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An Investigation of the Impact of Dental Hygiene Clinical Instructors' Emotional Intelligence on Clinical Teaching Effectiveness

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Title: An Investigation of the Impact of Dental Hygiene Clinical Instructors' Emotional Intelligence on Clinical Teaching Effectiveness

Abstract approved:

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Nancy Puglisi, Ph.D.

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The purpose of this mixed methods study was to measure the clinical teaching effectiveness (CTE) and emotional intelligence (EI) of dental hygiene (DH) clinical instructors, and to identify any statistically significant correlations found between the CTE and EI assessment outcomes. The qualitative phase of the study was intended to increase understanding of the outcomes from the CTE and EI quantitative assessments using data collected from the quantitative phase of the study. Two online assessments, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) and the modified version of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI), were used to measure EI and CTE. Demographic data collected from participants was also included in the statistical analysis. The qualitative phase of the study used a virtual meeting platform to collect data via one-on-one online interviews using open-ended questions to garner the participants' understanding of EI and its role in the DH clinical

teaching environment. Forty-two clinical instructors completed both the MSCEIT and the modified NCTEI. The exploratory data analysis, using Spearman's ranked correlation coefficient and regression analysis, revealed strong correlations existed between MSCEIT outcomes and self-assessed CTE. The data collected from one-on-one interviews, analyzed using a thematic analysis, and comparison to quantitative data revealed a correlation existed between responses to the open-ended questions and the participants' MSCEIT scores. The study found the need for raised awareness of the link between CTE and EI in DH clinical faculty, and determined the development of EI skills in instructors may improve the learning experiences of students in DH clinical settings.

An Investigation of the Relationship between Dental Hygiene Instructors' Emotional Intelligence and Clinical Teaching Effectiveness

By

Dianne L. Smallidge

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I understand that my dissertation will become part of the permanent collection of Plymouth State University, Lamson Learning Commons. My signature below authorizes release of my dissertation to any reader upon request.

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DEDICATION

This dissertation is dedicated to my parents, Ralph and Barbara Smallidge, who were my first and best teachers, to my children Amy and Alex Chadbourne who have taught me more than anything I have ever learned in a classroom, and to Charlie Caramihalis, who provided me with more support, love and kindness during my doctoral journey than most people experience in a lifetime.

Chapter One: Introduction

Individuals who possess a high level of emotional intelligence (EI) may be more successful in their work and personal lives because of their ability to manage their emotions (Vandervoort, 2006). Not only do emotionally intelligent people possess a high level of self-awareness regarding their own emotions, they also demonstrate empathy and understand the emotions of others (Vandervoort, 2006). Mayer, Salovey, and Caruso (2016) have suggested emotional intelligence is an innate and measurable ability which cannot be changed, while Bar-On (2010) and Goleman, Boyatzis, & McKee (2002) have purported EI skills can be taught and an individual's EI increased. Despite disagreement among EI theorists regarding emotional intelligence being a learned or innate ability, there does exist agreement amongst them regarding the ability to identify areas of EI weakness, and the potential to effectively develop skills to address these weaknesses (Bar-On, 2010; Goleman et al., 2002; Mayer et al., 2016).

Hen and Walter (2012) have supported the ideas of Goleman et al. (2002) and Bar-On (2010), and have suggested EI skills can be effectively taught in the undergraduate higher educational setting. The investigation of the role EI plays in undergraduate health professions education has not been investigated extensively, and the majority of research has been conducted in nursing education. (Beauvais, Brady, O'Shea, & Griffin, 2011; Codier, Kofoed & Peters, 2015; Collins, 2013; Foster, McCloughen, Delgado, Kefalas & Harkness, 2015; Shanta & Gargiulo, 2014). Despite evidence of the importance of clinical faculty to possess strong EI skills (Elcigil &

Sari, 2008; Esmaeili et al., 2014; Mogan & Knox, 1987; Nehring, 1990; Smith, Swain & Penprase, 2011), a paucity of research exists in regard to the role EI plays in health professions education in the clinical setting (Hen & Goroshit, 2011; Victoroff & Boyatzis, 2013).

Limited research has been performed in the area of dental hygiene (DH) education, in regard to the attributes of faculty which contribute to effective clinical instruction, or the role EI skills may play in clinical teaching effectiveness. (Paulis, 2011; Schönwetter, Lavigne, Mazurat, & Nazarko, 2006). As a result, the literature review conducted for the purposes of this study relied heavily on the research conducted in nursing education (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili, Cheraghi, Salsali & Ghiyasvandian., 2014; Hou, et al., 2010; Mogan & Knox, 1987; Nehring, 1990**;** Smith et al., 2011) to provide the knowledge and rationale needed for this research study.

Background of the Study

Emotional Intelligence in Higher Education

The inclusion of EI content in higher education curricula has been shown to improve academic performance, increase student self-efficacy, and decrease student attrition rates (Hen & Goroshit, 2014; Gliebe, 2012; Sparkman, Maulding & Roberts, 2012). Students with a higher level of EI are also more adaptable, possess enhanced coping skills, and have an increased level of self-efficacy and locus of control (Hen & Goroshit, 2014). A study of first year students revealed their transition from high school to college was more successful if they possessed a higher level of EI

(Sparkman et al., 2012). If taught in the curriculum, EI has been shown to increase retention in the first two years of student enrollment (Sparkman et al., 2012). In addition, student emotional and physical strength, as well as acceptable academic performance, is maintained when EI skills are taught in the higher education setting (Gliebe, 2012). Educators who possess a high level of EI have also been found to contribute to the success of these students (Vandervoort, 2006).

Teacher-Student Relationships. O'Keeffe's research (2013) revealed educators who demonstrate caring for their students are more apt to have students communicate with them. In fact, a key relationship with just one faculty member was found to positively impact a student's decision to stay in college (O'Keeffe, 2013). Negative relationships between teachers and students result in student anxiety and prevent effective communication in the educational setting (O'Keeffe, 2013). In addition, teachers who possess strong social and emotional learning competencies can influence students in three important ways and include (a) improved teacher student relationships, (b) modeling behavior, and (c) maintaining an organized and well-managed teaching environment (Jones, Bouffard, & Weissbourd, 2013).

Teachers who are calm, positive and content are likely to be better equipped to treat students warmly and sensitively even when students are behaving in challenging ways. When students have high-quality relationships with teachers, they have better social adjustment and higher academic competence. (Jones et al., 2013, p.63)

Despite the evidence supporting the importance of EI and of strong student teacher relationships in higher educational settings, there has been limited study in

regard to EI's role in allied health professions (AHP) education (Hen & Goroshit, 2011; Victoroff & Boyatzis, 2013). Examining the role EI plays in AHP education, and the level of EI in the faculty teaching students, is important as teaching emotional and social skills to future health care providers may have a significant impact on their performance and future success as health professionals (Hen & Goroshit, 2011).

Understanding Emotional Intelligence

In 1983, Howard Gardner first purported a theory suggesting human beings possess multiple intelligences. He later went on to describe and categorize these intelligences as being linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and personal (Gardner, 2011). Although he believed every person possesses each of these intelligences, he also acknowledged the strength of these intelligences varied widely among individuals (Gardner, 2011). Of all his proposed intelligences, Gardner (2011) believed personal intelligences was the one most ignored by psychologists, and he called for further study in examining this form of intelligence.

In 1990, Mayer and Salovey introduced their theory of emotional intelligence, which was linked to Gardner's (1983; 2011) idea of personal intelligence. They proposed EI represented four areas of emotional ability; perceiving, using, understanding, and managing the emotions of one's self and others (Mayer, Salovey & Caruso, 2016). Bar-On (2010) and Goleman (2002) also developed well-known EI models comprised of emotional competencies which included many of the same EI

abilities as Mayer et al (2016), but added personality traits to their models of emotional intelligence.

The validity of the ability-based model of EI (Mayer et al., 2004) and the trait-based models of EI (Bar-On, 2010; Goleman, 2002), and their alignment with cognitive ability and intelligence, continues to be debated (Roberts, MacCann, Mathews & Zeidner, 2010). The trait-based models (Bar-On, 2010; Goleman, 2002) possess significant overlap with personality traits and as a result have been deemed less aligned with true intelligence (Joseph & Newman, 2010; Van Rooy et al., 2005). However, Joseph and Newman (2010) also concluded both the ability-based and trait-based models have value when used to evaluate individuals in a particular work situation. More specifically, when evaluating an individual for the purposes of hiring, the trait-based model was found to be more effective, while the ability-based model was more useful in the area of employee development and in the enhancement of work performance (Joseph & Newman, 2010).

Although Mayer et al., (2016) have asserted their model may not necessarily forecast an individual's success in the workplace, they have suggested it can predict an individual's ability to develop and maintain strong personal relationships. They have also theorized individuals who possess high EI have genuine empathy for others, focus on what is important in emotional situations, and have more effective problem solving and reasoning skills (Mayer, et al., 2016). In addition, people with high EI ability can better predict how someone will react in an emotional situation and can more successfully resolve it (Mayer et al., 2016).

Measuring Emotional Intelligence. The authors of the three emotional intelligence constructs each developed their own instruments for measuring an individual's EI, with both trait-based EI models using self-reported measurements, and the ability-based model using a performance-based assessment of EI (Roberts et al., 2010). In 2010, Roberts et al. performed a review of emotional intelligence models and the instruments used to measure EI. The authors concluded the Mayer, Salovey and Caruso's (2004) four branch model of EI and its test of EI, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), possessed the highest level of construct and content validity (Roberts et al., 2010). This conclusion was based on the performance-based nature of the MSCEIT which produced minimal distortion and presented with less bias as its outcomes were not produced from self-reported EI (Roberts et al., 2010).

Emotional Intelligence and Effective Clinical Instruction

A review of the literature on the effective attributes of health professions clinical instructors revealed an overlap exists between the emotional competencies found in the EI models of Bar – On (2010), Goleman (2002) and Mayer et al. (2016), and the characteristics found in effective clinical instructors (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou, Zhu & Zheng, 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi, Oyeyemi, Adegoke & Rufai, 2013; Paulis, 2011; Schönwetter et al., 2006; Smith, Swain & Penprase, 2011).

One of the first studies on clinical teaching effectiveness in health professions (HP) education was conducted by Knox and Mogan (1985), which used a tool they

had developed to measure clinical teaching effectiveness in nursing faculty, i.e., the Nursing Clinical Teacher Effectiveness Inventory (NCTEI). In their initial study, empathy and understanding were consistently found to be important attributes in effective clinical instructors (Knox & Mogan, 1985). Additional research using the NCTEI, conducted between 1987 and 2010, also confirmed the findings of Knox and Mogan (1985), i.e., interpersonal relationships between students and faculty, and an instructor's level of emotional competency, played a significant role in successful student/instructor relationships (Allison-Jones, 2002; Hou, 2010; Mogan & Knox, 1987; Nehring, 1990). Although research on effective clinical instruction has revealed the important role emotional competencies play in the clinical teaching setting, the link between any of the EI models and effective clinical instruction in AHP education has not been expansively investigated (Victoroff & Boyatzis, 2013).

Emotional Intelligence in Health Professions Education

The few studies investigating EI in health professions education have been in multiple areas; the use of EI content in nursing curricula (Foster et al., 2015), the impact of nursing education on an individual's EI (Shanta & Gargiulo, 2014), a comparison of the EI ability of graduate and undergraduate nursing students (Codier et al., 2015), and the effect of emotional intelligence ability on nursing performance (Beauvais et al., 2011; Collins, 2013). An examination of EI's impact on students' stress was also conducted by Ruiz-Aranda et al. (2014) in multiple health professions programs.

Although research has revealed evidence supporting the importance of emotional competencies in effective clinical instruction (Allison-Jones, 2002; Elcigil & Sari, 2011; Hou, 2010; Mogan & Knox, 1987; Nehring, 1990), only one study has been conducted examining the relationship between EI ability and the effectiveness of clinical instructors using a specific EI model and assessment tool (Allen et al., 2012). This single study (Allen et al., 2012) suggested a link may exist between a clinical instructor's EI and their effectiveness as a clinical instructor.

Statement of the Problem

Although research has been performed in nursing education to gain an understanding of the characteristics found in effective clinical instructors (Allen, et al., 2012; Beauvais et al., 2011; Codier et al., 2015; Collins, 2013; Foster et al., 2015; Shanta & Gargiulo, 2014), a paucity of research on instructor attributes leading to effective clinical instruction continues to exist in DH education (Paulis, 2011; Schönwetter, et al., 2006). The findings from the few studies on EI, and performed in DH education, have produced outcomes in parallel to nursing education; i.e., emotional competencies are many of the same attributes found in effective clinical instructors in the DH clinical learning environment (Paulis, 2011; Schönwetter, et al., 2006). In fact, a dental hygiene clinical instructor's inability to express empathy and understanding has been observed to negatively impact the learning experiences of DH students (Smallidge, 2015).

Mayer et al. (2016) have posited successful interpersonal relationships are more likely to occur with individuals who have strong EI ability, and research in HP

education has supported this idea and found strong interpersonal relationships contributed to effective clinical teaching (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2013; Paulis, 2011; Schönwetter et al., 2006; Smith, et al., 2011). Although limited, the research in DH education has supported findings from previous research which has suggested an overlap exists between the emotional competencies which comprise the EI constructs (Bar-On, 2010; Goleman, 2002; Mayer et al., 2016), effective clinical instruction in DH education (Paulis, 2011; Schönwetter, et al., 2006), and the learning experiences of dental hygiene students (Hen & Goroshit, 2011, Smallidge, 2015). Despite this evidence, the existence of a link between a DH clinical instructor's EI and their clinical teaching effectiveness, has not been examined using a specific EI model or validated assessment instrument. As a result, a DH clinical instructor's level of EI, and its impact on clinical teaching effectiveness, is unknown.

