTs' sociodemographic and professional factors, cultural competency, and self-reported practice errors. The culturally congruent care model served as the theoretical framework which defines aspects of cultural competence using the Cultural Competence Assessment (CCA). Data were gathered via an anonymous online survey using the CCA with an additional question involving self-reported error frequency in the past year on a scale of either daily, weekly, monthly, or annually. A convenience sample included PTs from 3 of 6 districts within the Virginia Physical Therapy Association professional organization. The response rate was 10.2% ($N = 83$). Chi-square and ordinal regression tested whether PTs' sociodemographic and professional variables, cultural diversity experiences (CDE), cultural awareness/sensitivity, and culturally competent behaviors (CCB) were associated or predictors of cultural competency and self-reported error frequency. This study confirmed that PTs self-report practice error frequency. PTs with CDE more often self-reported annual errors ($p = .024$), and PTs with multiple races/ethnicities ($p = .010$) reported errors of any frequency, except never. Age, race/ethnicity, education degree, and years of practice were not associated with higher CCB or error frequency. However, cultural diversity training was a statistically significant predictor ($p < .001$) and had a medium effect (.338) on CCB. PTs with cultural diversity training were approximately 5 times more likely to self-report high CCB. Therefore, cultural diversity training is an effective way to improve CCB in PT practice and is positively impactful to meeting the growing physical therapy needs of a diverse society.

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Dedication

Without my husband's steadfast encouragement, this dissertation would not be possible. Thank you, John K. Huth, for your love and reassurance.

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Saying thank you seems so insufficient in terms of the patience, guidance, and advisement that my dissertation chair, Dr. David Segal, has provided me throughout this process. Thank you, Dr. Segal. I would also like to extend sincere thanks to my committee members, Dr. Earla White, and Dr. Simone Salandy, for their reviews, suggestions, and guidance on my dissertation. I would also like to thank Dr. Ardith Z. Doorenbos for her support by providing me access to and instructions to scoring the CCA instrument used as the survey within this study. Finally, I would like to thank the Virginia Physical Therapy Association leadership for emailing surveys to their members and to all participants who took the time to complete the survey. I hope that this study piques the reader's interest in exploring cultural competency aspects of care to support alternative approaches to work to reduce practice-related errors.

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Chapter 1: Introduction to the Study

Many healthcare errors result in adverse outcomes. More than 250,000 deaths per year result from medical errors, the third leading cause of death in the United States (US; McMain, 2016). An estimated 87% of physical therapy costs result from errors (Van Den Bos et al., 2011). While 70% of physical therapists (PTs) are female and 24% are of mixed race/ethnicity, the makeup of the physical therapy patient population treated differs, with 51% female and 36% of mixed race/ethnicity (Bureau of Labor Statistics, 2016). Historically, most medical errors have been associated with racial, ethnic, cultural, and communication barriers between practitioners and patients (Humbert, Burket, Deveney, & Kennedy, 2012; Khoury, Mendoza, & Charles, 2012). Common errors in physical therapy practice include those with aversive outcomes, systematic causes, post hoc actions, and preventable errors (Cochran, Mu, Lohman, & Scheirton, 2009). Preventable errors were more recently categorized into administrative, provider-patient communication barriers and a lack of knowledge and skills (Kagan & Barnoy, 2013). As the US population continues to diversify, health care providers need to adapt to meet the ever-changing cultural needs of patients in their care (Hawala-Druy and Hill, 2012; Khoury et al., 2012).

Although there has been significant progress in terms of recognizing and attempting to identify health-related social factors, many challenges exist such as ethnocentrism, poverty, low education, inequities, religious biases, and cultural disparities (Artiga & Hinton, 2018; Lehman, 2019; Masters & Hooker, 2013; U.S. Department of Health and Human Services, 2019). These problems can be mitigated. For example, culturally competent medical and health providers are reported to be more receptive and responsive to patients of diverse cultures (Schim &

Doorenbos, 2010). Likewise, the culturally competent practitioner displays kindness, concern, empathy, negotiation, and compromise in their interactions with patients (Ramklass, 2015). Cultural sensitivity is a teachable skill, and the application of culturally competent concepts in practice may be efficacious to reduce errors (Boysen, 2013; National Institute of Health [NIH], 2015; Orgera & Artiga, 2018; Wesam, Gill, & Eklund, 2015). The US professional organization of PT practice is the American Physical Therapy Association (APTA). The APTA recognized cultural competence as essential to current physical therapy practice and reinforced this concept by adding patient-centricity to their 2030 vision principles (Hayhurst, 2014; Meadows, 2014). Soon after that, cultural competence was added to the required physical therapy program curricular criteria (Commission on Accreditation in PT Education [CAPTE], 2019). However, based on this study's literature review, it is unknown whether physical therapy practitioner sociodemographic, racial/ethnicity, or cultural competency factors are associated with errors in physical therapy practice.

Cultural competency and PTs' self-reported error frequency is the primary focus of this study and includes analyses of possible associations beyond cultural competency such as sociodemographic and professional factors. Previous studies of athletic training students assessed using the Cultural Competence Assessment (CCA) scored high in terms of cultural diversity, awareness, and sensitivity; however, students did not report culturally competent behaviors (Marra, Covassin, Shingles, Canady, & Mackowiak, 2010). Nynas (2015) followed up observing that athletic trainers who reported a variety of diverse experiences that included travel, work, and clinical experience with exposure to diverse cultures self-reported higher cultural competencies.

Lower cultural competence behaviors were attributed to a lack of exposure to individuals from diverse backgrounds. Predictors of increased medical error rates among Israeli nurses included a lack of overall patient safety culture and a lack of communication training (Kagan & Barnoy, 2013). This correlation suggests an association between cultural competency and practice-related medical errors. In this current study, PTs' self-reported sociodemographic and professional factors, including previous cultural competence training and individual cultural competency were measured using the CCA. PTs also self-reported their frequency of practice errors in the last year.

This study aimed to contribute to the physical therapy profession by working to adopt best practice approaches to prevent adverse events related to PT patient care. The purpose of this study was to determine whether cultural diversity experiences (CDE), cultural awareness/sensitivity (CAS), and cultural competence behaviors (CCB) were associated with self-reported PT error frequency and whether sociodemographic or professional variables have a significant predictive relationship on self-reported error frequency. The important sections of Chapter 1 include the background and identification of a gap in the literature, problem statement, purpose of the study, research questions, theoretical framework, nature of the study, definitions, assumptions, limitations, scope, and delimitations, and the study's significance.

Background

Culture is defined as the knowledge, language, diet, and social behaviors shared by members of a group (Future US, Inc., 2017). Culture is how we learn about our world, what to believe and what we prioritize, and how we engage and interact with others (Schim and

Doorenbos, 2010). Furthermore, cultural competence or competency in healthcare practice is the congruence of provider and patient attitudes, perspectives, and behaviors that support positive interactions and outcomes (Schim and Doorenbos, 2010). Shi and Johnson (2013) wrote that cultural competence is an essential health care provider skill in a globalizing world and that it is the most complex aspect care. Cultural competency training that focuses on improved patient-practitioner communications has been associated with improved outcomes of care and patient satisfaction in professions similar to physical therapy including nursing (Alpers & Hanssen, 2014; Ayaz, Bilgili, & Akın, 2010; Heitzler, 2017; Hendson, Reis, & Nicholas, 2015; Marzilli, 2016; Perng & Watson, 2012), athletic training (Marra et al., 2010; Nynas, 2015), occupational therapy (Humbert, Burket, Deveney, & Kennedy, 2012; Murden et al., 2008; Sood et al., 2014), pharmacy (Sales et al., 2013), and medicine (Committee on Healthcare for Underserved Women, 2018; Oliveira, North, Beck, & Hopp, 2015).

Cultural competence training has led to improved practitioner cultural competency and physicians reporting increased comfort levels when working with diverse people (Alpers & Hanssen, 2014). For example, health education students who participated in a low-income community service-learning project reported improved self-efficacy and cultural competency and demonstrated improved culturally competent behaviors (Housman et al., 2012). Nursing, pharmacy, and physical therapy students' self-assessed cultural competency increased directly following diverse cultural beliefs training (Hawala-Druy & Hill, 2012). Musolino et al. (2010) said that cultural competency of physical therapy students who identified as Asian or Hispanic and females improved more than that of Whites, non-Hispanics, and males following an

interdisciplinary cultural competency educational program. The cultural competency of all student' PTs improved following participation in a 9-day study abroad experience (Hayward & Li, 2014). These studies have in common one theme, which is that student cultural competence can improve following educational experiences that focus on racial and cultural diversity awareness.

Although cultural competence studies exist that have included student PTs, few have included enough licensed PT participants to make physical therapy practice generalizations (Schim, Doorenbos, & Borse, 2005; Langford, Gordon, Loeseer, Tauben, & Doorenbos, 2019). Most cultural competency studies have focused on physicians and nurses. Schim and Doorenbos (2010) developed the CCA and compared the cultural competence of nurse professionals in two healthcare systems. Two independent variables, higher education, and cultural diversity training (CDT), were found to be directly associated with cultural competency (Schim & Doorenbos, 2010). Similar findings resulted when the CCA was used to measure the cultural ability of nurses working for five different hospice agencies (Schim, Doorenbos, & Borse, 2006b). Nurses from six hospitals completed the CCA instrument with three predictors of higher cultural competence identified: job position, ability to speak a foreign language, and background that included working with foreigners (Chae, Park, Kang, & Lee, 2012). Despite language barriers and access to professional healthcare language interpreters, PTs prefer to ask family members or bilingual staff to interpret or attempt non-verbal communication or simplified English resulting in increased bias and misinterpretation (Lee, Sullivan, & Lansbury, 2006). While predictors for

cultural competency have been studied in similar fields, cultural competency in physical therapy practice and its associations with self-reported PT practice-related error frequency is unknown.

Problem Statement

Medical practice errors have previously been associated with communication barriers based on racial, ethnic, and sociocultural differences (Humbert, Burket, Deveney, & Kennedy, 2012; Khoury, Mendoza, & Charles, 2012), interprofessional miscommunication (King & Anderson, 2010), and a lack of knowledge and skills (Kagan & Barnoy, 2013). It has been estimated that 50% of all US children will be born from non-White parents by 2020, and more than 50% of the US population will self-identify as non-White by 2050 (Janik, 2015). Moreover, the diversity of races and ethnicities in the US is predicted to increase most in terms of the number of Hispanic and Black/African Americans by 2060 (Duffin, 2019).

Few physical therapy studies have included the perspective of PTs' cultural competency (Langford, Gordon, Loeseer, Tauben, & Doorenbos, 2019; Schim, Doorenbos, & Borse, 2005), and none per this literature review has investigated whether PTs' sociodemographic and professional variables or cultural competency have a significant predictive relationship with self-reported error frequency. The physical therapy profession has remained vigilant to meeting the growing needs of a diverse society by incorporating cultural competence within the physical therapy curriculum and its professional core values (American Physical Therapy Association [APTA], 2019a, CAPTE, 2019; Virginia Physical Therapy Association [VPTA], 2019b). US licensed PTs evaluate, treat, and direct bills without a physician referral via direct access in all 50 US states (APTA, 2019a; McGarvey, Leon-Verdin, Killos, Gutterbock, & Cohn, 2011) and PT

employment is expected to increase by 24% between 2014 and 2024 (BLS, 2016). The PT profession is expected to continue to grow in patient access and depth; therefore, the quality of PT care may be at risk. This study is timely in that it was the first to attempt to determine if cultural competency is a significant predictor of self-reported PT practice error frequency.

Purpose of the Study

The purpose of this quantitative nonexperimental study was to determine whether an association exists between cultural diversity experiences, cultural awareness/ sensitivity, cultural behaviors, and cultural competence and self-reported error frequency among PTs in Virginia. Secondarily, this study aimed to determine whether sociodemographic and professional variables have a significant predictive relationship with cultural competency and self-reported error frequency among PTs in Virginia. Virginia PTs completed the CCA to determine their diverse cultural experiences (CDE), cultural awareness/sensitivity (CAS), and cultural behaviors (CCB) and competency (CCA total). Likewise, sociodemographic and professional data were extracted directly from the CCA survey. CCA questions include birth year, race/ethnicity, the highest level of education, and whether the responder completed diversity or cultural competency training. Also, participants were asked to self-report their frequency of physical therapy practice errors within the last year. Each participant's CCA was scored as outlined by the CCA author Ardith Z. Doorenbos (see Appendix C). Individual responses were scored to determine CDE, CAS, CCB, and CCA total. The dependent variables were the scored CCB and CCA totals. Following Kagan and Barnoy (2013) example, the second dependent variable was PTs' self-reported rate of errors made in their practices in the last year on a scale of 1 (daily), 2 (weekly), 3 (monthly), 4

(annually), and 5 (never). Each of the independent variables, CDE, CAS, CCB, and CCA total, was tested to see if any were associated or predictors of the dependent variable, self-reported practice-related error frequency. Next, PTs' sociodemographic and professional variables were tested to determine whether any of these independent variables were predictors for CCB or self-reported practice-related error frequency. CCB and CCA total served as independent variables for the first hypothesis and dependent variables for the second hypothesis. This study is the first to quantify self-reported PT practice error frequency. The results of this study may highlight the need for a more comprehensive review of the types of errors to develop appropriate strategies to mitigate PT practice-related errors.

Previous research on cultural competency in healthcare showed promise to address healthcare gaps. Cultural competence is an essential aspect of effective practice, yet many PTs feel inept in terms of working with patients of diverse backgrounds (O'Shaughnessy & Tilki, 2007). Pham et al. (2012) reported that a culture of safety and teamwork among health care workers who recognized their roles and effectively communicated with team members, respected individual cultural traditions and beliefs, provided structured hand-offs for continuity of care all led to improved patient feedback and reduction in medical errors. Female athletic trainers who self-identified as multiracial had higher cultural competence compared to self-identified multiracial men and all who identified as single race and the number of years of experience or differences in the practice environment revealed no significant differences in cultural competence (Marra et al., 2010). A comparison of student nurses within eight rural nursing programs demonstrated no significant cultural competency differences based on age or education

degree (Diaz, Clarke, & Gatua, 2015). While these are just a few examples of health professions that have specifically focused on cultural competency in their practices, a gap exists in physical therapy practice. Research that explores cultural awareness between caregivers and patients can help inform culturally and linguistically sensitive physical therapy (Grandpierre et al., 2018). Therefore, the overarching goal of this research was to highlight cultural competency and its relationship with PT practice errors. This goal is in alignment with the APTA's vision that works to improve the human experience by engaging in collaborative and innovative practices to meet a diverse society and optimize movement (APTA, 2019a; CAPTE, 2019).

Research Questions and Hypotheses

RQ1: Is there an association between CDEs, CAS, CCBs, or CCA total and self-reported error frequency?

$H_0$1: There is no association between CDEs, CAS, CCBs, or CCA total and self-reported error frequency.

H_a1: There is an association between CDEs, CAS, CCBs), or CCA total and self-reported error frequency.

RQ2: Is there a significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals?

$H_0$2: There is no significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals.

H_a2: There is a significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals.

RQ3: Is there a significant predictive relationship between sociodemographic and professional variables and self-reported error frequency?

$H_0$3: There is no significant predictive relationship between sociodemographic and professional variables and self-reported error frequency.

Ha3: There is a significant predictive relationship between sociodemographic and professional variables and self-reported error frequency.

Theoretical Framework for the Study

The cultural competence model (Table 1) created by Doorenbos and Schim (2004) was the theoretical basis for this study and is an extension of the Leininger Transcultural Model (Leininger, 2002, 2015; Leininger & McFarland, 2006). The cultural competence model has been described as a jigsaw puzzle with each puzzle piece representing a provider's cultural aspect, including diversity, awareness, sensitivity, and competence. Table 1 further describes CCA components and subscales. The cultural competence model, also referred to as the three-dimensional puzzle of culturally congruent care model, considers the impact that patient (Wiebe & Young, 2011) and provider (Doorenbos et al., 2016; Doorenbos, Schim, Benkert, & Borse, 2005) values, beliefs, and behaviors have on patient preferences, treatments, and outcomes. The CCA instrument, also developed by Doorenbos and Schim (2004), was used as the primary survey in this study and is a direct reflection of the cultural competence model. The CCA instrument focuses on the provider's cultural competency pieces includes all the independent and dependent variables for this study, like CDE, CAS, CCB, and CCA total, with one exception, self-reported error frequency.

Table 1

Cultural Competence Assessment Components

Survey component	Subscale	Description	No. of questions	Subscale Score
Cultural Diversity Experience	CDE	Have you cared for people of various cultural groups in the past 12 months?	1	0-8
Cultural Awareness	CAS	Knowledge and awareness of patient lifestyles, beliefs, and values	11	1-7
Cultural Sensitivity		Practitioner recognizes own attitudes, values, and beliefs may differ from patients; includes non-verbal communication		
Culturally Competent Behaviors	CCB	Consistent demonstration of cultural behaviors	14	1-7
Culturally Competent	CCA total	Consistent incorporation of diversity, awareness, and sensitivity into everyday practice.	26	2-14

Adapted from "Psychometric Evaluation of the Cultural Competence Assessment Instrument Among Healthcare Providers" by A.Z. Doorenbos, S. M. Schim, R. Benkert, and N. N. Borse, 2005, *Nursing Research, 54*, p. 326.

Nature of the Study

This quantitative nonexperimental study involved a convenience sample of PTs who live and work in Virginia. In 2016, there were 5,790 licensed PTs in Virginia (BLS, 2015). Therefore, a sample population of 817 possible PTs invited to participate in this study constituted just over 14% of total Virginia licensed and practicing PTs.

Surveys were emailed to VPTA members in the Tidewater, Valley, and Mountain districts as well as faculty who work within physical therapy and PTA programs across Virginia. After reaching out to the VPTA, three of six VPTA district leaders responded to my email in support of this study. The Tidewater, Valley, and Mountain districts include an estimated 817 members (see Appendix B). Having Dr. Segal email VPTA and physical therapy faculty provided a second degree of separation to limit potential bias and coercion. I am active in the physical therapy profession as a current licensed PT in Virginia and faculty member in a Virginia-based PT program, and volunteer with physical therapy professional organizations including the VPTA, APTA, and Federation of State Boards of Physical Therapy (FSBPT, 2019). Dr. Segal, Dissertation Committee Chair, emailed survey requests to VPTA leaders who agreed to forward it to their members. He additionally emailed faculty who worked within physical therapy and PTA programs across Virginia.

To increase potential response rates, Dr. Segal was asked to resend the survey request by email to VPTA district leaders to forward a second time to prospective VPTA members. Data were collected over 90 days. Four weeks after the initial email request-to-participate was sent, Dr. Segal sent a second participation request email to VPTA leaders and physical therapy and

PTA program faculty across Virginia. VPTA leaders requested I speak briefly at district meetings about my study, including its purpose, and let interested parties know how they may access the survey link, but no data were directly collected at these meetings. Additionally, without my request, VPTA leadership placed the survey link on the VPTA Facebook page (2019a). Data collection occurred between January and April 2018.

The request-to-participate email to potential survey participants included an active link to the survey, my contact information, and a consent statement that described the study's purpose, how the data were collected, estimated length of time to complete the survey, and information that survey responses will remain confidential, and respondents may stop participating at any time. The consent statement included a statement that the participant may refuse to answer any of the survey questions, end the survey at any time, and there were no penalties associated with refusing to participate in the study or completing partial surveys. All survey data were collected electronically via SurveyMonkey, and collected data did not include participant identifiers, so data remained anonymous.

Survey data were collected electronically. Radford University, my employer, waived IRB review for Walden University. Walden University's IRB approved this study (Registration # 00005599). Participants were over 21 years of age, graduates of graduate-level higher education programs, and live or practice in Virginia. Survey data remained anonymous and password protected on a dedicated personal computer throughout collection and analyses.

The independent variables were CDE, CAS, CCB, and CCA totals, sociodemographic information (age; race/ethnicity), and professional variables (education degree, years of practice,

CDT). As in nursing, over 70% of licensed PTs are women; therefore, the CCA does not include a question that asks participants to identify their sex as this might be an identifier. The dependent variable, self-reported practice related error rates, was the final question developed with respondents asked to rank the frequency of self-errors in practice over the past year on a scale of 1 (daily) to 5 (never). Chi-square and ordinal logistic regression were used to test associations and predictors of cultural competency and self-reported practice error frequency.

Cultural Competence and Errors Defined

Cultural Competence

Cultural competence or cultural competency is the alignment of knowledge, skills, and attitudes during patient-provider cross-cultural encounters (Meadows, 2014). Cultural competency supports the APTA's organizational values, vision, and mission, which emphasizes respecting individual differences, elevating the human experience, and improving population health (APTA, 2019a). Cultural competency in physical therapy practice is not a product, but a concept that practitioners need to continually work to enhance to provide quality care (APTA, 2019b) effectively.

Errors

The dependent variable, self-reported error frequency, was determined by asking participants to respond to the following question: How often have you made practice-related errors in the past year? Answer options were measured numerically as 1 (daily), 2 (weekly), 3 (monthly), 4 (annually), and 5 (never). Instead of medical errors, this study focused on PT practice errors to encourage each participant's self-reflection in terms of their physical therapy

practice. The literature focused on the reduction of errors in physical therapy practice is limited, and to date, no standard definition for the term medical error exists in physical therapy literature. For this reason, no specific definition of practice-related errors was provided to participants within this study. Not defining the term errors encouraged each participant to self-interpret and self-reflect where possible improvements in care could be made.

Assumptions

Cultural competence in physical therapy practice is not an-end-product, but instead ever-changing, adapting, and developing (APTA, 2019b). An assumption was that CCA assessment scores would represent participants' cultural competency at a single point in time, no matter where or when the survey was completed. Participants were assumed to answer questionnaires wholly and honestly, including self-reports as licensed PTs in Virginia, in addition to sociodemographic and professional factors. Finally, as in all self-reports, response bias may have occurred, but it was assumed that participants self-reported error frequencies in the last year honestly and accurately.

Scope and Delimitations

This study was to determine whether there was an association between cultural competency and self-reported error frequency. A secondary theme of this study was to determine whether sociodemographic and professional variables have a significant predictive relationship with cultural competency or self-reported error frequency. The CCA instrument has been successfully validated and used to assess the cultural competence of healthcare providers in

similar therapy and medical fields. This study addresses a present gap in the literature by acknowledging cultural competence in physical therapy practice.

Limitations

To limit threats to validity, Dr. Segal emailed VPTA leaders who previously pledged their support to email VPTA members within their respective Mountain, Valley, and Tidewater districts. The emailed membership of these three districts included PTs, PTAs, and students; therefore, a power estimate using 817 total members was used to approximate the desired sample size ($N = 159$). Dr. Segal also emailed physical therapy and PTA program faculty the survey, which included a request for faculty to forward to peers and colleagues who meet the inclusion criteria. To limit bias, Dr. Segal acted as a third-party contact, emailing all correspondence concerning survey requests. Sample size estimates, response rates, and recruitment strategies were reported to increase transparency. There were two missing data points. One participant did not report their age, and another did not report error frequency. The one participant survey without an error frequency was removed from the final study results since this was the primary dependent variable of the study.

The CCA instrument's construct validity was previously established (Schim et al., 2007). Using online surveys limits the ability to confirm the adult status and personhood; however, using an online survey should have limited risk since VPTA leaders emailed requests to their membership roster, and Dr. Segal sent emailed to faculty at Virginia physical therapy and PTA programs directly. In this study, the response rate was defined as the number of completed surveys divided by the total number of eligible PTs in the sample (Fan & Yan, 2010), with the

response rate affected by the official survey sponsorship, topic, and length of the survey. All emails requesting participation were sent via a third party, limiting any possible duress due to my roles as a PT in Virginia or faculty member in a Virginia physical therapy program. A SurveyMonkey survey was the medium for all data collection; all data remained anonymous throughout the data collection process and analyses. The final survey response rate was 10.2% (*N* = 83). I do not know who completed the survey and who did not; therefore, opting or declining to participate or discontinuing the survey before completion in no way impacted relationships. However, it is important to note that the limited response rate may have biased the results. Furthermore, the recall bias may have affected the results as PT respondents were asked to report the frequency of errors in the past year. Also, response bias may have occurred due to the use of self-reported data whereby the respondent misinterpreted survey questions or wanted to remain in a positive light despite the survey being anonymous (Rosenman, Tennekoon, & Hill, 2011).

As a PT and educator who currently lives in the Valley District, works in the Mountain District, and previously lived and worked in the Tidewater District, I recognize that my personal biases may influence the study. Therefore, analyses of surveys were not conducted until all surveys were collected to limit my ability to identify study participants' responses.

Significance of the Study

Virginia's poverty rate, according to race/ethnicity in 2013, was 6% White, 23% Black, and 15% Hispanic (The Henry J. Kaiser Family Foundation, n.d.). Improving provider cultural competence can decrease healthcare disparities related to ethnicity and race (Betancourt, Green, Carrillo, & Park, 2005), yet because the majority of PTs did not grow up or graduate from a

physical therapy school in Virginia, they may not easily acculturate into a Virginian culture. For example, approximately 20% of Valley and Mountain District populations fall 200% below the federal poverty level, which means this region as medically underserved (University of Virginia, 2011). PTs who move to the Valley or Mountain districts may never have previously worked with adult patients of low socioeconomic status, those with less than high school education, or Appalachian culture (McGarvey et al., 2011). The Tidewater region of Virginia also has the fourth most active military duty and reserve members among all US states and is seventh in the number of veterans (U.S. Department of Veteran Affairs, 2014). When I contacted the APTA Committee on Cultural Competence (2019), I was encouraged to share the results from this research to contribute to the body of knowledge in physical therapy practice highlighting cultural competence and its possible associations with practice-related errors. My plan, therefore, is to disseminate study findings directly to institutions that will influence PTs' future practice, including the Federation of State Boards of Physical Therapy, APTA, and VPTA. Also, I plan to present at a future state or national PT professional conference and submit my manuscript to a relevant professional journal.

Summary

In summary, this chapter provides an overview of the research problem, research questions, and research methods used. The description and rationale were presented for selecting the three-dimensional puzzle of culturally congruent care model. This research framework provided a foundation for the exploration of some of the possible variables predicting the cultural competence of PTs. The CCA survey is a valid and reliable tool and provided a mechanism to

collect sociodemographic and professional variables at one point in time. The next chapter provides an in-depth literature review.