Purpose of the Study

The purpose of this mixed methods study was to explore the relationship between a dental hygiene clinical instructor's level of emotional intelligence and their clinical teaching effectiveness. Finding a correlation between an instructor's level of EI, and teaching effectiveness in DH clinical instructors, may provide rationale for the need to focus attention on the development of EI skills in DH clinical faculty. Improved effectiveness of clinical instructors in DH education may also lead to improved clinical learning experiences for students (Hen & Goroshit, 2011).

Quantitative Phase I: Hypotheses

H_0**:** The level of emotional intelligence of dental hygiene clinical instructors, based on the Mayer-Salovey-Caruso model of emotional intelligence and using the outcomes of the ability-based measurement tool the MSCEIT, has no correlation to the DH instructors' clinical teaching effectiveness as determined by a self-assessed teaching evaluation, the NCTEI.

H_1**:** The level of emotional intelligence of dental hygiene clinical instructors, based on the Mayer-Salovey-Caruso model of emotional intelligence and using the outcomes of the ability-based measurement tool the MSCEIT, is correlated to the DH instructors' clinical teaching effectiveness as determined by a self-assessed teaching evaluation, the NCTEI.

Qualitative Phase II: Research Questions

How do dental hygiene clinical instructors define emotional intelligence, and how do they describe emotionally intelligent behavior?

What are the perceptions of dental hygiene clinical instructors in regard to the role of emotional intelligence in effective clinical instruction?

Definition of Key Terms

The following definitions are provided to ensure understanding of the key terms to be used throughout the study. Those definitions not accompanied by a citation were developed by the researcher.

Ability-based emotional intelligence. An emotional intelligence construct comprised of emotional competencies deemed to be aligned with true intelligence (Joseph & Newman, 2010; Mayer et al., 2016).

Allied health professions education. Those health professions programs, distinct from medicine and nursing, developed to train students to use evidence-based practice in the prevention, diagnosis, and treatment of a variety of diseases and conditions. (Association of Schools of Allied Health Professions, 2016).

Big Five personality traits model. A personality trait framework widely used in research and comprised of five domains encompassing human personality (Gosling, Rentfrow, & Swann, 2003).

Effective clinical instruction. Effectual clinical learning in health professions education where clear communication exists between instructors and students, and the bridge from classroom theory to clinical practice is successfully linked.

Emotional intelligence (EI). A form of intelligence reflected in an individual's ability to perceive, use, understand, and manage the emotions of self and others effectively in relationships and in emotionally-charged situations (Mayer et al., 2016).

Emotional Quotient Inventory (EQ-i). The self-report questionnaire used and developed by Bar-On (2013) to measure trait-based emotional intelligence.

Emotional Social and Competency Inventory (ESCI). The self-report questionnaire used and developed by Goleman (2002) to measure trait-based emotional intelligence.

Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). The performance-based test used and developed by Mayer et al. (2016) to measure ability-based emotional intelligence

Nursing Clinical Teaching Effectiveness Instrument (NCTEI). A questionnaire developed by Knox and Mogan (1985) to measure the teaching effectiveness of clinical instructors in nursing education.

Physiotherapy. The term used internationally, and used interchangeably with the term physical therapy, for the health profession which treats individuals with a disease or injury related to their mobility (Physiotherapy, n.d.).

Theory of multiple intelligences. A theory developed by Howard Gardner (1983) purporting the existence of multiple intelligences in human beings beyond a single cognitive ability to include: linguistics, music, logic-mathematics, bodily-kinesthetic and personal intelligence.

Trait-based emotional intelligence. An emotional ability construct, also referred to as mixed-based emotional intelligence, which includes in its model a mixture of emotional competencies and personality traits.

Summary

The presence of emotional intelligence in the faculty teaching in higher education has been found to impact the learning experiences of their students (Hen & Goroshit, 2014; Gliebe, 2012; Sparkman et al., 2012). The emotional competencies found in the EI models of Mayer et al. (2016), Bar-On (2010), and Goleman (2002) are also those identified as important attributes in effective clinical instructors

(Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili, et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2013; Paulis, 2011; Schönwetter et al., 006; Smith et al., 2011). However, the impact of an instructor's EI on their teaching effectiveness has not been examined extensively in allied health profession education and particularly in the area of clinical teaching (Allen, et al., 2012; Victoroff & Boyatzis, 2013).

The literature review to follow will discuss the research conducted previously in the areas of effective clinical instruction, the theories, models and tests of emotional intelligence, and the role of emotional intelligence in allied health professions education. The review will also discuss what has been found in the literature regarding the role of emotional intelligence in AHP education, and specifically dental hygiene education. This discussion reveals the gap found in the literature regarding the role of EI in dental hygiene education and clinical teaching effectiveness.

Chapter Two: Review of the Literature

Effectual clinical learning in health professions education occurs in environments where clear communication exists between instructors and students, and the bridge from classroom theory to clinical practice is successfully linked (Esmaeili, Cheraghi, Salsali & Ghiyasvandian, 2014). Teaching and motivating students to understand and provide the critical elements of patient care, by connecting theory to practice, requires the presence and guidance of knowledgeable clinical instructors (Esmaeili et al., 2014). Multiple attributes in clinical instructors contribute to their success in creating effective clinical learning environments for health professions (HP) students, i.e., clinical competence, the ability to develop positive interpersonal relationships with students, and other specific behavioral characteristics (Esmaeili et al., 2014; Smith, Swain & Penprase, 2011).

The behavioral characteristics of clinical instructors identified as contributing to effective clinical teaching and learning include empathy, understanding, and the ability to calm students during stressful moments (Elcigil & Sari, 2008; Smith et al., 2011). Dental hygiene (DH) students have identified clinical instructors' emotional support, and their ability to empathize, as highly important instructor attributes in the clinical learning environment (Paulis, 2011). These behaviors are also the elements found in the framework and constructs of emotional intelligence (EI) theory (Bar-On, 2010; Goleman, Boyatzis, R., & McKee, 2002; Mayer, Salovey & Caruso, 2016), and identified as a predictor of success in interpersonal relationships (Mayer, et al., 2016). Hen and Goroshit (2011) have suggested the capacity for individuals to effectively use

emotional intelligence is important to the development of relationships in the health care setting. However, the impact of a clinical instructor's EI has not been examined in most HP education clinical settings (Hen & Goroshit, 2011; Victoroff & Boyatzis, 2013).

This literature review will discuss the research regarding the characteristics and behaviors found in effective clinical instructors, the emotional intelligence models which overlap with the behaviors found to be related to effective clinical instruction, and the research which has investigated the role of EI in the health professions education.

Review Strategy

The literature review process began with the identification of databases targeting and identifying literature in three topic areas including (a) effective clinical instruction, (b) emotional intelligence theory, and (c) the role of emotional intelligence in health professions education. The search terms used around these topic areas included (a) attributes of successful clinical instructors, (b) emotional intelligence theory, (c) emotional intelligence testing and validity, (d) emotional intelligence and higher education, (e) emotional intelligence and teaching performance, (f) emotional intelligence and clinical education. Academic Search Premier, Scopus, PubMed and ERIC were used in the literature search with each of the search terms used in the databases. PsycINFO was used in the search for literature pertaining to emotional intelligence theory. In addition, ProQuest was used to search for previous dissertations on the topic of emotional intelligence in health professions education.

The literature identification and retrieval process (Locke, Spirduso & Silverman, 2014) began by screening citations which emerged from the outcomes of the database search, and also found to be related to the identified topics. This was followed by a review of the abstracts of the articles found to have relevance to the research topics. Upon this review, the studies and articles identified as pertinent to the chosen topic areas were collected, reviewed, and categorized using RefWorks, a computerized note-taking and retrieval program. The studies were also synthesized, paraphrased, and placed in literature topic tables. The categories developed in the literature tables to organize the synthesized information can be found in Table 2.1.

Table 2.1 Categories for Literature Review Tables

Journal; Year; Author	**Research Design; Analysis**	**Sample; Setting; Purpose**	**Major Findings**	**Limitations/ Recommendations**	**Strength of Evidence; Relevance to Topic**

A lack of research was found in the initial database search of two of the topic areas; clinical teaching effectiveness in dental hygiene education, and emotional intelligence in health professions education. As a result, a second literature search was initiated and alternative combinations of search terms were developed and used to ensure a complete search of relevant literature had been completed. However, minimal literature was found in this second search of the literature. In addition, references identified within the literature, which had been retrieved and synthesized, were also used and proved to be an effective source for research related to the topic areas.

Literature Review Outcomes

Three major topics and related sub-topics emerged from the research found after the literature search:

- Clinical teaching effectiveness in health professions education
  - Nursing
  - Physiotherapy
  - Dental hygiene
- Emotional intelligence theory
  - Ability-based emotional intelligence constructs
  - Trait-based emotional intelligence constructs
- Emotional intelligence's role in the health professions and allied health professions (AHP) education
  - Investigation of EI in AHP
  - Link between EI level and performance
  - Integration of EI taught in curriculum
  - Impact of nursing education on EI
  - Comparison of EI in graduate and undergraduate nursing students
  - Impact of EI on nursing clinical teaching effectiveness

The research centering on effective clinical instruction, and the role of EI in clinical teaching, was limited and found predominantly in nursing education. Most of the studies had small sample populations, which restricted generalizability of the outcomes to other nursing and allied health education clinical settings (Allison-Jones

& Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou, Zhu & Zheng, 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Smith et al., 2011). The literature review also revealed nursing education was the only health professions to develop a valid measurement tool for the evaluation of effective clinical instruction within their discipline. Seminal research was found regarding the development of instruments used to measure clinical instructors' effectiveness from the 1980's with the Nursing Clinical Teaching Effectiveness Instrument (NCTEI) emerging as the tool most frequently used in nursing education research regarding teaching effectiveness (Allison-Jones & Hirt, 2004; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990).

In contrast to the limited research found in health professions clinical education, a significant amount of current, peer-reviewed literature with large sample populations and minimal study limitations were found on the topic of emotional intelligence theory. The majority of the literature compared the various EI constructs, with two systematic reviews found which focused on the validity of emotional intelligence models and the instruments used to measure EI (Joseph & Newman, 2010; Roberts, MacCann, Matthews & Zeidner, 2010). Two major emotional intelligence constructs emerged consistently; an ability-based and two trait-based EI models. Most of the literature examining the role of EI in the health professions used a trait-based model to examine EI; however, an ability-based EI model was used more frequently in the studies investigating EI in health professions education. In regard to the specific topic of the role of EI in allied health professions clinical instruction, only one study

could be identified in this area and this research used a trait-based model as part of the study (Allen, Ploeg, & Kaasalainen, 2012).

Clinical Teaching Effectiveness in Health Professions Education

Although most of the research examining characteristics associated with effective clinical instruction in health professions education has been conducted in the field of nursing (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Smith et al., 2011), a few studies conducted in the allied health professions of physiotherapy (Oyeyemi, Oyeyemi, Adegoke & Rufai, 2013) and dental hygiene (Paulis, 2011; Schönwetter, Lavigne, Mazurat, & Nazarko, 2006) examined this topic. Regardless of the health professions field from which the research has been conducted, the themes emerging regarding the characteristics perceived to be important to both students and faculty were the same (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2013; Paulis, 2011; Schönwetter et al., 2006; Smith et al., 2011). These characteristics included: strong interpersonal relationships, effective communication skills, an adequate level of knowledge of the profession, the ability to relay empathy and understanding, and role modeling (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2013; Paulis, 2011; Schönwetter et al., 2006; Smith et al., 2011). In addition, specific characteristics found in effective clinical instructors revealed many emotional competencies as

important to both faculty and students (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2013; Paulis, 2011; Schönwetter, et.al., 2006; Smith, et al., 2011).

An investigation regarding the development of research instruments used to measure clinical effectiveness in health professions education revealed the existence of multiple measurement tools, with the NCTEI the most frequently used instrument in health professions education research over the last thirty years (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2013; Paulis, 2011; Schönwetter, et.al., 2006; Smith, et al., 2011).

Effective Clinical Instruction in Nursing Education

Both quantitative and qualitative research has been used in the approach to investigating the characteristics playing a significant role in effective clinical instruction in nursing education. Regardless of the chosen research method, study setting, or size and source of the participant pool, the research outcomes revealed similar themes, conclusions, outcomes, and recommendations for future studies (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Smith et al., 2011).

Qualitative research on clinical teaching effectiveness in nursing education. Two qualitative international studies, conducted in Iran (Esmaeili et al.,

2014) and Turkey (Elcigil & Sari, 2008), used semi-structured face-to-face interviews and focus groups to better understand nursing students' perceptions of the behaviors and factors leading to effective clinical instruction. Both studies had small sample populations, and used male and female students (n=17) (Esmaeili et al., 2014), or strictly female students (n=24) (Elcigil & Sari, 2008), enrolled in the clinical phase of their nursing education with experience in interacting with instructors in the clinical setting.

In both studies, the interpersonal relationships developed between instructors and students was the most frequent emerging theme identified as having great importance to students in regard to effective clinical instruction (Elcigil & Sari, 2008; Esmaeili et al., 2014). Other major themes emerging from the thematic analyses included (a) the importance of communication skills, (b) an ability to help integrate theory to practice, (c) adequate knowledge (d) highly motivated for clinical teaching, and (e) effective and fair evaluation practices (Elcigil & Sari, 2008; Esmaeili et al., 2014). The qualitative studies also revealed participants believed clinical instructors able to bring forward theoretical principles and apply them to the hands-on clinical experiences were highly valued (Esmaeili et al., 2014). The nursing students also indicated an instructor's ability to perform and model a clinical skill served as an effective means to bridge theory to practice, and significantly enhanced their learning experience (Esmaeili et al., 2014).