Chapter 2: Literature Review

Culturally competent healthcare providers in fields similar to physical therapy who engage their patients .had better patient outcomes (Alpers & Hanssen, 2014). While there has been a plethora of studies focused on the cultural competency of nursing, pharmacy, athletic training, and occupational therapy professionals, this literature review resulted in a limited number of resources that focused on physical therapy and PTs' cultural competence. No study was observed that associated or analyzed PTs' cultural competence as a predictor of practice error frequency. This study, therefore, aims to fill this gap in the literature.

In the US, medical errors accounted for $17 billion in unnecessary medical costs (Pham et al., 2012; Van Den Bos et al., 2011). US physicians were among the lowest of the top seven industrialized nations to report errors, and among the errors that were reported, most were significantly associated with what physicians reported as a lack of patient involvement in healthcare decisions (O'Hagan, MacKinnon, Persaud, & Etchegary, 2009). Approximately 4.2 million Canadian adults reported having experienced a pharmacy-related error in the previous two years (MacKinnon, O'Hagan, Persaud, & Etchegary, 2009). Many of these errors could be reduced by better engaging the patient in self-care. These studies suggest that cultural competency is essential not only for upholding quality and ethics in practice but also for its potential to reduce costs due to practice errors.

This current study additionally aimed to identify whether errors in physical therapy practice were related to PTs' sociodemographic and professional factors and cultural competency. This study seeks a potential way to reduce PTs' errors via CDT. The literature

review demonstrated the benefits of cultural competence in fields like PT practice and interprofessional practice, as well as cultural competency training benefits within physical therapy school. Chapter two is divided into six major parts: literature search strategy, theoretical foundation, survey instrument, and cultural competency definitions, historical perspective of cultural competence studies conducted in similar professions and their outcomes on health, key variables and concepts, summary, and chapter conclusion.

Literature Search Strategy

Literature searches were conducted using Google Scholar after logging into the Walden University Library using the search terms, physical therapy, cultural competence, cultural competence assessment. This search was then limited to 50 relevant resources based on relevance to the proposed study, and whether it was peer-reviewed and published between 2010 and 2019 except for pertinent articles referencing the theoretical approach, CCA, or cultural competence instrument that was used in this study or prior relevant studies that used the CCA and were published in English. Web sites from federal, state, and local agencies and professional organizations were also accessed as little was found in the literature on cultural competence specific to physical therapy.

Theoretical Foundation, Survey Instrument, and Definitions

The theoretical basis for this study is the three-dimensional puzzle of culturally congruent care model. This model considers patients' and providers' values, beliefs, and behaviors and their influences on patient outcomes. The three-dimensional puzzle of culturally congruent care model entwines the concepts of the Campinha-Bacote (1999) model of cultural competence

where cultural desire motivates the provider to participate in the process of cultural competence. Using the three-dimensional puzzle of culturally congruent care model as a basis for this study offers an effective way to measure the cultural competence of PTs in Virginia.

The CCA Instrument

The CCA instrument (see Appendix C) was created based on the descriptive components of cultural competence. Internal consistency reliabilities for the CCA instrument scale ranged from 0.86-0.92 (Doorenbos & Schim, 2004; Doorenbos et al., 2005; Schim et al., 2005; Schim, Doorenbos, & Borse, 2006a; Schim et al., 2006b), thereby demonstrating high reliability. Two hundred fifty-three surgeons were asked to reflect on practice within the past 12 months with CCA scores ranging from 5.99 to 13.75 of a possible 14 (mean = 10.3; standard deviation ± 1.3; Doorenbos et al., 2016). CDT was found to be associated with higher CCA scores. Construct validity was supported with the CCA moderately correlated (r = 0.66). The CCA instrument was selected as an effective and less costly survey tool.

Definitions

The three-dimensional puzzle of culturally congruent care model defines the concepts of cultural competence and its variables as follows:

Cultural diversity. Minorities in the US are quickly becoming the majority (Colby & Ortman, 2015). The basic concept of cultural diversity rests on genetic, cultural, and environmental factors, including, but not limited to, gender, race/ethnicity, sexual orientation, socioeconomics, and education (Schim & Doorenbos, 2010). With increased exposure to

diversity, cultural awareness increases. An individual's experiences, environment, and exposure to diverse cultures may differ but tend to increase with exposure (Janik, 2015).

Cultural awareness. This concept relates to knowing a culture or cultural group that is different than the providers. Awareness of an individual's culture includes acknowledging there are individual differences in verbal and nonverbal language, varying religious beliefs or traditions, values and motivations, dress, and diet (Schim & Doorenbos, 2010). Schim and Doorenbos (2010) consider this a teachable construct.

Cultural sensitivity. Beyond acknowledging the world is changing, and individuals are more than their culture, cultural sensitivity is a concept of attitude and emotive nature (Schim & Doorenbos, 2010). This concept focuses on the provider's respect for varying attitudes, values, beliefs, and personal insight. Being sensitive relates to how a person adjusts their behaviors and approaches based on cultural or individual differences.

Cultural competence. According to Schim and Doorenbos (2010), cultural competence is a behavioral construct and may be best viewed as consistent sensitivity. Cultural competence or competency is based on the provider's consistent appreciation and adaptation to meet everyone's needs. Cultural competence is provider-patient and resource bound and therefore is dynamic and changing with every interaction and encounter. Cultural competence typically increases with exposure to diverse experiences, increased knowledge of varying cultures, adopting attitudes to meet culturally sensitive situations, and consistently demonstrating culturally competent behaviors (Bednarz, Schim, & Doorenbos, 2010). Combining experience,

knowledge, and attitude to consistently and effectively meet patient-specific needs demonstrates cultural competence and is the desired outcome of professional education and development.

Errors. Practice errors or PTs' errors were not defined within this study to allow participants to associate the concept freely. General physicians participated in an online survey that focused on self-reporting practice related errors, confidence in uncertainty in practice, fear of making errors, and error reporting to superiors (Nevalainen et al., 2014) and did not define "medical errors" or "practice-related errors" to prevent bias in the terminology. Among the few studies in physical therapy practice that reviewed errors in practice, Cochran et al. (2009) utilized a phenomenological approach of experienced PTs separated into four distinct US regions. Five major error causative and reactionary themes were noted after the authors left it up to PTs to individually define 'errors.' A lack of error definition is consistent with healthcare practice as a whole (Anderson & Towell, 2002; Cochran et al., 2009). Beyond developing a self-definition of the error concept, the survey asked PTs to self-report error frequency in the past year on a scale of 1 (daily); 2 (weekly); 3 (monthly); 4 (annually) to 5 (never) following this same rationale (Kagan & Barnoy, 2013).

Historical Perspective of Cultural Competence Studies

The APTA's 2030 vision emphasizes that PTs be committed to excellence in practice, education, research, and advocacy and to balance evidence-based continuing competence in practice while limiting patient care costs (Hayhurst, 2014). About two decades ago, APTA's House of Delegates instituted the concept of cultural competence in the Vision Statement for Physical Therapy 2020 (Duffy, 2001). Value, one of the APTA's guiding principles, is more than

positive health outcomes achieved per dollar spent; instead, it is described as a practice that is patient/client-centered, efficient, effective, equitable, team coordinated and safe (APTA, 2019a). The impact of these cultural competence visions and values have yet to be fully assessed and suggests a potential public health risk since PTs treat culturally diverse populations from birth to senescence in varied environments (Dean, 2009a, 2009b). PT employment in the US is projected to increase to 282,700 by 2024 (US Department of Labor, Bureau of Labor Statistics, 2015). Finally, physical therapy practice in the US allows PTs to directly access, evaluate and treat patients without a physician's referral and includes billing the patient or their insurance directly (McGarvey et al., 2011).

Both the APTA (2019a) and CAPTE (2019) support that cultural competence is vital to improving client care outcomes. All US PT program curricula include cultural content, yet how this subject is taught varies widely (American Physical Therapy Association, 2019b). Additionally, although each physical therapy education program addresses content in cultural competence, the US license examination does not test this content (FSBPT, 2017). Conversely, foreign-educated PTs who would like to sit for the US physical therapy license examination must complete supervised clinical practice under the direction of a US licensed PT to ensure cultural competence and a level of public protection (FSBPT, 2017). It is questionable whether this is best practice as it is unknown whether US PTs are culturally competent in their practice and therefore mentoring others who are foreign trained PTs may be an ineffective practice.

Interprofessional cultural competence training and local healthcare provider recruitment efforts in Australia, New Zealand, Canada, and the US resulted in improved patient satisfaction

and enhanced access to health care (Clifford et al., 2015), yet PTs were not included in the study. The 3-Dimensional Puzzle of Culturally Congruent Care Model and the CCA instrument has been previously applied to interprofessional studies (Doorenbos et al., 2005). Two separate studies using the CCA noted the same predictors of cultural competence, including higher education and CDT (Doorenbos & Schim, 2004; Schim, Doorenbos, & Borse, 2005). Employer cultural education training has been shown to improve health providers' cultural competence (Schim, Doorenbos, & Borse, 2006b). Also, an interprofessional student nursing, pharmacy, and allied health sciences cultural competency training improved students' levels of cultural awareness, knowledge, skills, desire, and encounters (Hawala-Druy & Hill, 2012) supporting cultural competence as a teachable skill.

Multiple professions, like physical therapy, have invested in cultural competence training. US certified athletic trainers' cultural competence was assessed using the CCA with no differences reported based on years of experience and practice location; however, females and mixed-race/ethnicity were predictably higher in their cultural competence (Marra et al., 2010). A more recent study in which CCA surveyed athletic training students demonstrated high cultural awareness and sensitivity; however, inconsistency in cultural competence (Nynas, 2015). Federal programs such as the National Health Service Corps utilized the CCA to assess and better prepare physicians, assistants, social workers, and nurses to be community-responsive and culturally competent providers (Smith-Campbell, 2005). A CCA pre-and-post- test was utilized to assess students' clinical experiences. The greatest change reported was an increased intent to serve in underserved communities following their practicum. Housman et al. (2012) reported that

all 17 health education students who engaged with members of a low-income community in a service-learning project had increased perceived self-efficacy and cultural competence versus 17 students who did not participate. Comparison analysis demonstrated graduating nursing students' cultural competence was significantly higher than beginning nursing students suggesting the need for continuing education in cultural competence (Reyes et al., 2013). Another study used the CCA to assess the cultural competence of a convenience sample of nurses who graduated from a program in North Carolina (Lampley, Little, Beck-Little, & Xu, 2008). The level of education, nursing experience, and continuing education were factors indicative of higher cultural competence, whereas gender and race/ethnicity had no bearing on the cultural competence findings.

Patients who previously perceived a lack of culturally congruent care were more likely to not follow-up or delay care altogether (Doorenbos et al., 2016). Interviews of nurses showed limitations in intercultural knowledge, knowledge of medical traditions and differences in illness etiology, and symptom assessment (Alpers & Hanssen, 2014). Knowledge beyond western practices was limited, such as beliefs about illness and treatment philosophies. Years and work experience did not significantly change cultural or assessment knowledge. In contrast, public health nurses' previous cultural competency training was significantly related to higher scores on cultural competence (Starr &Wallace, 2009). Most participants scored at a moderate cultural competence level with the highest scores observed in cultural awareness and sensitivity. A descriptive study utilized a convenience sample of nurses from six general hospitals in Seoul, Korea, to assess the cultural competency level of nurses in the region (Chae, Park, Kang, & Lee,

2012). Higher cultural competency was associated with job position (p =.044), foreign language classes experience (p =.005), fluency in a foreign language (p < .001), and experience of working with foreign health care professionals (p < .001).

A Swedish grounded theory study explored the experiences and perceptions of occupational therapists working with immigrant psychiatric clients from the Middle East region (Pooremamali, Persson, & Eklund, 2011). The results of the interviews highlighted potential cultural, societal, and professional barriers to multicultural occupational therapy. Another study interviewed occupational therapy students following their participation in international experiences and identified three central themes: connectedness with others who engaged in the same experiences, cultural awareness of the cultural differences, and challenges of overcoming personal beliefs and constructs (Humbert et al., 2012). Furthermore, the American Occupational Therapy Association (2019) supports cultural competency education to improve occupational therapists' knowledge, skills, and attitudes to more effectively, sensitively, and responsively treat a multiculturally diverse population.

Pharmacy students showed improvements in communication and safety skills following simulations and lectures when compared to case scenario group discussions (Kane-Gill & Smithburger, 2011; Sales et al., 2013). An earlier study noted limited improvements in cultural desires and behaviors following a course in which students engaged in teams to learn cultural competence concepts (Poirier et al., 2009).

Self-rated physicians' abilities in understanding a foreign language and cultural competence rating were associated with patients' reports of effective care (Fernandez et al.,

2004). Patients diagnosed with cancer who had lower acculturation and higher language barriers with their care provider reported a lack of involvement in their decision-making regarding care (Mead et al., 2013). Disparities among American Indian and Alaskan Native minority groups in the US were particularly notable with cancer incidence lowest among all racial/ethnic groups, yet highest in mortality and 5-year survival following a cancer diagnosis. These disparities or errors may be reduced with providers consistently and effectively engaging patients in the care conversation, communicating effectively, and advocating for prompt appropriate treatments (Kavanagh, Saman, Bartel & Westerman, 2017; Mead et al., 2013).