Quantitative research on clinical teaching effectiveness in nursing education. Quantitative research has also been used to investigate the characteristics

found in effective clinical instructors, with the outcomes of this research producing similar outcomes as the qualitative studies examining clinical teaching effectiveness (Allen et al., 2012; Allison-Jones & Hirt, 2004; Hou et al., 2010; Mogan & Knox, 1987; Nehring, 1990; Smith et al., 2011). Both Smith et al. (2011) and Hou et al. (2010) conducted descriptive quantitative research using measurement instruments developed specifically for the purposes of their respective studies. In regard to study sample populations, Smith et al. (2011) used student registered nurse anesthetists (n=6), and certified registered nurse anesthetist instructors (n=89), from a large Midwestern teaching hospital, as their sample population of participants. Hou et al. (2010) conducted their study in China using administrators, faculty, and student participants (n = 218) from six different universities.

Both studies performed survey research using a list of characteristics describing potential attributes important to effective clinical instruction, and Likert scales for the participants to use to rate the importance of the characteristics (Hou et al., 2010; Smith et al., 2011). Study outcomes revealed the student and faculty participants identified the same attributes which they found important to effective clinical instruction, with communication skills the most highly rated characteristic (Hou et al., 2010; Smith et al., 2011). Other attributes identified by the study participants as being of high importance included the ability to (a) stimulate student involvement in the learning experience, (b) appropriately encourage independence, (c) calm students during times of stress, (d) express enjoyment in clinical teaching, (e) demonstrate theoretical knowledge and competency as well as clinical skill

competency, (f) nurture students' professional growth, and (g) provide good role modeling (Hou et al., 2010; Smith et al., 2011)

Limitations to these studies were the small sample size used as well as the validity of the measurement tools (Hou et al., 2010; Smith et al., 2011). Both Hou et al. (2010) and Smith et al. (2011) had developed their own instruments to collect data; however, there existed no evidence of content or construct validity for the two surveys used.

The Development of the Nursing Clinical Teaching Effectiveness Inventory

The Nursing Clinical Teaching Effectiveness Inventory (NCTEI) has been a measurement tool used extensively over the last 30 years in clinical nursing education research (Allen, et al., 2012; Allison-Jones & Hirt, 2004; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990). In 1985, Knox and Mogan began the development of the NCTEI as a means to investigate effective clinical teaching in nursing education. The tool was developed and based on the responses from students, faculty and practicing nurses who identified the behaviors they perceived as important for instructors to possess in the clinical learning environment (Knox & Mogan, 1985).

The two studies conducted to develop and validate the NCTEI (Knox & Mogan, 1985; Mogan & Knox, 1987) used cross-sectional quantitative research methods and were conducted in baccalaureate programs at universities in northern Canada and the Western U.S. Convenience and purposive sampling was used to recruit participants for the studies with faculty (n=77), students (n= 566), and graduate practicing nurses (n= 45) participating in the research (Knox & Mogan, 1985; Mogan

& Knox, 1987). The research design was similar to the studies conducted by Hou et al. (2010) and Smith et al., (2011). However, the NCTEI asked participants to rank clinical teaching characteristics listed on the survey by level of importance (Knox & Mogan, 1985; Mogan & Knox, 1987).

The chosen characteristics identified as important to effective clinical instruction were similar amongst students, nursing faculty, and practicing nurse participants (Knox and Mogan, 1985; Mogan & Knox, 1987). Top characteristics included (a) good role modeling, (b) demonstrating good clinical skills and judgment, and (c) enjoying both nursing and teaching (Knox and Mogan, 1985; Mogan & Knox, 1987). Other characteristics identified by students as important to clinical instruction were teaching ability and interpersonal relationships (Knox and Mogan, 1985; Mogan & Knox, 1987). The authors suggested interpersonal relationships may have been of high importance to students due to their lack of confidence in providing care at their clinical learning level, resulting in the need for support from their clinical instructors (Knox and Mogan, 1985; Mogan & Knox, 1987). Students also rated lack of open-mindedness, inability to demonstrate empathy, and judgmental behavior as those characteristics which contributed most to ineffective clinical instructors (Mogan & Knox, 1987). The behaviors associated with poor clinical teaching identified by the faculty were (a) a lack of ability to recognize their own limitations, (b) inability to enjoy the field of nursing, and (c) an inability to create a climate reflecting mutual respect between students and faculty (Mogan & Knox, 1987).

Subsequent nursing studies using the Nursing Clinical Teaching Effectiveness Inventory. Over the thirty years following the development of the Knox and Mogan (1985) NCTEI, other nursing education researchers chose to replicate the research (Allen, et al., 2012, Allison-Jones & Hirt, 2004; Nehring, 1990), or use the NCTEI in their respective studies. In 1990, Nehring used the NCTEI to replicate the Mogan and Knox (1987) study to further explore the characteristics attributed to successful clinical instruction and to confirm the validity of the NCTEI. The follow up study, using student and faculty participants from 11 nursing programs across the state of Ohio, resulted in the recruitment of (n=63) clinical nursing faculty and nursing students (n=121) (Nehring, 1990).

The overall outcomes revealed the top characteristics chosen as reflecting good clinical instruction by both the students and faculty were similar (Nehring, 1990). In addition, both groups chose the same top four behaviors as important and included (a) develops positive interpersonal relationships, (b) demonstrates good role modeling, (c) takes responsibility for their actions, and (d) enjoys both nursing and teaching (Nehring, 1990). When rating the characteristics associated with poor clinical instructors, four characteristics were rated by both students and faculty as contributing to unsuccessful clinical instruction and were (a) poor role modeling, (b) an inability to demonstrate empathy, (c) a lack of support and encouragement for students, and (d) the absence of effective constructive criticism (Nehring, 1990). The characteristics perceived as important by both student and faculty participants were the same in both the Nehring (1990) and Mogan and Knox (1987) studies. In addition Nehring (1990)

concluded the study findings helped to confirm the validity of the NCTEI as an evaluation tool for clinical instructors.

In 2004, Allison-Jones and Hirt conducted further research with the use of the NCTEI, and rather than a replication study, the researchers sought to determine the differences in the clinical teaching effectiveness of part-time (PT) and full-time (FT) faculty. The survey research study used a convenience sampling technique to recruit associate degree nursing students (ADN) (n=538), and full and part-time ADN clinical faculty (n=44), from 7 nursing programs located in the Mid-Atlantic States (Allison-Jones & Hirt, 2004). Students were asked to rate their current clinical instructors, while faculty were asked to self-assess their own clinical teaching performance, both with use of the NCTEI (Allison-Jones & Hirt, 2004).

In regard to student perceptions of differences between the clinical teaching effectiveness of full-time and part-time faculty, the students found FT faculty were more effective clinical teachers than their PT counterparts (Allison-Jones & Hirt, 2004). Interpersonal relationships were identified by students as the most important of the five categories in regard to characteristics of effective clinical instructors, followed by nursing competence, evaluation, teacher's personality and teaching ability (Allison-Jones & Hirt, 2004). There was no statistically significant difference found between the students' rating of the faculty and the faculty ratings of their own clinical teaching effectiveness (Allison-Jones & Hirt, 2004).

Effective Clinical Instruction in Physiotherapy Education

In 2013, Oyeyemi et al. conducted a quantitative study regarding effective clinical instruction in the field of physiotherapy. Oyeyemi et al. (2103) used the McGill Clinical Teacher Evaluation (CTE), an assessment instrument used to evaluate the effectiveness of clinical instructors in medical education, since no evaluation tool had been developed for this purpose in the field of physiotherapy education. The choice of the CTE was also based on its similarity between the criteria used to assess clinical instruction of medical faculty, and physiotherapy clinical faculty. The purpose of the study was to evaluate physiotherapy educators (n=46) clinical teaching effectiveness in 5 physiotherapy schools in Nigeria (Oyeyemi et al., 2013).

The CTE was comprised of a list of teaching attributes, similar to those found in the NCTEI (Mogan & Knox, 1987), used by participants to rate the importance of the attributes, and to self-assess their teaching effectiveness (Oyeyemi et al., 2013). The outcomes from the self-assessment portion of the CTE completed by the physiotherapy instructor participants (n=46) indicated they cared most about the interpersonal relationships shared with students (Oyeyemi et al., 2013). Assisting and encouraging students, and treating them in a positive manner, were the specific characteristics identified by faculty (Oyeyemi et al., 2013).

Effective Clinical Instruction in Dental Hygiene Education

Only two studies were found on effective clinical instruction in dental hygiene education and neither of the studies used a validated tool to evaluate clinical faculty (Paulis, 2011; Schönwetter et al., 2006). In 2011, Paulis conducted a cross-sectional

mixed-methods study investigating important dental hygiene (DH) clinical instructor characteristics when entering their teaching role, while Schönwetter et al. (2006) conducted a qualitative study to better understand what DH students perceived as important attributes in effective teachers. Paulis used both students (n=285) and clinical instructors (n=76) from 48 baccalaureate degree programs in the U.S. as participants, while Schönwetter et al. (2006) recruited (n=50) dental hygiene students for their study.

In the quantitative aspect of the Paulis (2011) study, both groups rated communication and clinical skills as the two most important topics pertaining to preparation for a teaching role. The qualitative outcomes from the thematic analysis performed in both the Paulis (2011) and Schönwetter et al. (2006) studies revealed similar themes emerged from all participant groups across both studies. These characteristics included (a) the instructors' ability to relate to students, (b) rapport with individual students, (c) providing empathy, (d) being approachable and helpful, (e) creating a stress free and positive learning environment, (f) being respectful and understanding of student needs, and (g) being available and willing to assist students outside of the clinical setting (Paulis, 2011; Schönwetter et al., 2006).

The authors concluded the clinical learning setting creates an environment where close working relationships with students are required, which may explain why students identified individual rapport as important in this learning environment (Schönwetter, et al., 2006). The authors also concluded the clinical faculty who value students' individuality, and are humanistic in their approach to teaching, will provide

more effective teaching and learning experiences for their students, and also serve as better role models (Schönwetter, et al., 2006).

Limitations to the Studies on Effective Clinical Instruction in the Health Professions

Limitations of many of the studies on effective clinical teaching in health professions education were the use of a single site or region where the research was conducted (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Hou et al., 2010; Knox & Mogan, 1985; Schönwetter, et al., 2006; Smith et al., 2011) and small sample size (Elcigil & Sari, 2008; Hou et al., 2010; Nehring, 1990; Smith et al., 2011). Paulis (2011) noted the cross-sectional design, which examined the perceptions of the participants at a single point in time, as a limitation to her study. These study limitations prevented generalizability of the research findings to other student and faculty populations in allied health education (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Hou et al., 2010; Knox & Mogan, 1985; Nehring, 1990; Paulis, 2011; Schönwetter, et al., 2006; Smith et al., 2011) Finally, a limitation specific to the quantitative studies was the self-assessment nature of the NCTEI and CTE which may have created potential bias in faculty and student responses (Allison-Jones & Hirt, 2004; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Oyeyemi et al., 2013).

Recommendations for Future Research

The need for further research in regard to the factors impacting clinical health professions education was recommended by most of the authors (Esmaeili et al., 2014; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990; Oyeyemi et al., 2013;

Paulis, 2011; Schönwetter, et al., 2006; Smith et al., 2011). Several authors suggested the findings learned from the research regarding effective clinical instruction should be used in academia for faculty development purposes and could improve the clinical learning experiences for health professions students (Allison-Jones & Hirt, 2004; Esmaeili et al., 2014; Oyeyemi et al., 2013; Paulis, 2011; Smith et al., 2011)

Shared Conclusions Regarding the Research on Effective Clinical Instruction

Interpersonal relationships and communication were consistently identified as highly ranked criteria by students, practicing nurses, and faculty, in regard to effective clinical instruction in nursing and other allied health educational settings (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi et al., 2011; Paulis, 2011; Schönwetter, et.al., 2006; Smith et al., 2011). The specific behaviors contributing to effectiveness in clinical instruction, were the clinical instructor's ability to empathize, understand and manage stressful situations for students in the clinical teaching environment (Elcigil & Sari, 2008; Esmaeili et al., 2014; Mogan & Knox, 1987; Nehring, 1990; Smith et al., 2011; Paulis, 2011; Schönwetter, et.al., 2006).

Providing empathy, understanding and self-management are also abilities identified in the foundational framework and constructs of emotional intelligence (Bar-On, 2010; Goleman et al., 2002; Mayer et al., 2016). Despite the parallels existing between emotional intelligence and the behaviors identified as important to effective clinical instruction, minimal research has been conducted in regard to

investigating the role of emotional intelligence in allied health clinical education (Victoroff & Boyatzis, 2013). Prior to discussing the research found in the area of EI and effective clinical instruction, an overview of literature regarding emotional intelligence theory and its most well-known constructs will be discussed.

Multiple Intelligences, Personal Intelligences, and Emotional Intelligence

The development of emotional intelligence theory, and the constructs on which they are based (Mayer et al., 2016), have been linked to the earlier work of Gardner (2011), and in some cases were directly developed by Gardner's work (Bar-On, 2010; Goleman et al., 2002). In 1983, Howard Gardner challenged the idea of the existence of a single intelligence and suggested human beings possess a variety of intellectual strengths (Gardner, 2011). He posited the basis for intelligence was both biological and cultural, with the biological basis of intelligence a result of the synaptic connections found in various areas of the brain (Gardner, 2011). He also proposed an individual's culture impacts intelligence based on society's influence, with individuals focusing on those intelligences important to their culture (Gardner, 2011).

Together, cultural and biological sources produce intelligences in a variety of areas including linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and personal intelligence (Gardner, 2011). Every person possesses each of these intelligences, however, every person has a different set of strong and weak intelligences (Gardner, 2011). Gardner (2011) suggested personal intelligence, which is the capacity to understand one's own emotions and guide behavior, had been ignored by many psychologists. As a result, an incomplete investigation of intelligence

has been conducted and Gardner (2011) suggested personal intelligence is an area in need of further study (Gardner, 2011).

In 1990, Mayer and Salovey proposed the theory of emotional intelligence, and later developed a model of EI (1990, 1993) using the term intelligence as a means to link their model to Gardner's work and distinguish their construct as a form of intelligence. Bar-On (2010) and Goleman et al. (2002) also developed well-known EI models based on the ideas proposed by Gardner (2011) and referred to the components of their models as emotional competencies, also identifying them as a form of intelligence (Joseph & Newman, 2010).

Bar-On (2010), Goleman et al. (2002), and Mayer, Salovey and Caruso (2016) are a few of the many theorists who have developed EI models and tools to measure EI in individuals (Roberts et al., 2010). The literature found on emotional intelligence has focused heavily on the validity of the theory and the two construct models of EI theory (Roberts et al., 2010), and the tests developed by Bar-On (2010), Goleman et al. (2002) and Mayer and Salovey (1993). Conflicting beliefs continue to exist among EI researchers, and attempts to find a consensus regarding the model and measurement tool, which most accurately describes and assesses EI, continues to be debated (Roberts et al., 2010).

Emotional Intelligence Constructs and Models

Despite the differences identified regarding the EI constructs and models (Cherniss, Extein, Goleman & Weissberg, 2006; Waterhouse, 2006), some congruence does exist among the three most commonly researched models of EI, i.e., Bar-on

(2010), Goleman et al. (2002), and Mayer, Salovey and Caruso (2016). All three models support Gardner's (2011) work which suggests emotional competency is a form of intelligence (Joseph & Newman, 2010). However, the models differ in regard to the constructs on which they are based (Joseph & Newman, 2010).

In 2016, Mayer, Salovey and Caruso updated their ability-based model, developed in the 1990's, and describes EI as the ability to perceive, use, understand and manage the emotions of one's self and others. The alternative constructs popularized by Bar-On (2010) and Daniel Goleman et al. (2002) are mixed/trait-based models of EI, and suggest emotional intelligence is both an intellectually and personality-based ability. (The terms mixed and trait-based can be interchanged, and the term trait-based will be used in the remainder of this review to describe both the mixed and trait-based models.)

Ability-based construct/model of emotional intelligence. The ability-based model of emotional intelligence (Mayer, et al., 2016), consists of four areas, or branches, of EI ability. The first of the four branches identified in the Mayer-Salovey-Caruso (M-S-C) is the ability to perceive emotion (Mayer et al., 2016). Although it is considered a lower level EI skill, it plays a critical role in the M-S-C model (Mayer et al., 2016). Perceiving emotion not only includes recognizing feelings in self and others, but includes the ability to identify the difference between real emotion and individuals who are feigning emotion (Mayer et al., 2016). Perceiving emotion is also expressed through an ability to feel emotion when listening to music, or when viewing artwork (Mayer et al., 2016).

Using emotion, the second branch of the M-S-C model, is the ability to allow emotions to impact and enhance your thinking, empathize with others, and to focus on what is important in situations when emotions are running high (Mayer et al., 2016). Individuals who are strong in using emotion also use cognitive ability with their emotional state to more effectively problem solve, to generate new ideas, heighten their reasoning skills, and generate emotion as a way to empathize with others (Mayer et al., 2016). In fact, Mayer et al. (2016) have suggested human beings cannot make decisions with rationality alone, and propose emotions are necessary to accelerate and accomplish cognitive processes.

The third branch of the M-S-C model is the ability to understand emotion and is the most aligned with cognitive functioning of the four EI abilities (Mayer et al., 2016). Individuals who understand emotions have a strong emotional vocabulary, can predict what people feel, can identify cultural influences when evaluating emotion, and typically know the right thing to say in conflicting situations (Mayer et al., 2016). The ability to understand emotion includes knowing the difference between moods and emotion, as well as recognizing the cause of emotions and the relationships between them (Mayer et al., 2016). This ability to understand the relationship between emotions also results in the individual's successful forecasting on how another person might feel in the future and in various conditions (Mayer et al., 2016).

The fourth and final branch of the M-S-C model is the ability to manage the emotions of one's self and others (Mayer et al., 2016). Individuals who are able to manage emotions can create calm in highly emotional situations, maintain a

productive mood and a positive setting, and inspire others in a low energy environment (Mayer et al., 2016). The ability to manage emotions does not suggest an individual will refrain from expressing their own emotion, but instead provides them with success in identifying strategies which lead to reducing the emotional response in others (Mayer et al., 2016). This emotional decision-making ability enhances an individual's life as well as the lives of those around them (Mayer et al., 2016).

Mayer, Caruso, and Salovey (2016) also purport emotional intelligence is an ability we are born with and not something that can change significantly during our lifetime. However, it is possible to increase our awareness regarding EI and to develop skills to better use emotions in decision making (Mayer et al., 2016).

Trait-based/mixed models of emotional intelligence. In contrast to the ability-based model developed by Mayer, Salovey, and Caruso (2016), trait-based models of emotional intelligence suggest EI is comprised of (a) intellectual ability, (b) personality traits, and (c) competencies which lead to success in managing environmental difficulties and stresses (Goleman et al., 2002; Joseph & Newman, 2010). The two trait-based models of EI referenced most frequently in the literature, were those proposed by Goleman et al. (2002) and Bar-On (2010) (Roberts et al., 2010).

Goleman model of emotional intelligence. Four emotional competencies comprise Daniel Goleman's trait-based model of emotional intelligence and include (a) self-awareness, (b) self-management, (c) social awareness, and (d) relationship management (Goleman et al., 2002). The self-awareness competency proposed by

Goleman et al. (2002) is the ability to recognize one's own feelings and its positive effect on job performance. It also includes the ability to know one's strengths, weaknesses, and self-confidence, which allows an individual to best use their strengths.

Self-management is possessing competency in maintaining self-control and governing emotions in difficult situations (Goleman et al., 2002). It also includes; transparency or authenticity when dealing with others, adaptability particularly when faced with challenges, a history of achievement based on their set of personal standards, initiative or self-efficacy, and an optimistic outlook (Goleman et al., 2002).

The emotional competency of social awareness includes the ability to understand the perspectives of others and to demonstrate empathy, possessing organizational awareness and service-mindedness. The fourth emotional competency, relationship management, is the ability to provide inspiration, positively influence and develop others' abilities, be a catalyst for change, effectively resolve conflict and promote collaboration and collegiality in a team setting (Goleman et al., 2002). In addition, Goleman et al. (2002) has proposed individuals who possess the emotional competencies outlined in his model are more likely to find success in the workplace and in their lives.

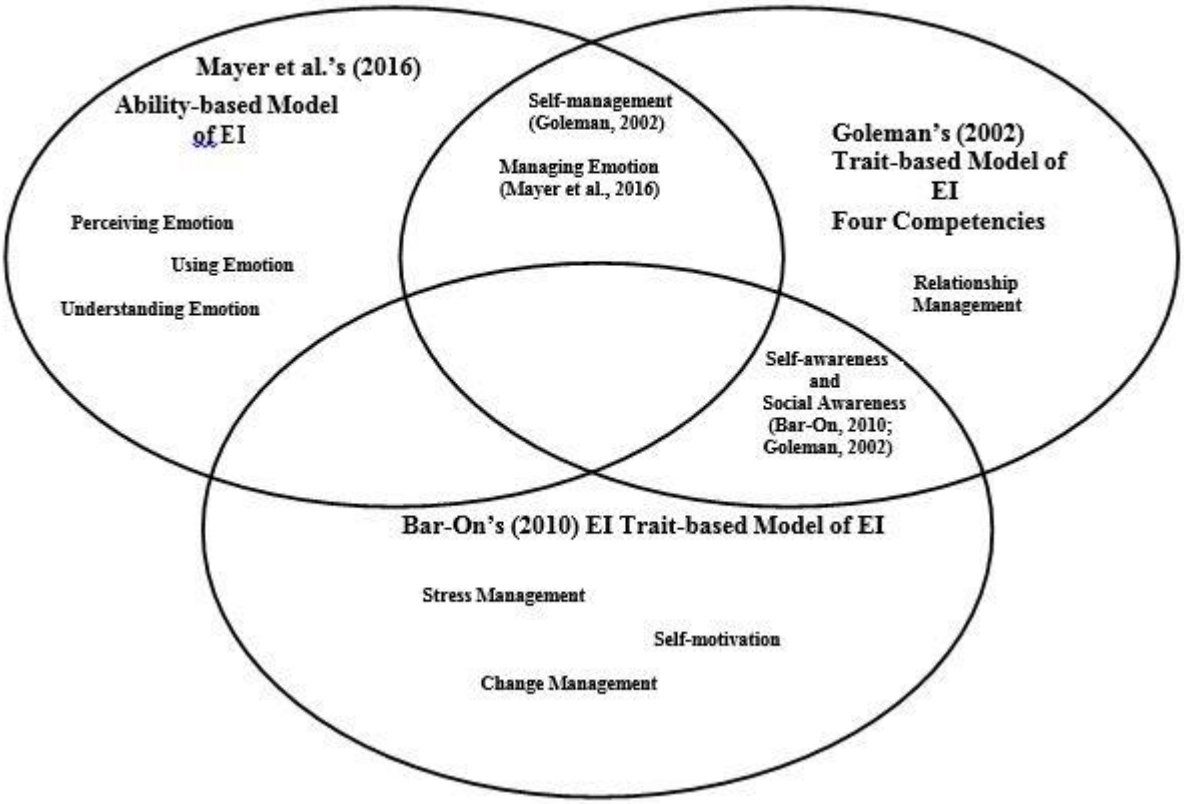
Bar-On model of emotional intelligence. Bar-On's (2010) model of emotional intelligence is comprised of five competencies which include (a) self-awareness, (b) social awareness, (c) emotional management, (d) change management, and (e) self-motivation. Self-awareness in the Bar-On model is the ability to understand one's own

emotions and to be free of reliance on others for emotional support, while social awareness is understanding the emotions of others and being capable of developing fulfilling relationships (Bar-On, 2010). Emotional management is an emotional competency reflected in the capability to effectively control and manage emotions, and change management is the ability to adapt one's emotions and thinking in new situations, while demonstrating effective problem-solving skills (Bar-On, 2010). The final competency in Bar-On's model of EI is self-motivation, which is reflected in having a positive attitude, being happy and possessing optimism and a sense of self-content (Bar-On, 2010).

An overview of the overlap between the EI constructs of Mayer et al. (2016), Goleman et al. (2002) and Bar-On (2010) are shared in Figure 2.1. The shared ability of the Mayer et al. model (2016) and the trait-based models of Goleman et al. (2002) is the ability to manage emotions. The Goleman et al. (2002) and Bar-On (2010) models share the competencies of self-awareness and social awareness, and possess more similarities than with Mayer et al.'s model (2016).

Figure 2.1.

Emotional Intelligence Constructs



Measuring Emotional Intelligence

The instruments used to measure EI are based on their respective EI models and are outlined below as follows (a) the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey & Caruso, 2004) (Table 2.2), (b) the Emotional Social and Competency Inventory (ESCI) (Goleman et al., 2002) (Table 2.3), and (c) the Emotional Quotient Inventory (EQ-i) (Bar-On, 2013) (Table 2.4).

Table 2.2 The Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer, Salovey, & Caruso, 2004)

Table 2.2		
MSCEIT EI Ability	**Task Performed and Ability Measured**	**How Individual Uses the Ability**
Perceiving Emotion	Faces- Interpreting emotional state of individuals with use of pictures	Able to determine how a person is feeling
	Pictures - Interpreting emotions with use of pictures of scenery and inanimate objects	Able to recognize emotion in an environment or situation
Using Emotion	Facilitation -Answering questions regarding choosing an emotion appropriate for a situation	Able to identify an emotion to assist in problem solving or communicating effectively
	Sensation – Identify emotional states in given scenarios to measure empathy	Able to create feelings and effectively leading people and communicating a vision
Understanding Emotion	Changes – Identifying progression of emotions in a given situation	Able to predict how people will react
	Blends- Defining complex emotional words	Able to identify how a complex emotional state is formed
Managing Emotion	Management – Observing short scenarios regarding managing one's emotions and explaining how to respond	Able to think clearly while using emotional state to make effective decisions
	Relations - Observing short scenarios regarding managing others' emotions and explaining how to respond	Able to get a desired outcome from an emotional situation

Note. The MSCEIT is divided into four sections, which reflect Mayer et al.'s (2002) four branch model of EI, and tests an overview of the abilities measured in the MSCEIT; perceiving, using, understand and measuring emotion. Table 2.2 also outlines the means used to measure EI and how an individual might use the given emotional ability.

Table 2.3 The Emotional Competency Inventory (Goleman et al., 2002; Wolff, 2005)

Table 2.3 ESCI Abilities	**EI Competence Assessed**	**EI Competency Predicts Ability to:**
Self-awareness	1. Emotional awareness	Recognize emotions in self
	2. Accurately self-assessment	Understand one's own strengths and weaknesses
	3. Self-confidence	Know self-worth and capability
Self-Management	4. Emotional Self-Control	Keep emotions in check
	5. Transparency	Maintain integrity and one's own set of values
	6. Adaptability	Be flexible when change occurs
	7. Achievement	Make ongoing efforts to meet high standard
	8. Initiative	Be prepared to act on opportunities
	9. Optimism	Demonstrate persistence to achieve goals despite barriers
Social Awareness	10. Empathy	Sense others' feelings and act on it
	11. Organizational awareness	Read emotions in a group and recognize power relationships
	12. Service orientation	Anticipate and recognize needs of those being served by an organization or group
Relationship Management	13. Developing others	Sense others' abilities and to encourage their use
	14. Inspirational leadership	Guide and inspire others and groups
	15. Change catalyst	Initiate change
	16. Influence	Use and identify effective tactics to make change
	17. Conflict Management	Negotiate and resolve disputes
	18. Teamwork and collaboration	Create synergy and develop shared goals for the group

*Note***.** The ESCI is based on **t**he emotional intelligence branches identified in Goleman's (2002) EI model and are reflected in the ESCI. Table 2.3 outlines the eighteen emotional competencies comprising the ESCI. Test takers are asked to rate their ability to perform each of the competencies using a 6-point Likert scale (Wolff, 2005).