Nursing students participating in an experimental longitudinal designed study, took the CCA before, directly after a cultural competency course and six months after completing the course (Lin, Chang, Wang, & Huang, 2015). While nursing students who participated in the cultural competence course scored higher on the CCA directly after completing the course, CCA scores diminished with time to that of students without course training. Cultural education may, therefore, increase cultural diversity and sensitivity temporarily, but on-going training is needed to maintain culturally competent practice standards.

The APTA (2019a) and CAPTE (2019) recognize the importance of cultural competence in physical therapy practice and described cultural competence as recognizing personal biases, understanding cultural differences, accepting cultural differences, and applying cultural understanding (Black & Purnell, 2002), yet to date what and how cultural competency is taught within physical therapy programs varies immensely (Romanello, 2007). Three factors have been previously suggested to positively impact PT student cultural competence: positive PT role

models, diverse clinical experiences across the lifespan and cultures, and frequent student reflection (Romanello, 2007). Licensed PTs who instructed minority PT students in clinic reported that they would benefit from further preparation in communication and interpersonal skills, but were rated higher than the majority students in stress management and the effective use of time and resources (Clouten et al., 2006) supporting possible differences in minority/majority learning styles.

Other associations with PT student cultural competence development have been explored. A descriptive article supported two models for physical therapy education, an integrated standardized patient's examination (ISPE) and refugee screening (Panzarella, 2009). Both models had positive cultural competence outcomes. International community service immersion experiences in Nicaragua (Dupre & Goodgold, 2007) and Belize (Ekelman, Bello-Haas, Bazyk, & Bazyk, 2003) led to increased cultural competency demonstrated by students recognizing and adapting treatments to patient cultural differences. Additionally, students' social responsibility was higher among those who had multiple international experiences versus those with only a few international experiences (Lee, Litwin, Cheng, & Harada, 2012). Varied and diverse cultural experiences may, therefore, be predictors of cultural competence.

Literature Review Related to Key Variables and Concepts

This quantitative non-experimental study utilized a convenience sample of PTs who live or work in Virginia. The independent variables were gathered from questions asked within the CCA, sociodemographic factors (age; race/ethnicity), and professional variables (e.g., highest education degree; prior diversity training; years of practice). CCA instrument cultural scores,

including CDE, CAS, CCB, and CCA total, were manually scored for each participant. CDE, CAS, CCB, and CCA total served as independent variables in the first hypothesis. CCB and CCA total served as dependent variables in the second hypothesis. PTs were additionally asked to self-report the number of errors in practice in the past 12 months, which is consistent with the timeframe described within the CCA instrument. Specifically, one survey question was: In the past 12 months, which of the following racial/ethnic groups have you encountered among your clients and their families or within the health care environment or workplace?

Previous Approaches

Similar studies have been conducted in cultural competency of nursing, pharmacy, athletic training, and occupational therapy professionals, yet none have investigated possible predictors of cultural competency in a large sample of PTs, nor whether an association exists between cultural competence of PTs and practice errors. Previous studies in cultural competence in physical therapy have either concentrated on the development of the student PT professional or collaboration within interprofessional studies.

Demographics, access to care, coordination of care, and patient-provider relationship were hypothesized to be explanatory medical risk variables. Errors rates were reported highest in Germany, the US, and Canada (O'Hagan et al., 2009). The final model of risk factors included: chronic disease, patients under 65 years of age, use of four or more medications, lack of physician-patient time, patient's perception of lack of involvement in self-care, patient-perceived inadequate medical staffing, and the absence of a regular physician.

Studies reviewing errors from the perspective of the practitioner have also been conducted. Nine percent of the 352 returned surveys received from San Diego County paramedics self-reported at least one error in the last twelve months, which was 4% higher than the internal quality improvement survey (Vilke et al., 2007). Most errors were related to dose, protocols, wrong route, or wrong medications with error risk related to the failure to triple check or communicate effectively, infrequent use of a medication, dosage calculation error, and incorrect dosage. One in four self-reported errors was related to communication errors. Experienced general practitioners were likely to be less fearful of making possible errors and less likely to apologize to their patients when errors were made (Nevalainen et al., 2014). However, less experienced general practitioners were more fearful of making errors but were more likely to report errors to their supervisors when they occurred (Nevalainen et al., 2014). Minor and major PT errors led to otherwise avoidable patient harm described as ineffective interventions, joint dislocation, bone fracture, infection, tendon and muscle tears in need surgical repair, burns from modalities, falls, myocardial infarction, and death; as well as errors that led to PT injury. Many of these errors could have been prevented with effective, culturally competent care.

Rationale for Variables

Virginia had an estimated 6900 PTs in July of 2014, which equated to just over 62 per 100,000 people who lived and practiced in Virginia (APTA, 2019a). These statistics are tangible, yet a qualitative feature of practice, cultural competence, is less so. The majority of PTs did not grow up or graduate from a physical therapy program in Virginia (Virginia Health Workforce Development Authority, 2017), and therefore may not recognize the population's culturally

diverse beliefs, attitudes, and values (McGarvey et al., 2011). For example, one in every ten residents in Virginia is foreign-born, with 40% hailing from Asia and 36% from Latin America (Center for American Progress [CAP], 2011). English is one of one hundred recognized languages that are spoken across Virginia, some of which include Spanish, Chinese, Vietnamese, Korean, and Tagalog (CAP, 2011). Also, 19% of 2009-2011 births were African American (CAP, 2011). In southwestern Virginia, approximately 20% of the population falls 200% below the federal poverty level designating this region as medically underserved (University of Virginia, 2011). Virginia's southwestern population has the worst prognosis for health, and health care utilization is significantly less than the rest of the state regardless of access to care and insurance (McGarvey et al., 2011). PTs are urged to meet the emergent care needs of a multicultural patient population via direct access, but to do so might be considered unethical, especially if they do not understand their patients' cultures.

Practice in a culturally competent manner has been reported to reduce health disparities by improving the responsiveness of healthcare providers (National Institutes of Health [NIH], 2015), yet based on my literature review, it is currently unknown whether PTs are culturally competent and whether predictors exist that determine PT cultural competence or self-reported practice error frequency. Identifying potential predictors for cultural competency of PTs in Virginia may reveal opportunities to improve culturally congruent care, thereby reducing physical therapy practice errors and associated costs.

Studies with Key Variables

Descriptive statistics were compared to the CCA survey results to quantify any effects the independent variables, CDE, CAS, CCB, and CCA total), sociodemographic (age; race/ethnicity) and professional factors (highest education degree; prior diversity training), had on the dependent variable, PTs' self-reported ranking of the frequency of self-errors in practice in the past year. Self-reported ranking of the frequency of errors is a ranking of self-errors on a scale of 1 (never), 2 (annually), 3 (monthly), 4 (weekly), and 5 (daily). A second hypothesis analyzed sociodemographic and professional variables as predictors of cultural competence. Descriptive statistics about participants are provided.

The level of cultural competence has varied by demographics with older, multiracial, females, and higher education most often associated with higher cultural competence (Lampley, Little, Beck-Little, & Xu, 2008; Marra et al., 2010; Musolino et al., 2010; Schim et al., 2005, 2006a). Ethnicity and sex are additional factors previously reported to influence cultural competence as noted when Asians, Hispanics, and females' cultural competence outperformed that of Whites, non-Hispanics, and males with medical and PT students underperforming all other health professions (Musolino et al., 2010). Age may also predict cultural competence. Older students reported increased challenges in communication, religious beliefs, sexual discrimination, and nutrition versus younger students despite all receiving the same cultural training (Ayaz et al., 2010). One study contradicted all other studies noting that gender and race/ethnicity had no bearing on the cultural competence findings (Lampley et al., 2008). Higher education and degree, as well as previous cultural-diversity training, have been associated with higher cultural competence (Doorenbos & Schim, 2004; Schim et al., 2005). Finally, nursing

experience and continuing education were factors indicative of higher cultural competence (Lampley et al., 2008; Lin et al., 2015).

Summary and Conclusions

Based on this literature review, it is currently unknown whether PTs are culturally competent in practice, whether predictors exist for PTs' cultural competence, and whether the cultural competence of PTs is a predictor for practice error frequency. This study aimed to determine whether PT sociodemographic and professional factors or cultural competency were predictors for reported practice error frequency. The results of this study may elucidate an approach to reduce errors and improve PT practice safety. Results from this study may assist in mitigating PT practice-related errors. Study findings will be disseminated to the FSBPT, APTA, CAPTE, as well as physical therapy programs in Virginia, to support safe and ethical physical therapy practice. The three-dimensional puzzle of culturally congruent care model and proposed hypotheses guided this quantitative study per the methods described in Chapter 3.

Chapter 3: Research Design & Methodology

The purpose of this quantitative nonexperimental study was to determine whether sociodemographic factors, professional variables, and cultural competency are associated with or predictors of self-reported practice error frequency among PTs in Virginia. The major sections of Chapter 3 include the research design and rationale, methodology, instrumentation, and operationalization of constructs, ethical procedures, and summary.

Research Design and Rationale

Before its start, the protocol for this study was approved by the Institutional Review Board (IRB) at Walden University. This study used a convenience sample of PTs who live or work in Virginia. The independent variables were CCA instrument scores (CDE; CAS; CCB; and CCA totals), sociodemographic factors (age; race/ethnicity), and professional variables (highest education degree; prior diversity training, years of practice). The CCB and CCA totals were independent variables for the first hypothesis and dependent variables for the second hypothesis. The dependent variable for the first and third hypotheses was self-reported PT practice error frequency in the past year on a scale of 1 (daily) to 5 (never). Using chi-square and ordinal regression, PTs' CDE, CAS, CCB, and CCA totals were associated with self-reported error frequency. Next, PTs' sociodemographic and professional variables were assessed for significant predictors of culturally competent behaviors or cultural competency. Lastly, PTs' sociodemographic and professional variables were tested for significant predictors of self-reported error frequency.

This quantitative nonexperimental cross-sectional approach was most appropriate for this study as it involved gathering data from a convenience sample of Virginia licensed PTs at a specific point in time. One of the major benefits of a cross-sectional study design is that it allows comparing many different variables at the same time, such as age, educational level, and previous training with little or no additional cost. Data were collected via SurveyMonkey between January 20, 2018, and April 16, 2018. This approach was determined to be the most efficient and cost-effective study design to collect sociodemographic and professional factors, PT cultural competence scores, and PT self-reported errors using the CCA instrument, a previously validated and reliable tool.

Methodology

This quantitative nonexperimental cross-sectional study used a convenience sample that included licensed practicing PTs aged 18 or older who work in Virginia. As an active member of the VPTA, I directly reached out to each of the six districts' directors to request a written pledge of agreement that would include the directors emailing a survey link and study description to their district members during the spring of 2018. Tidewater, Valley, and Mountain VPTA district leaders pledged their support to email the online link to the survey to members of their districts.

Raosoft, Inc. (2004), an online sample size calculator, was used to calculate the recommended minimum sample size of 159 surveys (95% confidence interval; 15% response distribution). An alpha of .05 was selected to balance and limit both type I and type II errors. SurveyMonkey was used to email the electronic consent forms and surveys. Survey response rates were calculated by totaling the completed surveys among participants who met the

inclusion criteria, then dividing by the estimated total number of surveys distributed to PTs. The email to potential survey participants included an active link to the survey, my contact information, and a consent statement that described the study's purpose, how the data would be used, estimated length of time to complete the survey, and information that survey responses will remain anonymous, and responders may stop the survey at any time. The consent statement said that the participant might refuse to answer any of the survey questions, end the survey at any time, and there were no penalties associated with refusing to participate in the study or completing partial surveys.

All data were collected electronically via SurveyMonkey. To meet the desired number of completed surveys ($N = 159$), Dr. Segal emailed requests to VPTA district leaders twice during the data collection period. By my request, Dr. Segal also emailed the survey link and request to participate survey information to physical therapy and PTA program faculty across Virginia. I was also invited to and attended one VPTA district meeting in each of the pledged Valley, Mountain, and Tidewater districts during the data collection period, but no data were collected onsite to prevent bias.

Participant survey responses were not connected with original email information so that CCA survey results and self-reported practice-related error rates remained anonymous. Consent was assumed when participants opted to click on the link to the survey and complete it. Participants could opt-out at any time without completing, partially completing, or fully completing the survey. The online survey questions #44 and #49 verified that all participants were PTs over 18 years old who practice in Virginia. SurveyMonkey allows anonymous survey

data collection, and therefore, data remained anonymous from collection to analyses and storage. Survey data collected via the online survey included sociodemographic (age; race/ethnicity) and professional factors (higher education degree; prior diversity training, years of practice) and CCA survey responses that were used to calculate CDE, CAS, CCB and CCA total scores, as well as error frequency in the past year. Once participants exited the survey, an automated email was sent with my contact information as well as IRB contact information for possible complaints.

Instrumentation and Operationalization of Constructs

The CCA instrument was developed and validated by Schim and Doorenbos (2010). The CCA was previously used to assess cultural competence in similar professions, including but not limited to nursing, social work, and athletic training. The CCA has proven to be a valid and reliable instrument with face, content, and construct validity previously established in medical professions including nursing and pharmacy, as well as allied health professions including occupational therapy, social work, and athletic training (Chae & Kang, 2013; Doorenbos et al., 2005; Schim et al., 2006; Schim et al., 2003). The CCA instrument author, Dr. Doorenbos, provided me with written permission to use the instrument at no cost and provided instructions on how to score the instrument (see Appendix C).

The CCA instrument provided the means to measure cultural elements (CDE, CAS, CCB, and CCA totals). The instrument includes questions focused on sociodemographic and professional factors and cultural competence-related scores (CDE, CAS, CCB, CCA totals).

There are two CCA subscales, one of which measures CAS and the other, which measures CCB. The CCA total score was a combined score of CAS and CCB subscale scores.

Operationalization

From my literature review, no study to date has examined whether age, race/ethnicity, education, CDT, years of practice, or cultural competency was associated with PT error frequency. Previous studies focused on other health professions have examined sociodemographic variables and response to diversity or cultural competence related training. Marra et al. (2010) found no differences in cultural competence by sex, race, years of experience, or where one practiced, yet women and multiracial and African American athletic trainers had higher cultural competence. Kagan and Barnoy (2013) surveyed nurses within an academic program and observed that employer safety culture emphasis, the nurse's birthplace, and lack of academic nursing degree were significant predictors for self-reported error frequency. A study that included participants from eight rural nursing programs across the state of Wyoming noted no significant difference in the cultural competence of graduate nursing students, community college nursing faculty, university nursing faculty and clinical instructors based on age, education level, years of experience, or level of pre-license nursing degree (Diaz et al., 2015). Another study noted that student cultural competence improved directly following cultural competency training, but CCA scores waned after six months (Lin et al., 2015).

Analysis Plan

Data were analyzed using SPSS Version 24.0. All results were provided at an alpha of .05. Descriptive analyses were conducted to analyze sociodemographic and professional

variables and evaluate assumptions for appropriate analysis. Since data was determined to be non-parametric, chi-square was used to test for associations, and ordinal regression analyses were used to test for predictors where associations were noted. In the circumstance predictors were observed, Cramer *V* and Odds Ratio was calculated for a magnitude of effect (Ellis, 2010). Data collected was reviewed for missing variables, and it was observed that one participant did not answer the final question, error frequency. One of the authors of the CCA instrument, Schim et al. (2005) removed any participant with more than 10% missing values; however the missing data happened to be a dependent variable, therefore even though this was less than 10% of the missing values, this participant's data was removed from the data set before testing for associations.

Independent variables included CCA instrument calculated scale scores (CDE, CAS, CCB, CAS total), sociodemographic (age; race/ethnicity), and professional factors (education degree; diversity training; and years of practice). One categorical dependent variable was used in this study, PTs' self-reported frequency of errors in practice in the past year. Self-reported practice-related errors were answered using a scale of 1 (daily); 2 (weekly); 3 (monthly); a) to 5 [never] (Kagan & Barnoy, 2013). The second hypothesis included ordinal dependent variables, CCB and CCA total, for cultural competence, which were tested separately.

The three research questions, hypotheses, and alternate hypotheses were:

RQ1: Is there an association between CDEs, CAS, CCBs, or CCA total and self-reported error frequency?

H_01: There is no association between CDEs, CAS, CCBs, or CCA total and self-reported error frequency.

H_a1: There is an association between CDEs, CAS, CCBs), or CCA total and self-reported error frequency.

RQ2: Is there a significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals?

H_02: There is no significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals.

H_a2: There is a significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals.

RQ3: Is there a significant predictive relationship between sociodemographic and professional variables and self-reported error frequency?

H_03: There is no significant predictive relationship between sociodemographic and professional variables and self-reported error frequency.

Ha3: There is a significant predictive relationship between sociodemographic and professional variables and self-reported error frequency.

Threats to Validity

This study has several limitations. The study included a convenience sample of PTs in Virginia only; therefore, responses can only be generalized to PTs in Virginia. PTs were asked to recall and reflect on their practice in the past 12 months, but results may only be generalized to the reporting period of spring 2017 to spring 2018 due to questions survey questions focusing on

self-reporting reflections of practice error frequency in the last year. Construct validity was supported with CCA moderately correlated (r=0.66) with the IAPCC, which is a tool previously utilized to assess PT cultural competency (Chae & Kang, 2013; Schim, Doorenbos, Miller, & Benkert, 2003). The IAPCC was expensive to access; therefore, I chose to use the previously validated CCA survey to limit my financial burden. To limit threats to external validity, Dr. Segal emailed the link to all three pledged district leaders to ask them to email out to their district membership. This way, I was not emailing membership directly. As a PT and educator in the SW Virginia region, I recognize I may have personal biases when writing the study's discussion of the results. All data were collected using an online survey so that data would remain anonymous. Data were downloaded to an excel format then uploaded to SPSS version 24. Analysis of data occurred after all data were collected.

Ethical Procedures

Survey data were collected using an anonymous online survey using SurveyMonkey, Inc. Study participants were PTs who work within the Commonwealth of Virginia. Participants were not considered vulnerable based on their higher education level and age (>18). Survey data remained anonymous throughout collection and analyses. Identifying demographic data was limited.

Appendix C includes a letter from the author, Dr. Ardith Doorenbos, which permitted me to use the CCA as well as the tool and coding for appropriate and consistent scoring. The survey request email included informed consent to acknowledge potential ethical concerns. The email included a description of the purpose of the study and a description of how data was to be

gathered, secured, analyzed, and the plan for dissemination of findings. Participants were not coerced to participate. However, as I am an active member of the VPTA and faculty member at a doctor of physical therapy program in Virginia, participants may feel urged to participate. To reduce any pressure to participate, all emails were sent from VPTA leadership, and my dissertation faculty chair and data collected remained anonymous throughout collection and analyses. Participants were free to opt to participate or ignore the request to participate.

Participants were treated autonomously, with beneficence, and justice. This research presented no more than minimal risks to participants, and the IRB review was, therefore, expedited (IRB Registration # 00005599). Confidential survey data were de-identified and then saved in excel on a dedicated storage device. De-identified data was backed up on a secondary source maintained within my home in a dedicated file drawer. Raw coded data brought directly over from SurveyMonkey will only be shared with my dissertation chair. Data is secured as described and will be destroyed after five years as required by Walden University. To limit ethical issues, research for this dissertation will not be conducted within my work environment or utilizing any resources connected with my current workplace. No incentives for completing the survey were provided.

Summary

This quantitative non-experimental cross-sectional study accessed a convenience sample of PTs in Virginia via the VPTA. This study aimed to determine whether cultural competence, sociodemographic, or professional factors were associated with or predictors of self-reported practice error rate frequency among PTs in Virginia. The research design and rationale,

methodology, instrumentation, and operationalization of constructs, ethics procedures have been provided. Results are provided in Chapter 4.

Chapter 4: Results

The overall purpose of this quantitative nonexperimental study was to determine whether sociodemographic, professional, and cultural competence factors were associated with self-reported error rates among PTs in Virginia. There were three research questions and three null hypotheses. First, PTs' CDE, CAS, CCB, and cultural competency were tested for associations with self-reported error frequency using chi-square. Secondly, PTs' sociodemographic (age; race/ethnicity) and professional variables (highest education degree; CDT; years of practice) were tested for associations with cultural competency before testing for predictors of cultural competency. Ordinal regression was used to test and confirm any variable found to be associated with CCB ($p < .001$). Lastly, PTs' sociodemographic and professional variables were tested for associations and where applicable predictors of self-reported error frequency.

The major sections of Chapter 4 include the study's time frame, recruitment and response rates, discrepancies from the original plan, baseline sample descriptive statistics, how representative the sample was in terms of the larger population, possible covariates in the model, statistical assumptions, results, posthoc analyses, summary, and transition to a discussion.

Data Collection

This quantitative nonexperimental study used a convenience sample of PTs who live or work in Virginia. Data were collected electronically between January 20, 2018, and April 16, 2018, via SurveyMonkey. To comply with Walden IRB and assure participants were not inadvertently coerced to participate, survey links with consent to participate were emailed to my dissertation chair, who then forwarded these to VPTA leaders of the Tidewater, Valley and Mountain districts who previously pledged to forward surveys to district members. Districts, on

average, reported sending the request to participate in an email two times to members within their districts during the study period. Also, the VPTA placed the survey up on its Facebook page. I also was invited and attended one meeting within each district during the study period. During meetings, VPTA leadership allowed me to describe my study and request members who were interested in providing me their email information. After each meeting, I provided emails to my dissertation chair, who then emailed requests to participate in the study survey. VPTA district leaders advertised meetings to members only. Therefore, recruitment remained limited to the original 817 potential participants who previously received invites from pledged district leaders. Emails to potential survey participants from district leaders included an active link to the survey, my contact information, and a consent statement that described the study's purpose, how the data collected would be used, estimated length of time to complete the survey, and information that survey responses would remain confidential and responders could stop the survey at any time. SurveyMonkey restricts a participant from using the same email address, IP domain, and hyperlink, thereby limiting the possibility of participants repeating the study survey more than once. Data were downloaded from SurveyMonkey to Microsoft Excel and included IP addresses and dates of survey completion to assure the same PT did not complete the survey again. Survey data remained anonymous throughout collection and analyses. Data were analyzed using SPSS Version 24.0. A priori statistical significance for independent variables and the primary outcomes were set to $p < .05$.

Descriptive Statistics

A total of 817 electronic surveys were emailed to the VPTA Valley, Mountain, and Tidewater district members sent by pledged VPTA leadership. Using Raosoft, Inc. (2014), an online sample size calculator, the recommended sample size at $p = .05$ for a population size of 817 was 159. The sample size desired was not met despite various recruitment efforts. Recruitment occurred during VPTA district meetings and via repeated requested emails sent by VPTA leadership and Dr. Segal. Additionally, Dr. Segal emailed a request to Virginia physical therapy and PTA program faculty, and a VPTA district leader placed the link to the survey on the VPTA Facebook page. The final survey response rate was 10.2% ($N = 83$). One respondent opted not to answer the frequency of self-reported errors, and one did not report their age. The dependent variable in this study's first and third hypotheses was PT self-reported error frequency. Most participants reported annual errors (N=37), and least responded daily (N=1; see Table 3). One participant opted out of answering this question; therefore, the response to this question included 82 participants.

VPTA district membership demographics were not available, therefore for generalizability, demographic comparisons were made to Virginia licensed PTs who completed the Virginia Department of Health Professions (2017) survey of physical therapists (see Table 2). Using a two-sample t-test calculator for two population proportions, the two samples' respondent demographics were compared. Final participants were 83 PTs licensed in Virginia with a mean age of 42.5 years ([SD] ± 12.0 years; range 26 to 69) and a median age of 41.5.

Table 2

Comparisons of Two Physical Therapist Population Proportions

Variable	Virginia*	Current Study	*p*-value
N	6457	83	
Age			
Median Age	40	41.5	
% Under 40	51% (3293)	48.8% (41)	.772
% 55+	16% (1064)	22% (18)	.204
Highest Education			
Bachelors	21% (1356)	9.6% (8)	.0114
Masters	21% (1356)	6% (5)	.00084
Doctorate	58% (3745)	84.3% (70)	< .00001
Race and Ethnicity			
White/Caucasian/European American	82% (5115)	91.6% (76)	.0238
Black/African American	4% (254)	6% (5)	.3320
Asian	8% (521)	2.4% (2)	.0588
American Indian/Alaska Native	-	3.6 % (3)	-
Hispanic/Latino	2% (139)	3.6% (3)	.3628
Mixed Race/Ethnicity	2% (119)	7.2% (6)	.0004

From "Virginia's Physical Therapist Workforce: 2016," by Virginia Department of Health Professions (https://www.dhp.virginia.gov/media/dhpweb/docs/hwdc/pt/2305PT2016.pdf).

Ethnicity was not reported by the Virginia Department of Health Professions (2017), and gender was not reported within the current study's survey because it was not included within the previously validated CCA survey used in this study. Schim and Doorenbos (2010) emphasized that sexual orientation should not be included in surveys focused on professions that tend to be homogenous to improve anonymity. Therefore, no questions regarding sex were added to the CCA survey. Demographics of participants in both study samples were not statistically different in terms of age percentage or self-identified race and ethnicity in terms of the following categories: Black/African American, Asian, and Hispanic/Latino ($p > .05$). In the current study, participants were asked to answer the question: "Using the categories below, what do you consider yourself? (choose one or more)." Approximately 92% of respondents identified as White, 6% Black, and 2.4% Asian (see Table 2). Respondents who self-identified as more than one race/ethnicity were categorized as mixed. Approximately 7% of respondents were mixed race/ethnicity.

There were no significant differences in ages between the two survey samples, which supports that the current study's sample was representative of Virginia licensed PT population. The Virginia Department of Health Professions respondents' median age was 40, with 51% of participants under 40 and 16% over 55 years old, while this current study's median age was 41.5, with 49% of participants under 40 and 22% over 55 years old. While the Virginia Department of Health Professions did not report the specific age ranges of their respondents, the age range of the current study's participants was 26-69. Participants in the current study practiced a minimum of one year and a maximum of 40 years ($M = 11.24$; $SD \pm 10.38$). The Virginia Department of

Health Professions did not report the number of practice years; therefore, no comparisons were made.