Table 2.4 Bar-On's Emotional Quotient Inventory (EQ-i) (Bar-On, 2013)

Table 2.4 EQ-i Abilities	**EI Competence Assessed**	**EI Competency Predicts Ability to:**
Self-awareness	1. Self-regard	Accept and understand oneself
	2. Emotional self-awareness	Be aware of the emotions of self
	3. Assertiveness	Effectively and constructively express one's emotions
	4. Independence	Be reliant on self and not dependent on others
	5. Self-actualization	Achieve personal goals and fulfill one's potential
Social Awareness	6. Empathy	Be aware and understanding of others' feelings
	7. Social responsibility	Be cooperative and recognize one's identity in a social group
	8. Interpersonal relationship	Possess mutually satisfying relationships and relate well to others
Stress Management	9. Stress tolerance	Constructively manage emotions
	10. Impulse control	Constructively control emotions
Adaptability	11. Reality Testing	To validate one's feelings with the use of external reality
	12. Flexibility	Adjust feelings and thinking in new situations
	13. Problem-Solving	Effectively solve problems for self and others
General Mood	14. Optimism	Possess a positive outlook
	15. Happiness	Be generally content with self and others

Note. The EQ-i is based on the five emotional scales reflective of Bar-On's (2010) emotional and social intelligence model. Table 2.4 outlines fifteen emotional competencies which comprise the EQ-i. The test is a self-reporting survey and asks individuals to rate themselves on the ability to perform a given emotional competency using a 5-point Likert scale (Bar-On, 2013)

Both the EQ-I (Bar-On, 2013) and the ESCI are self-rated questionnaires, while the MSCEIT (Mayer et al., 2004) is a performance-based test using consensus and expert panels to measure EI outcomes. Other major differences among the EI tests are the inclusion of personality traits in the EQ-i (Wolff, 2005) and ESCI (Goleman et al., 2002) and these include being persistent, flexible, and inspirational. The overlap of emotional competencies measured in the three respective tests, are in parallel to the overlap of the EI constructs illustrated in Figure 2.1.

Conflict and Consensus Regarding Emotional Intelligence Models and Tests

A lack of consensus exists regarding which model, ability or trait-based, most accurately defines and represents emotional intelligence (Joseph & Newman, 2010; Roberts, et al., 2010; Van Rooy, Viswesvaran & Pluta, 2005). Two meta-analyses were conducted to try to identify which of the models and EI tests most closely defines emotional intelligence (Joseph & Newman, 2010; Van Rooy et al., 2005)

In 2005, Van Rooy et al. conducted a meta-analytic review of emotional intelligence constructs using research studies published from 1995 to the present, and also examined the tools used to measure emotional intelligence from the respective models (Van Rooy, et al., 2005). The existence of a correlation between personality traits, cognition and the EI constructs was examined using the Big Five personality traits model (Van Rooy, et al., 2005). The Big Five model is a personality trait framework widely used in research and is comprised of five domains encompassing human personality (Gosling, Rentfrow, & Swann, 2003).

Van Rooy et al. (2005) concluded trait-based constructs were more highly correlated with the Big Five personality model and lacked significant correlation with cognitive ability. Conversely, the ability-based construct was more highly correlated with cognitive ability and less with the Big Five personality model (Van Rooy, et al., 2005). The authors also suggested the differences between the two constructs were of sufficient significance to prohibit the classification of the trait-based models as being accurately descriptive of an intelligence, and this was related to the presence of personality factors found in the trait-based construct (Van Rooy, et al., 2005).

Despite this conclusion, the authors determined one construct could not be considered of lesser value than the other, and both could be useful depending on the context in which they were used (Van Rooy, et al., 2005). More specifically, trait-based EI constructs may be effective in organizational settings for selection or hiring processes, based on the broad range of traits it assesses which may predict future success in an individual (Van Rooy, et al., 2005). The ability-based EI construct may be well-suited for use in employee development programs and could assist in improving work performance (Van Rooy, et al., 2005). The authors also concluded further research is needed to understand EI constructs and models, and to more clearly identify the differences between them and how they might be used (Van Rooy, et al., 2005).

In 2010, Joseph and Newman also conducted a meta-analysis of emotional intelligence, based on the work of Van Rooy, et al. (2005), in an attempt to further confirm their findings. An additional aim of their meta-analysis was to examine the

role of EI as a predictor of successful job performance (Joseph & Newman, 2010). Inclusion criteria for the meta-analysis were primary studies investigating the relationship between (a) cognitive ability and EI, (b) the Big Five traits and EI, and (c) job performance and EI. The search for literature resulted in (n=118) studies being chosen for the meta-analysis (Joseph & Newman, 2010).

The analysis produced findings suggesting the two constructs may not be measuring the same thing, with the ability-based model more aptly defining and reflective of emotional intelligence (Joseph & Newman, 2010). In regard to the analysis performed between the three constructs and the chosen attributes, the findings were generally not closely correlated to successful job performance (Joseph & Newman, 2010). The authors noted one exception regarding a lack of correlation, i.e., those jobs possessing highly emotional aspects were found to be more positively correlated with EI constructs (Joseph & Newman, 2010).

Joseph and Newman (2010) also confirmed the findings in Van Rooy et al.'s (2005) study which revealed personality traits were more significantly overlapped with the trait-based constructs than the ability-based construct, and cognitive ability was found to be more closely correlated to the ability-based construct. The authors also confirmed Van Rooy et al.'s findings which suggested the trait-based constructs may not be measuring emotional intelligence due to the significant overlap with personality traits (Joseph & Newman, 2010).

Based on the correlation found between EI ability and job success in professions with emotional aspects (Joseph & Newman, 2010), together with the

evidence found on the importance of emotional competencies in allied health professions programs, a search and review of the EI's role in AHP health professions education was performed.

Emotional Intelligence's Role in Health Professions Education

Most of the research found in HP education has used the ability-based model of EI, developed by Mayer et al. (2016), to investigate the role of emotional intelligence in health professions education (Allen et al., 2012; Beauvais, Brady, O'Shea, & Griffin, 2011; Codier, Kofoed & Peters, 2015; Collins, 2013; Foster, McCloughen, Delgado, Kefalas & Harkness, 2015; Shanta & Gargiulo, 2014). A paucity of empirical research exists in most areas of HP education (Hen & Goroshit, 2011; Victoroff & Boyatzis, 2013), with the majority of the research on EI and HP education conducted in nursing education (Allen et al., 2012; Beauvais et al., 2011; Codier et al., 2015; Collins, 2013; Foster et al., 2015; Shanta & Gargiulo, 2014). Only one study was found regarding EI's role in other HP education outside of nursing (Ruiz-Aranda, Extremera, & Pineda-Galan, 2014).

Examining the Relationship between Emotional Intelligence and Stress in Allied Health Professions Students

The single study conducted in AHP education regarding the role of EI, used the ability-based construct and was conducted at a university in Spain in 2014 by Ruiz-Arnada et al. The study used a variety of health professions students as participants, and examined the relationships between their level of emotional intelligence and their happiness, life satisfaction, and the impact of stress on the other variables. The participants (n=264) came from health professions within the university

and included schools of; physiotherapy (38.3%), nursing (33.3%), occupational therapy (17%) and chiropody (11.4%) (Ruiz-Aranda, et al., 2014). (The terms chiropody and podiatry can be used interchangeably and represent the same health care practice, i.e., the practice and treatment of diseased lower limbs) (The College of Podiatry, 2016).

Participants were recruited using a random sampling technique and ranged in age from 18 to 50 years (Ruiz-Aranda, et al., 2014). The data collection instruments used in the study were (a) the MSCEIT, (b) the Perceived Stress Scale (PSS), (c) the Satisfaction with Life Scale (SWLS), and (d) the Subjective Happiness Scale (SHS) (Ruiz-Aranda, et al., 2014). The statistical analysis performed on the data found emotional intelligence was negatively correlated with stress, and the authors concluded this outcome suggested health professions students with higher EI may have less perceived stress than those with lower levels of EI (Ruiz-Aranda, et al., 2014). The authors also concluded student health professionals should be provided opportunities to develop EI for improved well-being to aid them in their environment where controlling the emotions of themselves and others is of high importance (Ruiz-Aranda, et al., 2014).

The Role of Emotional Intelligence in Nursing Education

The aim of the studies conducted on the role of emotional intelligence in nursing education had a wide range of focus and included (a) an examination of EI content in nursing curricula (Foster et al., 2015), (b) the impact of nursing education on a student's level of EI (Shanta & Gargiulo, 2014), (c) a comparison of EI in

undergraduate and graduate nursing students (Codier et al., 2015), and (d) the impact of nursing students' EI on their performance (Beauvais et al., 2011; Collins; 2013). Only one study examined the role of EI in clinical teaching effectiveness (Allen et al., 2012).

The inclusion of emotional intelligence content in nursing education. The most recent research, regarding EI and health professions education, was a literature review conducted by Foster et al. (2015) in the United Kingdom (UK). The authors' purpose was to examine the theoretical and empirical research regarding emotional intelligence and its use in pre-registration nursing education in the UK (Foster et al., 2015). Pre-registration nursing is a term used in the UK to describe the undergraduate nursing education required for practice as a registered nurse (RN) (Nursing and Midwifery Council, 2010).

Inclusion criteria for the literature review was peer-reviewed research focusing on the EI content provided to students in nursing curricula and published between 1992 and 2014 (Foster et al., 2015). The literature search produced 17 articles and fell into two categories; discussion papers (n=15) and primary studies (n=2) (Foster et al., 2015). Three EI constructs were also used as criteria in the literature review and included Goleman et al.'s (2002) and Bar-On's (2010) trait-based construct, and Mayer et al.'s (2016) ability-based construct (Foster et al., 2015).

Nursing education's impact on a student's level of emotional intelligence. Prior to Foster et al.'s literature review, Shanta and Gargiulo (2014) conducted a quasi-experimental and quasi-longitudinal study investigating the impact of nursing

education on a nursing student's emotional intelligence. In their study, the authors' hypothesized emotional intelligence would be increased as a result of a student's enrollment in a baccalaureate nursing program (Shanta & Gargiulo, 2014). They also proposed emotional intelligence would be increased at a greater rate in nursing students than those enrolled in a general education program (Shanta & Gargiulo, 2014).

Both nursing and education students were recruited from three Midwestern institutions for the comparison study (Shanta & Gargiulo, 2014). The researchers chose the general education program as the study control group based on the similarities existing in the social and demographic backgrounds of the students in the two programs (Shanta & Gargiulo, 2014). Demographic information for the study participants was collected regarding (a) chosen major, (b) GPA, (c) age, (d) gender, (e) EI knowledge, and (f) any prior experience in health care (Shanta & Gargiulo, 2014). The MSCEIT was the EI assessment tool chosen to measure the level of emotional intelligence in the two student cohorts (Shanta & Gargiulo, 2014).

No statistically significant differences were found between the general education students' and the nursing students' MSCEIT outcomes (Shanta & Gargiulo, 2014). In regard to a correlation between the demographic data and MSCEIT outcomes, only the GPA of participants suggested a relationship existed with MSCEIT scores, i.e., the higher a student's reported GPA the higher the overall MSCEIT score (Shanta & Gargiulo, 2014). The authors concluded the lack of differences found between nursing and education students' MSCEIT scores indicated nursing education

did not have a higher level of impact on a student's EI than other undergraduate programs (Shanta & Gargiulo, 2014). The relationship between GPA and higher MSCEIT scores was posited by the authors to support the theory of ability-based EI being related to cognitive ability (Shanta & Gargiulo, 2014).

Comparing EI ability in graduate and undergraduate nursing students. Codier et al. (2015) conducted a quantitative study comparing the emotional intelligence ability of students in traditional nursing program, to students in graduate programs in nursing for non-nurses (GPNNN). The researchers sought to learn if students in GPNNN programs, who had previous work, academic, and life experience, would present with a higher level of emotional intelligence, as compared to undergraduate students (Codier et al., 2015). The study was performed with students in four separate nursing programs including (a) undergraduate students (n=24) and (b) graduate students (n=57) at an institution in an urban setting in Hawaii, (c) undergraduate students (n=64) enrolled in a nursing program in the western U.S., and (d) undergraduate students (n=72) enrolled in a nursing program in the Midwest (Codier et al., 2015). Participants were assessed on EI ability using the MSCEIT (Codier et al., 2015).

The MSCEIT outcomes in the study revealed the GPNNN students achieved higher scores on the MSCEIT than most of the undergraduate participants (Codier et al., 2015). The authors noted the study outcomes supported previous qualitative research and suggested GPNNN students possess higher psychosocial skills than

undergraduate nurses, resulting in improved communication skills and patient outcomes (Codier et al., 2015).

Emotional intelligence in nursing students and its impact on performance. Both Collins (2013) and Beauvais et al. (2011) investigated the level of EI found in nursing students and its impact on their nursing performance. In 2013, Collins used the MSCEIT to measure the EI ability of student registered nurse anesthetists (SRNAs) (n=216), enrolled in four different graduate nursing programs in the southeastern U.S. The participants' MSCEIT test scores were compared to outcomes on the nursing National Competence Exam (NCE), the students' Graduate Record Examination (GRE), overall GPA, science GPA and experience and years of acute nursing care (Collins, 2013). The statistical analysis revealed students in all levels of the nursing programs had overall strong MSCEIT outcomes, with additional evidence suggesting the MSCEIT scores were predictors of success on the NCE (Collins, 2013).

In 2011, Beauvais et al. conducted a similar quantitative study at a nursing program located in a New England university using both graduate (n=12) and undergraduate (n=75) students as study participants. Beauvais et al. (2011) compared nursing students' scores on the MSCEIT with outcomes of the Six Dimension Scale of Nursing Performance (6-D Scale) (Beauvais et al., 2011). The 6-D Scale is a self-administered test evaluating six subscales in the areas of (a) leadership, (b) critical care, (c) teaching/collaboration, (d) planning/evaluation, (e) inter-personal relations and communications, and (f) professional development (Beauvais et al., 2011). Overall outcomes for the MSCEIT reflected a moderate level of emotional intelligence

existed in the participants with a positive correlation found between overall MSCEIT scores and 6-D Scale scores (Beauvais et al., 2011). Four specific areas found to be positively correlated with the MSCEIT outcomes were (a) teaching/collaboration, (b) planning/evaluation, (c) interpersonal relations/communication, and (d) professional development (Beauvais et al., 2011).

Beauvais et al. (2011) found the study outcomes confirmed a positive relationship exists between emotional intelligence and nursing performance. In addition, the correlation between EI and the four areas of the 6-D Scale was anticipated by the researchers since they had proposed the ability to successfully address the emotional needs of patients was in parallel to the emotional abilities measured by the MSCEIT (Beauvais et al., 2011).

Emotional intelligence and its role in effective clinical instruction. The only study found in the literature examining EI, and its role in clinical teaching in HP education, was performed in 2012 by Allen et al. A cross-sectional survey design was used to compare the level of emotional intelligence found in female clinical instructors (n=47) to teaching effectiveness scores, and participants' demographic data (Allen et al., 2012). The Emotional Quotient Inventory: Short (EQ-i:S) (Bar-On, 2010) was used to assess EI, and clinical teaching effectiveness was measured using a modified version of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI) (Allen et al., 2012; Knox & Mogan, 1985).

The statistical analysis revealed the study participants' scores fell in the average range with a significant positive correlation found between overall EQ-i:S and

NCTEI scores (Allen et al., 2012). The authors concluded the study's findings suggested a relationship may exist between clinical teaching effectiveness and EI (Allen et al., 2012). However, there was no statistical significance found between EI and the demographic variables of age, level of education, employment status, nursing, and teaching experience (Allen et al., 2012).

Twenty-five percent of the faculty scored in the above average range for the EQ-i:S, suggesting only one quarter of the clinical faculty were exceptional in regard to managing the social and emotional aspects in their day to day lives (Allen et al., 2012). The authors identified this as an area of concern and suggested the skills of clinical faculty need to be in the above average range if they are to create a safe learning environment for students and provide quality care to patients (Allen et al., 2012).

Higher EI scores were also associated with an instructor's ability to effectively communicate expectations to students and provide evaluation and feedback (Allen et al., 2012). The authors posited the correlation between higher EI outcomes and perceived effective clinical teaching ability reflects the need to foster emotional intelligence skills as part of the development in nursing educators (Allen et al., 2012). The authors also concluded the learning experiences of students in the clinical environment would be improved if a clinical instructor understands their own emotions, and can recognize its effect on students (Allen et al., 2012).

Limitations of Previous Studies

Despite the diversity of the topics investigating emotional intelligence's role in HP education, the studies shared similar limitations, and prevented generalizability of the outcomes (Allen et al., 2012; Beauvais et al., 2011; Codier et al., 2015; Collins, 2013; Foster et al., 2015; Ruiz-Aranda et al., 2014; Shanta & Gargiulo, 2014). Small sample populations and use of a single location or region for the research (Allen et al., 2012; Codier et al., 2015; Collins, 2013; Shanta & Gargiulo, 2014) and a lack of male participants (Allen et al., 2012, Ruiz-Aranda, 2014) were all limitations of the research. The self-reporting nature of many of the questionnaires used for data collection may also have resulted in participant bias and the reliability of outcomes (Allen et al., 2012; Beauvais et al., 2011; Foster et al., 2015; Ruiz-Aranda et al., 2014).

Researchers' Recommendations for Future Studies

The collective recommendations of the authors suggested the need to use a single EI construct in future research, to better calibrate subsequent studies when examining the role of EI in HP education, and when considering integration of EI into health professions curricula (Beauvais et al., 2011; Codier et al., 2015; Collins, 2013; Foster et al., 2015; Shanta and Gargiulo, 2014). The ability-based model was the construct identified as most appropriate for use in future studies as a result of the performance-based nature of the MSCEIT and lack of bias and increased reliability it offers in regard to study outcomes and the construct's correlation to cognitive ability (Codier et al., 2015; Foster et al., 2013, Shanta & Gargiulo, 2014). Additional research

investigating EI's role in faculty development, and its impact on improved student learning experiences, was recommended as a means to identify ways to improve student skills and patient care outcomes (Allen et al., 2012; Beauvais et al., 2011; Codier et al., 2015; Foster et al., 2015; Ruiz-Aranda et al., 2014),

Summary

The research investigating the characteristics found in effective clinical instruction has identified interpersonal relationships and communication as the elements most frequently reported as important to the success of clinical instructors in health professions education (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2010; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Smith et al., 2011). More specifically, an instructor's ability to empathize, understand, and manage students in HP clinical settings were the qualities identified as most important in the development of successful interpersonal relationships between faculty and students (Elcigil & Sari, 2008; Esmaeili et al., 2014; Mogan & Knox, 1987; Nehring, 1990; Smith et al., 2011; Paulis, 2011; Schönwetter, et.al., 2006). These characteristics are in parallel to those found in the emotional intelligence constructs developed by Mayer, et al., (2016), Bar-On (2010) and Goleman et al. (2002).

Despite the overlap found between the characteristics of effective clinical instructors and the behaviors found in emotional intelligence constructs (Elcigil & Sari, 2008; Esmaeili et al., 2014; Mogan & Knox, 1987; Nehring, 1990; Smith et al., 2011; Paulis, 2011; Schönwetter, et.al., 2006), as well as the research revealing the

role EI plays in HP education, limited research has been performed on emotional intelligence and its role in HP education (Allen et al., 2012, Beauvais et al., 2011; Codier, et al., 2015; Collins, 2013; Ruiz-Aranda, et al., 2014; Shanta & Gargiulo, 2014). The review of the literature also revealed an even greater gap exists regarding the examination of a clinical instructor's EI, and its impact on effective clinical instruction (Allen et al., 2012; Beauvais, 2011; Codier, et al., 2015; Collins, 2013; Foster et al., 2015; Ruiz-Aranda, et al., 2014; Shanta & Gargiulo, 2014).

Based on this finding, and the recommendations and conclusions drawn from previous research, this study will seek to provide increased understanding of the role EI plays in health professions education, specifically in the clinical setting. It will measure the presence of emotional intelligence in dental hygiene clinical instructors, using a performance and ability-based emotional intelligence instrument, and use a self-report assessment tool to evaluate clinical teaching effectiveness. Finally, the study will investigate how DH clinical instructors define emotional intelligence, and the behaviors in the clinical teaching they perceive to be emotionally intelligent behavior.

Chapter Three: Methodology

Previous research has provided evidence suggesting the presence of emotional competencies in health professions clinical instructors is important to teaching effectiveness in clinical learning environments (Allison-Jones, 2002; Elcigil & Sari, 2011; Hou, 2010; Knox & Mogan, 1987; Nehring, 1990). However, only one study conducted in nursing education, has measured the emotional intelligence (EI) of clinical instructors and examined its relationship to effective clinical instruction (Allen, Ploeg, & Kaasalainen, 2012). Identifying a correlation between EI ability and effective clinical instruction may provide rationale for the need to focus on the development of EI skills in dental hygiene (DH) clinical faculty (Hen & Goroshit, 2011). Improved EI skills in DH clinical faculty could also lead to improved learning experiences for their students (Hen & Goroshit, 2011). The purpose of this study was to measure the EI ability of DH clinical instructors, to examine their clinical teaching effectiveness, and to determine if a relationship existed between EI ability and effective clinical instruction.

Research Design

An explanatory sequential mixed methods and cross-sectional research design (Creswell, 2014) was used for the study. The research was conducted in two phases; the first phase and quantitative aspect of the study used the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey & Caruso, 2012) and measured emotional intelligence in DH instructors. The first phase also used a modified version of a clinical teaching effectiveness survey (Nursing Clinical

Teaching Effectiveness Inventory (NCTEI) (Allison-Jones & Hirt, 2004; Mogan & Knox, 1985) and assessed the participants' effectiveness as clinical instructors. The second phase, and qualitative aspect of the mixed methods design, was phenomenological research (Patton, 2002) and explored the perceptions of DH clinical instructors in regard to their understanding of emotional intelligence, and their experiences regarding the use of EI in their approach to clinical teaching.

A statistical analysis of the data produced from the EI test and teaching survey was performed to determine if any correlation existed between the two assessments, as well as any relationships to participants' demographic data. The demographic data collected included: participants' age, gender, level of education achieved, and years of teaching and clinical experience. After data collection of the quantitative aspect of the study was completed, the qualitative phase of the study was implemented and involved one-on-one semi-structured interviews with participants who were asked open-ended questions regarding their perceptions of the role EI plays in clinical teaching effectiveness.

A mixed methods research design was chosen to bring improved understanding of the quantitative data (Creswell, 2014) produced from the outcomes of the MSCEIT and NCTEI assessments. The scores achieved by DH clinical instructors on the emotional intelligence test, and the self-assessment of their clinical teaching effectiveness, did not alone provide a thorough understanding of the role EI plays in effective clinical instruction (Creswell, 2014). The qualitative data collected provided

additional understanding of the quantitative findings and helped explain the statistical outcomes (Creswell, 2014).

Hypotheses

Phase I of the Study

As mentioned previously, the first phase of the study was quantitative and compared outcomes of the MSCEIT and NCTEI, testing the following null and alternative hypotheses:

H_0**:** The level of emotional intelligence of dental hygiene clinical instructors, based on the Mayer-Salovey-Caruso model of emotional intelligence and using the outcomes of the ability-based measurement tool the MSCEIT, has no correlation to the DH instructors' clinical teaching effectiveness as determined by a self-assessed teaching evaluation, the NCTEI.

H_1**:** The level of emotional intelligence of dental hygiene clinical instructors, based on the Mayer-Salovey-Caruso model of emotional intelligence and using the outcomes of the ability-based measurement tool the MSCEIT, is correlated to the DH instructors' clinical teaching effectiveness as determined by a self-assessed teaching evaluation, the NCTEI.

Research Questions

Phase II of the Study

Two central research questions were addressed in the qualitative aspect of the study with question #1 aimed at gaining understanding of DH clinical instructors' definition and knowledge of emotional intelligence. Question #2 sought to understand

the DH clinical instructors' perceptions of the role, if any, EI plays in effective clinical instruction.

Question #1: How do dental hygiene clinical instructors define emotional intelligence, and how do they describe emotionally intelligent behavior?

Question #2: What are the perceptions of dental hygiene clinical instructors in regard to the role of emotional intelligence in effective clinical instruction?

Variables

Phase One of the Study

Independent variables in the quantitative aspect of the study included the demographics of the participants as follows: (a) age; (b) gender; (c) years of clinical teaching experience; (d) years of clinical practice; (e) level of education completed by the instructors; and (f) the participants' specific role in the program where they teach. In addition to the demographic variables, other independent variables included the level of emotional intelligence present in dental hygiene clinical instructors, as measured by the outcomes of the MSCEIT. The dependent variables were the attributes identified from previous research, and found in the NCTEI, which reflected teaching effectiveness in health professions clinical instructors.

Setting and Participants

Research Setting

The study setting for both parts of the quantitative aspect of the study was conducted with the use of virtual software platforms. The clinical teaching self-assessment was completed using Qualtrics©, an online software platform designed to

survey participants and collect quantitative data. Qualtrics© has the capability to collect categorical data, including the study participants' demographic data. Qualtrics© also produces numerical outcomes such as the total number of respondents, the minimum and maximum values found in responses, mean scores, the variance, and standard deviation. These outcomes can be reported in Qualtrics© in the form of graphs representing overall as well as individual question results. The statistics generated from the Qualtrics© survey required further analysis as described in the statistical analysis discussion to follow. The emotional intelligence test was made available to participants, and completed online, at the vendor's website.

The virtual setting for the qualitative phase of the study used Zoom© technology, a video meeting software platform, which recorded one-on-one interviews with participants. Zoom© was chosen for the interviews since recorded sessions could be reviewed multiple times, and allowed for more accurate transcription of the participants' responses. Each of the online technological tools chosen for the study allowed for easy retrieval of the assessment data from participants who resided in multiple regions of the country.

Research Participants

The study participants were dental hygiene (DH) clinical instructors currently teaching students in the clinical setting of both baccalaureate and associate degree accredited dental hygiene programs across the US. Accredited DH programs are those deemed by the Commission of Dental Accreditation (CODA) to have met the

standards for DH education, which were developed by the American Dental Association (ADHA, 2016b).

A purposive sampling technique was used to recruit participants from dental hygiene programs located across the US. (ADHA, 2016a). A maximum variation sampling strategy (Patton, 2002) was also employed, as central themes were being sought from a small heterogeneous sample. Identifying common themes among the responses of a diverse participant group of DH educators, i.e., those who vary significantly in age, level of academic rank, years of clinical teaching experience, location, level of education earned, etc., strengthened and added value to the study's findings (Patton, 2002).