Table 3

An estimate of Practice-Related Errors

Response	Frequency	Percent
Never	13	15.7
Annually	37	44.6
Monthly	22	26.5
Weekly	9	10.8
Daily	1	1.2
Total	82	98.8
Missing	1	1.2

Statistical Assumptions

CCA instrument scores were tallied and averaged following the survey coding and scoring instructions provided by the CCA author (see Appendix C). Predesignated survey questions were scored on a scale of 0-7 with an average score equating to CDE, CAS, CCB, and CCA total scores. The CDE reflects the one question, “Check the various population groups you have encountered in the last 12 months?”. The list of options is diverse and includes categories of race, ethnicity, age groups, homeless, and mental health. The survey additionally includes questions specific to the respondents’ sociodemographic characteristics such as age and

race/ethnicity as well as professional variables of highest education degree, CDT, and years of practice. Participants were finally asked to report an estimate of error frequency in the past year on a scale of 1 (daily); 2 (weekly); 3 (monthly); 4 (annually) to 5 (never). To test for associations, chi-square was utilized to associate independent and dependent categorical, nominal, and ordinal variables. To assess for possible sociodemographic and professional predictors for cultural competency and PT self-reported errors, the dependent variables (CCB; CCA total), and PT self-reported frequency of practice related errors in the past year (daily; weekly; monthly; annually; never) were measured on an ordinal scale.

Research Questions and Hypotheses Statistical Findings

The variables are nominal, categorical, or ordinal, and the research questions are associations or predictor statements; therefore, the Pearson chi-square (chi-square) test for independence was first used to determine whether an association exists between the variables. The independent variables were categorical (e.g., age groups; race/ethnicity; highest education degree; cultural diversity [yes/no], years of practice grouped; CDE; CAS; CCB; CCA total). The dependent variable for the second hypothesis was cultural competency measured via CCB and CCA total. The dependent variable for the first and third hypotheses was PT self-reported frequency of practice related errors in the past year measured on an ordinal level scale (daily; weekly; monthly; annually; never). Therefore, chi-square and ordinal logistic regression were selected to test the hypotheses. Chi-square is used to determine whether an association exists between categorical variables, while ordinal logistic regression tests whether the independent variables predict the dependent ordinal variable or outcome. Although data were found to be

nonparametric, chi-square and ordinal regression test statistics were not violated since these tests do not imply assumptions about the parameters of the population. Also, independent observations are assumed based on the assurance that SurveyMonkey does not allow the same electronic device to access the same survey link decreasing the likelihood that surveys were duplicated. Each research question, hypothesis, and results are presented separately.

The Shapiro-Wilk Test is appropriate for small sample sizes of less than 50 but can also handle larger sample sizes. The Shapiro-Wilk test informed the data distribution normality. If the significance value of the Shapiro-Wilk Test is greater than 0.05, the data is normal (Field, 2013). If it is below 0.05, the data significantly deviate from a normal distribution (Field, 2013). Table 4 illustrates that the data is nonparametric. As noted by the Shapiro-Wilk's test results, all cultural competence domains, age, and years of practice data are non-normally distributed.

Additionally, the one-sample Kolmogorov-Smirnov normality test is used to test whether a variable follows a given distribution in a population. The results of the Kolmogorov-Smirnov test in Table 4 indicate that none of the independent variables follow a normal distribution with $p < .001$ for all but age with $p = 0.022$. All were below the .05 p-value indicating that the distribution was not normal, and therefore statistical analyses allowed must be nonparametric such as chi-square and ordinal logistic regression analyses.

Multicollinearity of the independent variables was assessed before conducting ordinal logistic regression analyses. Multicollinearity is a phenomenon in which a predictor variable in a multiple regression model can be linearly predicted from the others. Multicollinearity was assessed in SPSS; collinear diagnostics were checked within the linear regression tab. Table 5

shows the results of testing for the multicollinearity of the independent variables of CDE, CCA, and CCB. Variance inflection factors (VIF) less than one indicate no correlation, while those between one and five are moderately correlated, and greater than five are highly correlated. VIFs for CDE (1.03), CAS (1.14), and CCB (1.18) demonstrate no to low collinearity with the CCA total. Chi-square and ordinal regression tests were conducted as appropriate to examine all null hypotheses and are described by each research question as follows.

Table 4

Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CDE	.217	82	.000	.907	82	.000
CAS	.363	82	.000	.732	82	.000
CCB	.195	82	.000	.923	82	.000
CCA total	.171	82	.000	.934	82	.000
Age	.107	82	.022	.927	82	.000
Years of Practice	.190	82	.000	.863	82	.000

Table 5

Collinearity Statistics

Model	B	Std. Error	Beta	t	Sig.	Tol.	VIF
Constant	2.329	.622		3.75	.000		
CDE	-.025	.046	-.023	-.546	.587	.966	1.036
CAS	.637	.105	.270	6.06	.000	.874	1.144
CCB	.982	.055	.802	17.8	.000	.849	1.178

The null hypothesis testing results that follow are provided in a sequence that includes presenting the research question, hypothesis, and null hypotheses followed by analyses and results summaries.:

RQ1: Is there an association between CDEs, CAS, CCBs, or CCA total and self-reported error frequency?

$H_0$1: There is no association between CDEs, CAS, CCBs, or CCA total and self-reported error frequency.

H_a1: There is an association between CDEs, CAS, CCBs), or CCA total and self-reported error frequency.

Chi-square was used to assess the relationship between CCA cultural assessment scores and self-reported error frequency. None of the cultural assessment scores were associated with self-

reported error frequency (see Table 6). However, PTs who reported a high number of CDEs were more likely to self-report annual errors *(p* =.024).

Table 6

Chi-Square Tests: Cultural Assessment Scores and Error Frequency

Cultural Assessment Score	Pearson Chi-Square Value	df	*p*-value
CDE	24.876	24	.413
CAS	5.696	12	.931
CCB	20.490	20	.428
CCA total	33.081	24	.102

RQ2: Is there a significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals?

$H_0$2: There is no significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals.

H_a2: There is a significant predictive relationship between sociodemographic and professional variables and CCB and CCA totals.

Chi-square was used to assess the relationship between sociodemographic and professional variables and self-reported error frequency. The professional variable CDT had a statistically significant relationship with CCB, $\chi(5) = 12.525$, $p = .028$ (see Tables 7 and 8). As noted in Tables 8 and 9, CDT was a statistically significant predictor of CCB ($p < .001$) and a Cramer *V*

was calculated at .338 and Odds Ratio of 4.89 [CI: 1.575; 15.17] (Ellis, 2010). Next, sociodemographic and professional variables were assessed for associations with CCA total scores. No significant relationships were observed (see Table 10).

Table 7

Chi-Square Tests: Sociodemographic & Professional Factors and CCB

Variable	Pearson Chi-Square Value	df	*p*-value
Age	18.478	20	.556
Race/Ethnicity	6.524	20	.998
White/Non-White	3.056	5	.691
Highest Degree	8.363	15	.908
Cultural Diversity Training	12.525	5	.028
Years of Practice	13.523	15	.562

Table 8

Chi-Square Tests: Cultural Diversity Training and Culturally Competent Behaviors

	Value	df	*p*-value
Pearson Chi-Square	12.525[a]	5	.028
Likelihood Ratio	12.291	5	.031
Linear-by-Linear Association	8.409	1	.004

Table 9

Test of Parallel Lines: Cultural Diversity Training and Culturally Competent Behaviors

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	29.465			
General	9.134	20.331	4	.000

Table 10

Chi-Square Tests: Sociodemographic & Professional Factors & CCA total

Variable	Pearson Chi-Square Value	df	*p*-value
Age	11.820	24	.982
Race/Ethnicity	14.800	24	.926
White/Non-White	10.378	6	.110
Highest Degree	8.426	18	.972
Cultural Diversity Training	10.086	6	.121
Years of Practice	13.342	18	.771

RQ3: Is there a significant predictive relationship between sociodemographic and professional variables and self-reported error frequency?

H_03: There is no significant predictive relationship between sociodemographic and professional variables and self-reported error frequency.

Ha3: There is a significant predictive relationship between sociodemographic and professional variables and self-reported error frequency.

With H_03, there is not a significant predictive relationship between sociodemographic and professional variables, and self-reported error frequency was first tested for possible associations using chi-square. None of the sociodemographic or professional variables were associated with self-reported error frequency (see Table 11); therefore, no further tests were conducted.

Table 11

Chi-Square Tests: Sociodemographic & Professional Factors & Error Frequency

Variable	Pearson Chi-Square Value	df	*p*-value
Age	25.071	16	.069
Race/Ethnicity	17.156	16	.376
White/Non-White	8.337	4	.080
Highest Degree	9.428	12	.666
Diversity Training	.571	4	.966
Years of Practice	8.968	12	.706

Summary

Three hypotheses were tested for associations and significant predictors of cultural competency and PTs' self-reported error frequency. The survey response rate was 10.2% (N = 83). Eighty-two PTs licensed in Virginia fully completed the survey. Descriptive analyses, tests for normality, chi-square, and ordinal logistic regression analyses were conducted to test three hypotheses in SPSS. The participants' mean age was 42.5 +/- 12 years, 91.6% identified as non-Hispanic White/European American, 84.3% reported highest education degree was DPT, and mean practice years was 11.6 +/- 28 years. Most errors were reported annually (44.6%) and least daily (1.2%). No associations were observed between PTs' CDE, CAS, CCB, or CCA total and self-reported error frequency ($p < .05$). PTs of multiple races/ethnicities were observed to report errors of any frequency except never ($p = .010$); however, the number of participants that met the multi-race criteria was limited (N = 6). Additionally, one professional variable, CDT, was significantly associated ($p = .028$) and a significant predictor ($p < .001$) of CCB. No sociodemographic (age; race/ethnicity; highest education degree) or professional (years of practice; CDT) variables in this study were found to be associated or predictors of self-reported error frequency.

Chapter 5: Conclusions

A review of the literature focused on cultural competency in physical therapy and reporting revealed negligible research involving the topic. Therefore, this study aimed to address this gap in the literature. The increasingly diverse US population requires PTs to provide equitable and culturally competent care, which includes direct access. The study's purpose was to determine whether there was a relationship between cultural competency and self-reported practice- related error frequencies among PTs in Virginia. The online survey included the CCA instrument used to determine the individual CDE, CAS, CCB, sociodemographics (age; race/ethnicity; highest education degree), and professional information (CDT; years of practice) variables. One additional survey question was added, with respondents asked to rank the frequency of self-errors in practice over the past year on an ordinal scale of 1 (daily) to 5 (never).

A convenience sample included members of three VPTA districts with a response rate of 10.2% ($N = 83$). Participants' median age was 41.5 years, and the mean age was 42.5 years ([SD] ± 12.0 years; range 26 to 69). Eighty-four-point three percent of participants reported doctorates in physical therapy, and 91.6% self-identified as non-Hispanic White or European American. Most reported practice error frequencies were annual (44.6%), and least reported were daily (1.2%). Despite the low response rate, the study sample had similar demographics compared to practicing PTs in the State of Virginia.

PTs with a greater than five culturally diverse experiences were more likely to self-report annual errors ($p = .024$) than those who reported less than five culturally diverse experiences, and PTs of multiple races/ethnicities ($p = .010$) were more likely to report errors than those who

identified as a single race. CDT was observed to be a significant predictor of CCB (p <.001). Additionally, CDT was found to be a statistically significant predictor of CCB (p <.001) with a medium practical effect of .388. Moreover, PTs who reported participating in a prior CDT were approximately five times (OR=4.89) more likely to self-report highly culturally competent behaviors. Age, race/ethnicity, highest education degree, and years of practice were not associated, nor were predictors for CCB. Likewise, age, race/ethnicity, highest education degree, years of practice, and CDT were not associated with nor predictors for self-reported error frequency.

Interpretation of the Findings: Culture, Professions, and Errors

This main finding from this study suggests that CDT appears to predict higher reported CCB (p < .001). Additionally, CDE was associated with self-reported annual errors (p =.024). PTs of multiple races/ethnicities were more likely to report errors than a self-reported single race or ethnicity participants (p = .010). No differences were noted in error reporting frequencies by age, race/ethnicity, highest education degree, and years of practice. The social change implications from this study are that CDE and CDT may improve CCB self-awareness, which could help inform CDT and program development for students and practicing PTs aimed to reduce patient care errors.

Culture and Cultural Competence

Culture provides us the perspective of what is acceptable communication and behaviors to interact and engage in our world (Schim and Doorenbos, 2010). With the creation of the CCA instrument, Schim and Doorenbos (2010) offer a way to make a complex entangled concept that

encompasses affective, cognitive, and psychomotor domains more tangible. Cultural competence or competency is a non-achievable reality as practitioners are only one part of the picture. Instead, each provider-patient interaction is an interplay between both provider and patient attitudes, beliefs, and behaviors that support productive interactions (Schim and Doorenbos, 2010). The first principle of physical therapy practice, according to the APTA Code of Ethics (2019a), is "… (to) act in a respectful manner toward each person regardless of age, gender, race, nationality, religion, ethnicity, social or economic status, sexual orientation (p. 3, para 1)". Cultural diversity training may improve recognition and reflection of personal practitioner biases, core values, personal and professional ethics, and, thus, improve outcomes of care by facilitating effective and respectful communication. Results of this study support that CDT predicts behaviors reflective of the physical therapy profession's first ethical principle.

Professions

Nursing. Lampley et al. (2008) reported that nursing experiences and continuing education were significantly associated with cultural competence, whereas race/ethnicity had no association. Participants completed the CCA tool to evaluate perceptions of cultural competence between graduating and beginning level nurses. Self-reported graduating nurses' cultural competence scores were significantly higher than beginning level cultural competence scores. Also, Kagan and Barnoy (2013) said that nurses' educational achievement was a predictor for error reporting. CCA totals and CCB scale scores of neonatal nurses were negatively associated with age and positively associated with years of practice, years of specialty practice, and CDT (Heitzler, 2017). In this study, age and years of practice did not inform CCB or CCA total.

Heitzler (2017) and this study observed that CDT had a significant predictive relationship with CCB.

Chae et al. (2012) documented that Korean nurses' cultural competence was positively associated with diversity training, foreign language proficiency, and experience with working with foreign healthcare professionals. Benkert et al. (2011) observed CDE had a direct effect on awareness/sensitivity and CCB, and CDT was a predictor of CCB. Chiang, et al. (2012), Lin et al. (2015), and Chiang et al. (2017) noted that the cultural competency of Taiwanese nursing students and practicing nurses improved directly following a CDT course and job satisfaction; however, cultural competency decreased over time, suggesting the training effect diminishes with time. The results of this study suggest that cultural competence-focused courses may enhance the cultural competence of nurses, but only for a limited time. Future studies should assess the effect of CDT for PTs to establish whether continuing CDT in PT practice is needed.

Allied health and other professions. The results of the current study revealed that CDT and diverse experiences were associated with CCB. Nynas (2015) reported that athletic training students scored high in CAS, yet lower in CCB. Lower CCB scores were associated with a lack of participants' CDE and CDT. During focus group interviews, athletic training students suggested that the curriculum include more direct practice with patients of diverse cultures and that students be immersed in clinical education experiences that include exposure to diverse cultures to enhance their CCB skills. Occupational therapy students reported higher awareness and sensitivity of diverse cultures following their participation in international clinical experiences (Humbert et al., 2012). Humbert et al. (2012) identified three central themes that

related to higher cultural competence: connectedness, cultural awareness, and cross-cultural complexities of practice. Shah and Lonie (2012) suggested that future pharmacists' training should incorporate opportunities to access resources, practice demonstrating CCB, and document information about patients and their diverse cultures.

Interprofessional studies. Higher education, employer training, and CDT were associated with improved allied health providers' cultural competence (Doorenbos & Schim, 2004; Schim et al., 2005a, 2006a). Hawala-Druy and Hill (2012) reported students of nursing, pharmacy, physical therapy, occupational therapy, and physical therapy assistants demonstrated improved cultural competence directly following an elective three-credit course that focused on cultural diversity interprofessional education and consisted of two hours of in-class instruction and one hour of supplemental reading, video, field trips, and online discussion forums over a 14 week semester. This mixed study included a pre and post-test comparison with statistically significant increases in self-assessed cultural competence across all professions and ethnicities. Students' feedback emphasized the importance of including course aspects that focus on honing clinical skills that individualize patient care. The current study did not include a post-test following a specific course or training but instead asked participants to report any CDT they previously had in school, work, or via a continuing education course. Smith-Campbell (2005) said while students remained culturally aware and sensitive, CCA total did not. However, their self-reported attitudes about working with patients of lower socioeconomic improved, and students reported increased intentions to work with the underserved in the future.

Interprofessional care practice is recognized as a way to reduce medical errors (O'Hagan et al., 2009). O'Hagan et al. (2009) surveyed adult patients from Canada, Australia, Germany, the Netherlands, New Zealand, the United Kingdom, and the US to determine patient self-reported rates and risk factors for medical, laboratory and medication errors. Nine percent of US patients surveyed reported errors in 2008, which was the highest percentage of all seven industrialized nations included in the study. The most common patient-reported medical errors were related to a lack of patient involvement in care, perceived inadequate or lack of communication among medical staff, use of four or more medications, lack of physician time with the patient, and diagnosis of a chronic condition (O'Hagan et al., 2009). The results of this study highlight the need for improved interprofessional communication, collaboration, and increased patient involvement in their care to reduce medical errors, which relates to the current study in its emphasis on reducing medical errors.

Physical therapy. Few studies have focused on cultural competence in physical therapy, and most of these have focused on student cultural competency and interprofessional collaboration. PT students demonstrated improvement in overall cultural competence after participating in classroom activities and local, community-focused, cross-cultural activities (Denton, Esparza, Fike, Gonzalez, & Lundquist Denton, 2016). Copti, Shahriari, Wanek, and Fitzsimmons (2016) reported that people who identify as lesbian, gay, bisexual, transgender or queer (LBGTQ) are at increased risk for certain cancers, sexually transmitted diseases, mental health problems, and substance abuse; therefore it is a priority for PTs to be culturally competent to evaluate and treat patients of the LBGTQ community to prevent substandard care and reduce

errors. Patient perceptions of their PT's cultural competence were positively associated with patient-provider trust (Hook et al., 2013). Likewise, PT's cultural humility was positively associated with outcomes in care (Hook et al., 2013). However, Clouten et al. (2006) reported that physical therapy clinical instructors expected more of White students than minority students, and findings suggest that minority students would benefit from additional communication and interpersonal skill training, while white students would benefit from additional stress management and time management training. These results suggest possible differences in learning style preference by race, the additional need for students to have diverse cultural experiences, and the need for additional diversity training for physical therapy clinical instructors. Dupre and Goodgold (2007) reported an increase in five students' cultural competency following a Nicaraguan community service immersion experience. PT students at Alabama State University reported the best way to increase cultural awareness and knowledge was to include journal article reviews, journal reflections, patient interviews, and staff in-services (Jackson, 2011). Interprofessional simulation experiences in critical care have shown promise to improve PT student confidence in cognitive and behavioral performance in critical care (Ohtake et al., 2013). Simulation experiences may prove to be a promising method to disseminate and evaluate cultural competency in the future.

This study further expands the literature on the topic of cultural competency and practice errors to include the profession of PT. Although previous studies' findings supported that CDT improved culturally appropriate behaviors, patient safety, patient and provider satisfaction, quality of care, health promotion, population health, and the cost of care (Institute of Medicine,

2015), none associated cultural competence behaviors or cultural competence with increased error reporting. This study added to the literature by noting that culturally diverse experiences and participating in CDT may improve the self-awareness of culturally competent behaviors. Likewise, CDT and culturally competent behavior awareness could better inform CDT, and curricula development aimed to reduce patient care errors.

Errors

Cost of errors. Greater than one-third (39%) of participants in this study reported monthly, weekly, or daily errors, and 44.6% reported annual errors. It is difficult to estimate the costs per error; however, Van Den Bos et al. (2011) reported 87% of physical therapy costs are due to errors. Practice errors have been correlated with racial/ethnicity, age, cultural, and communication issues (Humbert, Burket, Deveney, & Kennedy, 2012; Khoury, Mendoza, & Charles, 2012). U.S. Department of Labor, Bureau of Labor Statistics (2018) reported that 67,100 PT jobs existed in 2018 and projected at a much faster than the average growth rate of 22% for PT positions between 2018 and 2028. Therefore, error prevention is vital. Also, the population is diversifying, with an estimated 54% of all US children self-identifying as non-white and Hispanic by 2050 (Duffin, 2019; Janik, 2015). The results of this study suggest that CDT may reduce PT errors, thereby reducing costs.

Barriers and facilitators to reporting. Based on a retrospective review of hospital records, an estimated 210,000 patients die annually due to preventable hospital errors (James, 2013). Yet, the actual number of premature deaths associated with preventable harm to patients was estimated at more than 400,000 per year; therefore, a culture of reporting error is pertinent to

improve overall patient safety (James, 2013). However, scares of personal, financial and professional liability, and a whistleblower stigma, negatively impact a culture of reporting. Practical experience is known to improve the physicians' willingness to admit their errors to patients, but not necessarily report these errors to authorities (Nevalainen et al., 2014). Whether these factors have similar effects on physical therapy practice, as observed in the delivery of nursing care, is worthy of further investigation. This study supports that cultural training increases self-reporting and other culturally competent behaviors thus may positively impact a culture of reporting.

Limitations of the Study

There are many recognized limitations to this study. First and foremost, this study focuses on the self-reported perspectives of the health care providers, PTs in the Commonwealth of Virginia. External validity, bias, and possible participant duress were limited by having Dr. Segal act as a third-party who emailed all correspondence concerning survey requests. Likewise, VPTA leaders acted as third-party requestors by emailing the convenience sample of Tidewater, Valley, and Mountain District members. Despite repeated requests, the response rate was low, with 10.2% or 83 PTs responding out of the estimated population of 817 members that included PTs, PTAs, and student members. One major limitation of this study is that it is unknown whether the population of PTs used to determine the sample estimate was accurate; therefore, a power analysis was difficult. PTs were encouraged to forward the survey to PTs. Also, PT and PTA Program faculty were invited to participate, which may have positively skewed the results for the variable, highest education. This study's sample size of 83 PTs resulted in an error rate of

7.25% (95% CI). A higher sample size was needed for parametric testing, and future studies need to be conducted with larger sample sizes or non-convenience samples.

To my knowledge, there are few, if any, studies that have explored cultural competency and errors using a sample population of PTs in Virginia. Furthermore, no single study before this one surveyed physical therapists only, therefore the CCA survey needs to be validated for the physical therapist population. Utilizing online surveys limited the ability to confirm the person, including adult status and "personhood," however, since VPTA leaders emailed only their membership roster, this was likely abated. All data collected remained anonymous as it was collected via SurveyMonkey. Although I am a member of the Valley District, I did not fulfill a leadership role during this period and, therefore, did not have access to membership rosters. As a professor in a physical therapy program in Virginia and a member of the VPTA and APTA, to limit possible feelings of duress from my fellow constituents, all data was collected online and not during VPTA district meetings. Finally, self-reporting error frequency relies on memory, and practitioners must determine not only the definition of error, but also which errors they consider significant to include in their frequency estimation, and their willingness to report them (Nevalainen et al., 2014).

Generalizability of Results

This quantitative nonexperimental research study accessed a convenience sample of licensed physical therapists who were also VPTA members. Results are descriptive and exploratory, and associations found between sociodemographic and professional variables or cultural competency assessment scores and self-reported errors do not necessarily imply

causation. Data gathered were obtained from a convenience sample of VPTA district membership at a one-point-in-time survey assessment; therefore, interpretation of results must be made with caution.

An attempt was made to overcome the limitations of a convenience sample and not meeting the calculated sample size. As a result of no significant differences being noted between this study's sample demographics and Virginia's physical therapist workforce 2016 survey sample demographics, generalizability is possible at the state level but is done so conservatively. Minority representation is limited; therefore, generalizability to all races and ethnicities is not possible. In contrast, White/Caucasian PTs were well-represented in the survey, which may have skewed the results.

This study's convenience sample represented three VPTA districts representing the most rural and one of the urban regions in the state of Virginia. However, the most urban areas of the state, the VPTA Northern District, was not represented in this sample. In retrospect, it may have been better to request participants to provide census information regarding their work location, e.g., ask to rank urban, suburban, rural to improve generalizability to these census variables. Likewise, recruitment was restricted to VPTA members of specific pledged districts (Tidewater, Valley, and Mountain) as well as physical therapy and PTA program faculty. It should be noted that most, if not all, physical therapy and PTA program faculty are likely members of the VPTA so that recruitment forums may have overlapped. Limiting the sample to pledged VPTA districts that correspond to specific regions in the state may have contributed to a bias of the results.

The largest US racial/ethnic minority groups are Latino/Hispanics (15%), African Americans or Blacks (13.5%), and Asians (5%). All minority groups were represented in this study's sample. Likewise, the most common race/ethnicity of US PTs are White (81.7%), and Asian (11.6%), and most PTs average just under 41 years of age (Data USA, 2019), which reflects this study's sample as well. Finally, the general demographics of the participants in this study appear to reflect US PTs' sociodemographics (Data USA, 2019). Despite this, no comparisons or attempts were made to generalize to the US population.

Recommendations

The topic of cultural competence has been recognized in the field of physical therapy for over three decades, yet whether culturally competence is instilled in PT practice is unknown. Focused studies on cultural competence and other topics that aim to improve access and delivery of equitable healthcare are needed. Studies emphasizing error prevention in other health care professions have occurred, but this topic remains a gap in the PT literature. High-quality quantitative studies to identify and address the predictors of errors in PT practice are needed. For example, a study that pulls data from electronic medical records to further estimate not only the grandiosity of errors in PT practice but also to confirm or negate what previous studies would be advantageous. Errors occur in PT practice as in any field, but once recognized, specific mitigation strategies may be employed to limit barriers and costs. Furthermore, since this was the first study that utilized the CCA tool to survey PTs only, the CCA survey needs to be validated for the PT population.

Implications

To the best of my knowledge, this is the first study to verify that PTs willingly self-report practice error frequency. In this study, PTs with higher CDE more likely to self-report annual errors ($p = .024$), and PTs of multiple races/ethnicities were more likely to report errors of any frequency except never ($p = .010$). Likewise, CDT appears to predict increases in self-reporting of CCB ($p < .001$), with a medium effect size (.338 and OR of 4.89; therefore, CDT may lead to positive social change by improving CCB, thus reducing practice errors. These results suggest that employing a strategy that includes CDE and CDT may improve CCB and increase error reporting.