An invitation to participate in the research was sent to DH clinical instructors via their respective program directors and deans. A minimum of 50 participants were sought for the quantitative aspect of the study. Minimal demographic information was available regarding the current number of clinical instructors actively teaching in DH clinical settings (Coplen, Klausner, & Taichman, 2011). This lack of data made determining an accurate estimation of an adequate sample size for this study population difficult to calculate. However, a maximum variation sampling strategy was employed to achieve heterogeneity in the study sample.

More specifically, studies using the MSCEIT in health professions education have used a mean sample size of 192 participants and have ranged from 87 to 251 (Beauvais, Brady, O'Shea & Griffin, 2011; Codier, Kofoed, & Peters, 2015; Collins, 2013; Shanta & Gargiulo, 2014). Previous studies using the NCTEI used a mean

sample size of 258 clinical instructors and ranged from 63 to 582 nursing participants (Allison-Jones & Hirt, 2004; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990). The single previous study which compared EI ability to effective clinical instruction, used a sample size of (n=47) nursing instructors (Allen et al., 2012).

The invitation to participate in the Phase I of the study also included a statement informing participants of the planned qualitative phase (Phase II) of the study, and the subsequent interviews regarding their perceptions of EI and its role in DH clinical education. Participants were asked to indicate their interest in participating in Phase II of the research by sharing e-mail contact information. They were advised this contact information would be deleted from all electronic files at the end of the study. Those participants who completed both the MSCEIT and NCTEI, and who indicated willingness to participate Phase II of the study, were contacted and invited to participate in a one-on-one interview. The final sample size for the qualitative phase of the study was determined by the number of interviews conducted until the point of data saturation was reached. This point was determined when redundancy in the codes developed from the interviews occurred (Creswell, 2014; Guest, Bunce, & Johnson, 2006).

In 2006, Guest et al. conducted a study and performed 60 semi-structured interviews using open-ended questions to determine the number of interviews needed to reach the point of saturation. Interviews were conducted with Nigerian women to gain an understanding of their perception of risk for contracting the human immunodeficiency virus (HIV). After completing twelve interviews a code book was

developed by the authors based on the data collected, and was reviewed after each subsequent interview (Guest et al., 2006). No significant new codes were identified after the first twelve participants were interviewed and the authors concluded 12 interviews may be sufficient to reach saturation in nonprobability purposive sampling research using semi-structured interviews and open-ended questions (Guest et al., 2006).

To ensure saturation had been achieved in this study, a review of the code book, developed after conducting 12 interviews, was performed after each subsequent interview to ensure no new codes were being identified from the data collected from the participants. No new codes emerged from the interview data collected after conducting twelve interviews, and the recurring responses from the 12 interviewees and emerging themes confirmed data saturation had been achieved.

Inclusion Criteria. A diverse sample of DH clinical instructors were sought, based on the identified maximum variation sampling strategy, which was described previously. A broad range of clinical faculty allowed for the opportunity to determine if participants' age, years of experience in the field, hours worked per week and other demographic data were related to the outcomes of the emotional intelligence or and clinical teaching assessments, as well as the emerging themes from data collected from the one-on-one interviews. In addition, full and part-time faculty and administrators, employed as clinical instructors in accredited associate and baccalaureate dental hygiene programs across the U.S., were asked to participate in the study. Faculty who

taught in pre-clinic, radiology and dental materials lab settings were also invited to participate in the research.

Exclusion Criteria. Full and part-time faculty and administrators employed at accredited associate and baccalaureate dental hygiene programs, who do not teach in the clinical setting, were excluded from participation in the study.

Human Subjects Protection

The Institutional Review Board (IRB) of MCPHS University, where the pilot study was conducted, oversaw the protection of the study participants per the guidelines of the U.S. Department of Health and Human Services. Because the research study involved surveys carrying minimal risk to participants, it was awarded the status "exempt" in accordance with 45 CFR 46.101(B) (2) and was assigned protocol number IRB121316R by the MCPHS University IRB (Appendix A). The identity of the participants in both the pilot study and in the dissertation research remained anonymous, with no identifying information from the participants linked to the study outcomes. Implied consent for participation was secured through inclusion of an informed consent statement (Appendix B) which appeared at the beginning of the NCTEI survey. Participants were advised completion of the study served as their consent to participate in the NCTEI and MSCEIT. Informed consent for the qualitative phase of the study, which included virtual interviews using with individual participants was secured via a separate form (Appendix C) which was read to them at the beginning of the recorded interview.

Participants were offered a chance to receive a $100 gift card as an incentive to participate in the research. E-mail addresses were collected from participants expressing interest in being entered in the drawing for the gift card via the Qualtrics© questionnaire (Appendix E). Participants were advised, prior to completing the questionnaire, that their e-mail addresses would be deleted after the drawing had been conducted. After all quantitative data had been collected, a participant was randomly selected from the list of e-mail addresses offered by participants, awarded the gift certificate, and the electronic file containing the e-mail addresses was deleted.

Test Instruments

As mentioned previously, two quantitative instruments were used in the study and included (a) the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer et al., 2004) (Appendix D), and (b) a survey comprised of demographic questions (Part A) and a modified version of the Nursing Clinical Teaching Effectiveness Inventory (Part B) (Allison-Jones & Hirt, 2004; Knox & Mogan, 1985) found in Appendix E. The revisions made to the content of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI) involved the replacement of the terms “nursing” or “nursing education” with “dental hygiene” or “dental hygiene education” (Appendix E).

Mayer-Salovey-Caruso Emotional Intelligence Test

The design of the MSCEIT is based on the four branches of emotional intelligence ability, as defined by Mayer et al. (2016), and includes the abilities to perceive, use, understand, and manage emotion. The test (Mayer et al., 2004) is

divided into four sections which reflect and measure the four branches/abilities found in the Mayer et al. (2016) model (Appendix D). Overall scores for the MSCEIT, as well as individual scores for each of the four branches, are calculated by the vendor and administrator of the MSCEIT, Multi-Health Systems (MHS), with access to the participants' scores provided at the vendor's website.

The Validity of the MSCEIT. The MSCEIT uses both consensus and expert panels in its scoring methods, and its reliability has been found to be sound (Mayer, Salovey &Caruso, 2012). The MSCEIT possesses an overall reliability of r = .93, with some variance in reliability among the individual EI branch scores, which range from r = .81 to r = .92 (Mayer, et al., 2012). An evaluation of face validity was also conducted to determine if the MSCEIT appeared to the participant to be measuring emotional intelligence (Mayer, et al., 2012). This analysis, based on feedback from MSCEIT participants, found the MSCEIT had good face validity (r = .83) (Mayer, et al., 2012).

Despite the evidence supporting the MSCEIT's reliability and validity, emotional intelligence is considered by psychologists to be a relatively new theory, and EI tests are considered to be novel research instruments (Roberts, McCann, Mathews & Zeidner, 2010). However, a meta-analysis (Joseph & Newman, 2011) performed on emotional intelligence models concluded no overlap exists between emotional ability and personality traits in the Mayer et al. (2004) emotional intelligence model suggesting the MSCEIT is measuring a form of intelligence and excludes the influence of traits in its test content.

In fact, Roberts et al. (2010) found the MSCEIT possessed the highest level of incremental validity among EI tests, with the MSCEIT closely correlated to other long-standing intelligence tests. The authors also concluded the MSCEIT was more aligned with intelligence tests than were the trait-based EI tests (Roberts et al., 2010). In addition, Roberts et al. (2010) suggested the performance-based nature of the MSCEIT contributed to its higher validity as compared to other EI tests. They purported the self-reporting nature of alternative EI measurement tools i.e., the trait-based EI tests of Bar-On (2010) and Goleman (2002), produced inaccurate outcomes due to the test-taker/participants' bias and inability to objectively report their emotions (Roberts et al., 2010).

In 2010, Karim and Weisz also investigated the incremental validity of the MSCEIT, using a cross-cultural design, and measured its strength in evaluating emotional intelligence ability in two distinctly different cultural settings, i.e., Pakistan and France. These contrasting settings were chosen as a means to more definitively measure the strength of the MSCEIT's validity (Karim & Weisz, 2010). The authors confirmed the findings of Roberts et al. (2010) and reported outcomes, which revealed the MSCEIT was more highly correlated with measuring intelligence and lacked overlap with personality traits (Karim & Weisz, 2010). Further, the researchers confirmed the MSCEIT possessed strong incremental validity, and found it measured EI more accurately than previous instruments used to assess emotional intelligence (Karim & Weisz, 2010). These findings were consistent across both cultural groups selected for the study (Karim & Weisz, 2010).

Nursing Clinical Teaching Effectiveness Inventory

In 1985, Knox and Mogan developed the NCTEI as a means to investigate effective clinical teaching in nursing education. Two studies were used to develop and validate the NCTEI (Knox & Mogan, 1985; Mogan & Knox, 1987) with the attributes associated with clinical teaching effectiveness developed from responses provided by students, faculty and practicing nurses in northern Canada and the Western United States.

The validity and reliability of the Nursing Clinical Teaching Effectiveness Inventory. The purpose of Knox and Mogan's 1985 study on clinical teaching in nursing education was to identify the attributes of successful clinical instructors for the purpose of creating a research instrument to measure a nursing clinical instructors' teaching effectiveness. The outcomes of the study confirmed the face validity of the NCTEI, which was based on feedback provided from nursing students, faculty, and practical nurses; the participants rated all of the 48 attributes using a Likert scale (ranging from 0 to 7) which resulted in high ratings for all attributes (M= 6) (Knox & Mogan, 1985).

In 1987, Mogan and Knox conducted a follow up study to further test the NCTEI's face validity. The same survey format, list of characteristics, and methods were used in this study, with nursing students (n=173) and faculty (n=28) serving as the study participants (Mogan & Knox, 1987). Although some divergence was found between what students and instructors perceived as being most and least important to effective clinical instruction, the face validity was confirmed with all participants

rating the 48 attributes found in the NCTEI to be of some level of importance in clinical teaching (Mogan & Knox, 1987).

The reliability of the NCTEI, or consistency of responses to the survey outcomes over time, was also confirmed by Knox and Mogan (1985) and Mogan and Knox (1987). Internal consistency was found to possess a significance level ranging from $\alpha = 0.79$ to 0.92 over time, with test and re-test scores ranged from $r = 0.76$ to $r = 0.93$ over a four-week test taking period. Subsequent research replicating the Knox and Mogan (1985) and Mogan and Knox (1987) studies were also conducted, with the authors concluding their respective studies confirmed the reliability of the NCTEI based on its repeated use in multiple sample populations (Kotzabassaki, Panou, Dimou, Karabagli, Koutsopoulou, & Ikonomou, 1997; Lee, Cholowski, & Williams, 2002; Nehring, 1990). In the Kotzabassaki et al. (1997) study, internal consistency for the NCTEI was also examined, with the authors finding it demonstrated validity at a level of $\alpha = 0.99$.

The validity of the modified version of the Nursing Clinical Teaching Effectiveness Inventory. A modified version of Knox & Mogan's (1985) NCTEI which was used in this study, was developed by Allison-Jones in 2002. Internal validity for the NCTEI, was established through comparison of its use in previous studies (Mogan & Knox, 1987; Nehring, 1990). External validity, and the ability to generalize findings using the NCTEI, was confirmed by Allison-Jones (2002) in her study which used the NCTEI to compare the differences in the teaching effectiveness between full-time and part-time nursing clinical instructors in nursing education. A

pilot study (Allison-Jones, 2002) was also used to confirm the content validity of the revised NCTEI.

In 2004, Allison-Jones & Hirt used the revised version of the NCTEI to perform further research examining the differences between part-time and full-time clinical faculty's teaching effectiveness. Further validation of the revised version of the NCTEI was confirmed by Allen et al.(2012) in their study comparing outcomes of the revised NCTEI to the level emotional intelligence found in clinical instructors in nursing education.

Open-ended Interview Questions

Five open-ended questions (Appendix F) were asked of randomly chosen participants (n=24). Of the 24 participants who were contacted, (n=13) agreed to participate in a follow-up interview. The questions were designed by David Caruso, one of the three authors of the EI ability model and the MSCEIT, with the purpose of gaining an understanding of participants' definition of emotional intelligence. In addition, situational questions were developed to elicit the DH clinical instructors' perceptions of emotional intelligent behavior. Comparisons of the participants' definition of EI, and the behaviors they perceive to be emotionally intelligent behaviors, were compared to their outcomes on the MSCEIT and NCTEI.

Data Collection Procedure

Phase I of the Study

Approval for the use of the two research instruments in the study was secured via e-mail consent from the authors. Consent for use of the NCTEI (Knox and Mogan,

1985) (Appendix G) was received from one of the original authors, Janet Knox, in June of 2016. Approval for use of the revised version of the NCTEI (Allison-Jones, 2002) (Appendix H) was received from Lisa Allison-Jones in February 2016. Use of the MSCEIT for the study was secured through the vendor, MHS, who owns the rights to administer the MSCEIT, calculates test scores, and provides access of the testing outcomes to researchers.

The dental hygiene programs chosen for participation in the study were secured through the American Dental Hygienists Association (ADHA) website, which maintains an updated list of accredited programs in the US. (ADHA, 2016a). Study participants and clinical faculty were recruited from accredited dental hygiene programs by way of the programs directors in their respective programs. The program directors were approached via e-mail (Appendix I) and asked to forward an invitation to participate to the clinical faculty in their respective programs. The invitation to clinical faculty (Appendix J) was sent to those program directors who expressed willingness to share the information about the study with their clinical faculty.