Furthermore, CDE may assist in increasing reporting and, thereby, recognition of the most common practice errors. Once errors are recognized, mitigation efforts may be employed aimed to reduce the repetition of these identified practice errors positively impacting society by lowering risk and preventable practice error costs. The culturally competent PT self-reports practice errors, but legal implications, the industry's culture, insurance, and employment status may hinder self-reports of error; therefore, this topic needs further exploration.

By completing the survey, the PT participant learned about cultural competence, which may have sparked the individual's curiosity to seek additional information on cultural competence or error reporting efforts. PTs must practice and attain continuing education credits to maintain a physical therapy license to practice. These requirements differ from state to state. No state requires practicing PTs to complete continuing education in cultural competency training. An opportunity exists, therefore, to include requirements focused on cultural

competency to work to increase culturally diverse experiences, awareness, sensitivity, and culturally competent behaviors. By improving culturally and linguistically sensitive care, PT errors and their related costs may be reduced, thus positively effecting not only the practice of physical therapy but also society.

Conclusion

PTs provide care to culturally diverse populations. CDT may improve culturally diverse behavior self-awareness and assist in reducing care errors. Therefore, PTs must possess the skills necessary to communicate effectively with each patient to limit errors and improve the delivery of equitable PT services. The PT professional organizations, APTA and FSBPT, remain committed to excellence in physical therapy practice, continuing competence, and reducing financial costs, including those resulting from otherwise avoidable errors (American Council of Academic Physical Therapy, n.d; APTA, 2019b; FSBPT, 2019).

PTs who reported participating in a CDT were approximately five times more likely to self-report highly culturally competent behaviors. Therefore, this study demonstrated that PTs willingly self-report practice error frequency and that continuing education focused on CDT was found to be a significant predictor for culturally competent behaviors. Therefore, CDT may improve culturally competent behavior self-awareness, and thus assist in reducing errors.

Indeed, this study supports the addition of continuing education requirements that focus on cultural diversity to support current best practice standards. Considerations of consistent and effective CDT in physical therapy education are needed. Likewise, this study supports the inclusion of aspects related to cultural competence on the national licensing examination.

Moreover, longitudinal studies that assess cultural competence longevity are necessary to address cultural competence to meet the needs of an ever-changing and diverse society. Nonetheless, offering CDT for practicing PTs may lead to positive social change by improving culturally competent behaviors, thus reducing practice errors.

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Appendix A: VPTA Mountain, Valley, Tidewater District Leader Emails of Support

[redacted]

Oct 6 (11 days ago)

Renee,
I you are asking the Valley District to email a letter to the District members, I am happy to do it. Just send me what you want to send to the members with your contact info included. Thank you! -Harrison

[redacted]

National PT Practice of the Year

dhpimpt
to Barret, me, Marie, Heather, William

Sep 21

Dear Renee,

I think if you could include contact information where participants could verify the legitimacy of the study, the investigator's name and the fact that you are an APTA member, and a recruitment announcement, we could send out an email recruitment/invitation to our District members with a blind cc. Also our Communications Director, Heather Byrne, could post a similar recruitment notice on social media for our District members. We could do this in addition to a spring 2017 meeting announcement. Hope this helps and good luck.

Sincerely,
[redacted]
Mountain District Director

[redacted]

c/o Virginia Physical Therapy Association

[redacted]

Oct 6 (11 days ago)

to me, Harrison, Adam, Betty, David, Cathy, Sandra, Emily, Andy, kfeldman07, dhpimpt, William, Marie

Renee,

I would be glad to send the info and your survey link for your research on to the Tidewater district when you send it out to us.

Sincerely,
Samantha Ficksman

Sent from my iPad

<image003.jpg>
<image004.png>

Request your help-Quick question re: VPTA district information Inbox x

Renee Huth <renee.huth@waldenu.edu> Jan 8

[redacted]

Happy New Year!

Thank you once again for agreeing to send out the link to my dissertation survey focused on cultural competence of PTs and medical errors.

Need your help ASAP in providing an estimated number of members in your districts (Valley, Mountain and Tidewater Districts) to appropriately estimate my potential sample size and later RR, power, etc. If you could send me an approximate number for your district by the end of today or latest tomorrow, I would be eternally grateful.

Sincerely,
Renee Huth, PT, DPT, ABD, ACCI

[redacted] Jan 8

Hi Renee,

My last updated roster from Sept. had us at 65 PT members, 7 PTA members, and 52 Student members for the Mountain District. FYI I am Director, Barret Blevins is now our District Chair, and Wil Kolb is still a member of our District but has moved up in the world to VPTA Treasurer.

Good luck.

Laura

[redacted] Jan 9

Looks like Valley District ~218. Thanks!

Harrison F. Hunt, PT, DPT
Partner, Rehabilitation Associates of Central Virginia
Vice President of Marketing
Site Director, Bedford Office
Physical Therapist I

3 Cedar Hill Court Suite C
Bedford, Virginia 24523
540-586-1138 (p), 855-RACV4PT
540-587-5903 (f)
racva.com
We *are* Physical Therapy...Our goal is your success

Renee Huth <renee.huth@waldenu.edu> Jan 9

[redacted]

Thanks Harrison and Laura!

Sincerely,
Renee Huth

[redacted] Jan 12

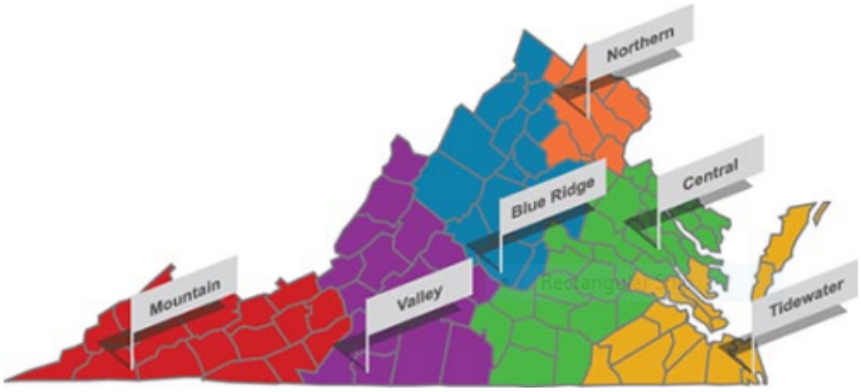
According to our membership chair, there are 534 list-serv members in the Tidewater district. We are unsure how many of those are APTA members versus students, etc.

Renee Huth <renee.huth@waldenu.edu> Jan 12
to Emily

Thanks Emily!

Appendix B: Sample Information (VPTA, 2019b)

VPTA Districts



Blue Ridge District
Geographical boundaries of the Counties of Frederick, Shenandoah, Rockingham, Page, Augusta, Nelson, Albemarle, Madison, Rappahannock, Culpeper, Louisa, Fluvanna, Buckingham, Cumberland, Greene, Warren, Clarke and Orange, the cities found within the territorial boundaries set by the above-named counties, and the city of Winchester.

Central District
Countries of Spotsylvania, King George, Westmoreland, Caroline, Northcumberland, Richmond, Lancaster, Mathews, Essex, Middlesex, King and Queen, King William, New Kent, Hanover, Henrico, Goochland, Powhatan, Chesterfield, Prince Edward, Charlotte, Lunenburg, Amelia, Nottoway, Brunswick, Dinwiddie, Prince George, and Mecklenburg, the cities found within the territorial boundaries set by the above-named counties, and the city of Fredericksburg.

Mountain District
Counties of Montgomery, Floyd, Giles, Pulaski, Carroll, Grayson, Wythe, Bland, Tazewell, Smyth, Washington, Russell, Buchanan, Dickerson, Wise, Scott and Lee, the cities found within the territorial boundaries set by the above-named counties, and the cities of Christiansburg, Radford, Wytheville, Galax, and Abingdon.

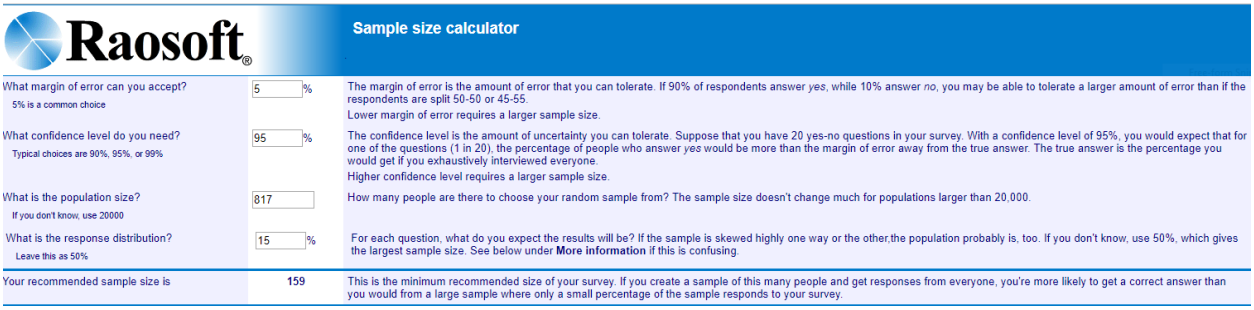
Northern District
Counties of Loudoun, Fauquier, Fairfax, Prince William, Arlington, and Stafford, the cities found within the territorial boundaries set by the above-named counties, and the cities of Alexandria, Fairfax, and Falls Church.

Tidewater District
Counties of Accomack, Northampton, Gloucester, James City, Charles City, Surrey, Southampton, Sussex, York, Greensville, Isle of Wight and the cities included therein as well as the cities of Norfolk, Portsmouth, Virginia Beach, Hampton, Newport News, Chesapeake, Suffolk, Franklin, Emporia, and Williamsburg.

Valley District
Counties of Appomattox. Amherst, Campbell, Halifax, Pittsylvania, Henry, Patrick, Franklin, Bedford, Roanoke, Craig, Botetourt, Alleghany, Rockbridge, Bath and Highland; the cities included within the territorial boundaries set by the above named counties, and the cities of Lynchburg, Lexington, Salem, Roanoke, Danville, and Martinsville.

Estimated Total Sample Size

VPTA District	Number of Members	District Member Estimate Constituents
Mountain	65	PTs
Valley	218	PTs, PTAs, Students
Tidewater	534	PTs, PTAs, Students
TOTAL	817	PTs, PTAs, Students



Appendix C: Author Letter of Support for CCA Instrument Use

From: Ardith Z. Doorenb[redacted].edu]
Sent: Tuesday, September 15, 2015, 12:55 PM
To: Huth, Renee
Subject: RE: CCA permission

Thanks for calling this morning. As we discussed by phone, you have my permission to use the CCA and there are no fees associated with the use of the CCA. We just ask that you cite our work in any publication coming from its use.

Wishing you the very best!

Ardith

ARDITH Z. DOORENBOS PhD, RN, FAAN
Professor
BNHS, School of Nursing
Anesthesiology and Pain Medicine, School of Medicine (Adj.)
Global Health, School of Public Health (Adj.)

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doorenbo@uw.edu

Appendix D: CCA Instrument Scoring Instructions

Cultural Competence Survey
CODING / SCORING INSTRUCTIONS
VERSION November 2010

Non-Scaled QUESTIONS

1 & 3	Diversity Experience	Count # groups checked
		Range = 0 – 8
			Greater number = greater exposure to diversity

2 & 4	Community of Service	Describe distribution pattern	Demographic
5	Self Reported CCA	5-4-3-2-1 ordinal scale	Greater number = greater self-reported overall competence
44	Age	Current year – year of birth = age	Demographic
45	Self ID Race/Ethnic	Dummy Code – Nominal Data	Demographic
46	Education level	Code 0 – 6: lowest to highest	Demographic
47	Prior Diversity Training	Code 1 = yes 0 = no	Demographic
48	Type of prior training	Dummy Code – Nominal Data	Demographic
49	Current Role*	Dummy Code – Nominal Data	Demographic
51	EACPHS Program*	Dummy Code – Nominal Data	Demographic

* Customize to specific application of instrument

Cultural Competence Assessment Scales

8 9 11 12 14 15 16	Cultural Awareness & Sensitivity Subscale (CAS)	Strongly Agree = 7 Agree = 6 Somewhat Agree = 5 Neutral = 4 Somewhat Disagree = 3 Disagree= 2 Strongly Disagree = 1 No Opinion = do not include item	Add all item codes and divide by # **items answered** individual Cultural Awareness & Sensitivity Subscale Score Larger number means greater awareness & Sensitivity Range = 1 to 7
6 7 10 13	Cultural Awareness & Sensitivity Subscale – reverse coded items	Strongly Agree = 1 Agree = 2 Somewhat Agree = 3 Neutral = 4 Somewhat Disagree = 5 Disagree = 6 Strongly Disagree = 7 No Opinion = do not include item	
17 18 19 20 21 22 23 24 25 26 27 28 29 30	Cultural Competence Behavior Subscale (CCB)	Always = 7 Very Often = 6 Somewhat Often = 5 Often = 4 Sometimes = 3 Few Times = 2 Never = 1 Not Sure= do not include item	Add all item codes and divide by # **items answered** individual Cultural Competence Subscale Score Larger number means more Cultural competence Behaviors demonstrated Range = 1 to 7