Dental hygiene clinical instructors were forwarded the invitation which provided a description of the study, a statement of risk and IRB approval, and instructions for proceeding with completion of the two assessments, the NCTEI and the MSCEIT. The instructions included directions to create a participant identification (ID) number to be used when taking the NCTEI and the MSCEIT, and providing participants with anonymity. Once participation in the NCTEI survey and MSCEIT was closed to participants, the list of participant names and respective ID numbers was

linked to the two assessment outcomes. The list of the names of participants and associated ID numbers were deleted from the password secured electronic files.

A description of the quantitative phase of the study informed participants of the two sections in the Qualtrics© questionnaire; Part A which collected demographic data (Appendix E), and Part B which was comprised of the revised NCTEI (Appendix E). Upon completion of the NCTEI, and prior to leaving the Qualtrics© site, a second link was provided to participants which sent them to the MHS website to complete the MSCEIT. Reports for the Qualtrics© survey outcomes, as described previously, were generated directly from the survey tool.

The MSCEIT performance for each participant was reported as an overall outcome, as well as individual scores for ability in each of the four EI branches. Scores on the MSCEIT range from 0 – 150 points, with five potential levels achieved (Table 3.1)

Table 3.1 – Ability Ranges for MSCEIT Scoring Outcomes

Table 3.1. Ability Ranges for MSCEIT Scoring Outcomes	
MSCEIT Outcomes	**EI Range of Ability**
0 to < 70	Needs Improvement
≥ 70 to < 90	Consider Developing
≥90 to < 110	Competent
≥110 to <130	Skilled
≥130	Expert

The MSCEIT outcomes for each participant were generated by MHS and made available to the researcher at the secured MHS website. Scoring reports are provided in the form of an Excel spreadsheet, and an example of the dataset provided for each study participant is outlined in Table 3.2.

Table 3.2 - Sample of Individual MSCEIT Scoring Outcomes

MSCEIT Component	**Score**
MSCEIT Overall Outcome	103
MSCEIT Ability	
Perceiving Emotion	98
Using Emotion	127
Understanding Emotion	88
Managing Emotion	126

Mean scores for the MSCEIT outcomes were calculated by the researcher and reported for the study participants. A description of the statistical analysis used for the assessment outcomes of the NCTEI and the MSCEIT is described in a subsequent section.

Phase II of the Study

After analysis of the first phase of the quantitative phase of the study was completed, the qualitative phase of the study was launched. In this second phase of the study, (n=24) clinical instructors, randomly chosen from the pool of participants who completed both the NCTEI and the MSCEIT, were invited via e-mail to participate in

a one-on-one interview. Open-ended questions were asked of the participants (Appendix F) with interviews lasting 20-30 minutes. Individual sessions conducted in person were recorded using two methods; Zoom© technology which stored the session virtually in a cloud, as well as in MP4 files in a password protected device. All participants were given an opportunity to review the audio or video-recorded session, as well as the transcribed data, to ensure the accuracy of their responses. The analysis of the qualitative data collected in the interviews will be describe in detail in a subsequent section.

Pilot Study

A pilot study testing the research procedure and research instruments used in Phase I was performed with 3 participants. Feedback from the participants was used to confirm accessibility of the website and measurement tools and the ability to complete the assessments without technical issues. Success with the continuity of transitioning between the Qualtrics© and MSCEIT links, and the ability to cross-reference participant names and ID numbers, was also verified. In regard to the pilot study for Phase II of the research, (n=1) participant, who had completed the NCTEI and the MSCEIT, participated in a one-on-one interview. Feedback from the Phase II pilot study participant ensured the understanding and effectiveness of the open-ended questions used. Only Question #4 was edited based on the lack of understanding the participant experienced when answering the question. The change in verbiage of Question #4 is reflected in Appendix F, and revision of the question was also based on feedback provided by David Caruso. The pilot study also tested the effectiveness of

the Zoom© virtual meeting platform, which proved to be a reliable and effective tool for collecting the qualitative data.

In addition to using the pilot study for the purpose of evaluating the effectiveness of the research instruments and technology used for recording interviews, Happy Scribe© was tested for use in transcribing video and audio recordings. Overall, this online transcription service was accurate in the transcription of the MP4 files generated by the Zoom interviews. In addition, the transcriptions of the interview sessions were completed within a few minutes of uploading the MP4 file at a cost of $.10 per minute. However, additional review of the audio recording and corrections to the raw transcription, delivered via e-mail from Happy Scribe©, was required to ensure accuracy of the transcribe data being used for the thematic analysis.

Data Analysis

Statistical Analysis

Descriptive statistics were used to report the demographic data, as well as the outcomes of the NCTEI and MSCEIT assessments. Exploratory data analysis was performed using Version 24 of IBM's SPSS statistical software package to identify relationships between the continuous variables. Spearman's Rank Correlation Coefficient and backwards regression analysis were both used to analyze the data. Overall emotional intelligence scores for the MSCEIT, as well as individual branch scores, were compared to the NCTEI overall outcomes and the individual attributes measured in the NCTEI Likert scale outcomes. The purpose for the analysis of MSCEIT sub scores and individual NCTEI attributes was to determine if some forms

of EI ability were more closely correlated with specific characteristics of clinical teaching effectiveness. Any potential relationships between the demographic variables of age, years of clinical practice, level of education, and number of years of teaching experience, were also compared to the NCTEI and MSCEIT outcomes.

Thematic Analysis

Participants' responses from the one-on-one interviews were analyzed using a thematic analysis, with the process for analyzing and coding data in parallel to the systems developed by Guest et al. (2006) and DeCuir-Gunby, Marshall, and McCulloch (2011). The chosen model of code book development for this study was introduced by DeCuir-Gunby, Marshall and McCulloch, (2011), who suggested the identification of theory-based codes should be the first of three steps in creating a code book for data collected from qualitative interviews. The second step in the development of the code book was to evaluate the codes and to revise them as the data is analyzed and any alternative codes emerge (DeCuir-Gunby, Marshall, & McCulloch, 2011). The third step was to confirm the reliability of the outcomes by using an alternative analysis method (DeCuir-Gunby et al., 2011).

The data collected for this study was theory driven, that is, the open-ended questions from the interviews were based on the hypothesis of the existence of a relationship between effective clinical instruction and an instructor's level of emotional intelligence. As a result, codes were developed prior to data collection (DeCuir-Gunby, et al., 2011) and were based on the four branches of the Mayer-Salovey-Caruso (M-S-C) model) of EI (Mayer et al., 2016). Additional codes were

added to the code book as additional patterns began to emerge during the thematic analysis.

As each of the interviews was conducted, the interview session was transcribed using Happy Scribe©. The data was then reviewed and analyzed for its application to the theory-based codes developed previously. Although codes were determined prior to data collection, this method of open coding allowed the principal investigator (PI) to immediately assess whether the outcomes were supporting the theory driving the research and also allowed for alternative central concepts to be identified early in the process of data analysis (DeCuir-Gunby, et al., 2011). This method of open coding also guided the PI to consider alternative connections between variables which may not have been theorized prior to the study (DeCuir-Gunby, et al., 2011).

After the codes were revised and the code book developed to a level of data saturation, the codes were categorized in preparation for identifying the themes emerging from the interviews. When identifying themes, the number of participants who expressed the same idea represented in a code was the basis for identifying the theme's significance, as opposed to the significance of the frequency of a code appearing in the raw data. Identifying the number of participants who expressed the same idea was of greater significance than participants who repeatedly stated an idea multiple times in the course of an interview (Guest et al., 2016).

Validity and Reliability. To avoid potential bias by the PI, the use of triangulating analysis (Patton, 2002) was employed in the data collection and analysis process. More specifically, the use of triangulating analysis in this study was

performed first by providing participants with an opportunity to review the transcribed data prior to conducting the thematic analysis. This process gave the participants an opportunity to confirm their responses and provided credibility of the data used in the analysis (Patton, 2002). The use of software to transcribe and interpret codes, classifications and themes was a second way to triangulate the data by comparing its outcomes to the hand analysis being performed on the data. Together, these measures confirmed the accuracy of the data being collected and interpreted, and increased the validity of the outcome of the qualitative data analysis (Patton, 2002).

Study Limitations

A number of limitations may have negatively impacted study outcomes. A small sample size, particularly for the quantitative phase of the study, and the purposive, non-probability sampling technique and self-choice of participants to take the tests may have prevented findings from being generalized to all dental hygiene clinical instructors. Also, the self-reporting nature of the NCTEI may have resulted in bias and a lack of validity in the measurement of the instructors' clinical teaching effectiveness. In addition, the cross-sectional nature of the study design could have resulted in a lack of ability to accurately measure clinical instructors teaching effectiveness and related emotional intelligence ability which could change over time.

In regard to the qualitative phase of the study, a lack of understanding regarding the definition of emotional intelligence may have resulted in misinterpretation of the open-ended questions. Recall bias in the faculty participants may also have influenced outcomes due to participants' inability to remember

incidences with students which reflected effective teaching or use of EI. Since the PI was responsible for conducting one-on-one interviews, and for interpreting participant responses, researcher bias may have occurred due to personal experience as a dental hygiene clinical instructor.

Summary

Despite the evidence suggesting emotional competencies found in models of emotional intelligence are related to clinical teaching effectiveness (Allison-Jones, 2002; Elcigil & Sari, 2011; Hou, 2010; Mogan & Knox, 1987; Nehring, 1990), only one study has been found in health professions education examining the relationship between the two variables (Allen et al., 2012). This study sought to investigate the relationship between EI and effective clinical instruction using a mixed methods design, and employed the NCTEI and MSCEIT to examine the existence of a relationship between them.

The quantitative phase of the study, which examined participants' outcomes on the NCTEI and the MSCEIT, was followed by one-on-one interviews which used randomly chosen participants who had completed the first phase of the study. The qualitative aspect of the study was intended to increase the understanding of the quantitative outcomes through the identification of themes developed from the participants' perceptions of EI and its role in effective clinical instruction.

Chapter Four: Research Findings

The purpose of this explanatory sequential mixed methods study was to investigate the potential relationship between the emotional intelligence (EI) ability of dental hygiene (DH) instructors, and their clinical teaching effectiveness. The qualitative phase of the study sought to understand the perceptions of DH clinical instructors regarding the role EI plays in clinical teaching. This chapter will discuss the findings which emerged from both the quantitative and qualitative phases of the study. The participation rate for the study, participants' demographic data, and the statistical analysis and findings for the first phase of the study will be reported. Emerging themes, produced from the thematic analysis performed on the qualitative data, will also be reported.

Participation Rate

Forty-three (43) program directors from DH programs across the U.S. were contacted and asked to disseminate invitations, to participate in the study, to their respective full-time and part-time clinical faculty. Eighteen percent of the program directors (n=5) responded to the request, while (n=3) asked invitations be sent directly from the PI, to faculty via contact information available on their respective institutions' websites. The actual number of program directors who forwarded the e-mail to clinical faculty, and clinical instructors who received the invitation to participate in the study, could not be determined. A total of (n=74) participants started the NCTEI, with (n = 60) completing the survey and first part (NCTEI) of Phase I of the study. Forty-two (42) of the (n=60) participants who completed the NCTEI went

on to complete the MSCEIT. Three (3) participants completed the MSCEIT but did not complete the NCTEI. The findings reported include only those participants (n=42) who completed both the NCTEI and the MSCEIT. Twenty-four (24) of the participants were invited to participate in the one-on-one interviews and were randomly chosen from the list of (n=42) participants who had completed both the NCTEI and the MSCEIT. Twelve (12) participants accepted the invitation and participated in the virtual one-on-one interviews.

Statistical Analysis

Data collection and analysis was performed using Version 24 of IBM's SPSS statistical software package. A summary of the demographic data (Table 4.1), and the participation rate of clinical instructors by state (Table 4.2) was reported using descriptive statistics. The outcomes of the NCTEI were also reported using descriptive statistics (Table 4.3). Descriptors of emotional intelligence ability and the associated scoring ranges (Table 4.4), and analysis of the MSCEIT outcomes were reported using descriptive statistics (Table 4.5).

The mean scores, highest and lowest individual scores mode, median of each of the branches of EI ability, as well as overall EI, were also analyzed using descriptive statistics (Table 4.6). Reporting of the descriptive statistics was followed by exploratory data analysis, and determined if correlations existed between the data collected from the MSCEIT outcomes and the NCTEI and demographic data (Table 4.7) using Spearman's rank correlation coefficient (Spearman's rho). This was

followed by a regression analysis which was performed on the significant correlations identified by the Spearman's rho (Table 4.8A- 4.8F).

Demographic data. All of the clinical instructor study participants (n=42/100%) were female, and most fell into the age range of either 41-50 years (n=12/28.6%) or 51-60 years (n=12/28.6%) (Table 4.1). The majority of participants' years of DH clinical practice fell into the 10+ year range (n=30/71.4%), with the most common range for years of clinical teaching experience being 5-7 years (n=17/40.5%). The majority of study participants were white (n=34/80.9%), with (n=2/4.8%) participants reporting their ethnicity as Hispanic, and (n=2/4.8%) reporting their ethnicity as African-American. Four (4/9.5%) of the study participants did not disclose their ethnicity. A majority of the participants (n= 30/71.4%) had earned a master's degree, (n=9/21.4%) held a bachelor's degree, (n=1/2.4%) an associate's degree, and (n=2/4.8%) participants had earned doctoral degrees or the equivalent. Twenty (47.6%) of the participants taught in associate degree programs, with (n=18/42.9%) participants reporting they taught in bachelor's programs, and (n=4/9.5%) teaching in programs where students could earn either an associate's or bachelor's degree. Nineteen (45.25%) of the participants taught between 9-16 hours per week, and a majority reported their role in the program was as a full-time faculty member (n=23/54.8%), with (n= 17/40.5%) participants reporting their role was as an adjunct clinical faculty member. Two (2/4.8%) of the participants indicated they were dental hygiene program directors.

Table 4.1. Demographic Data	%	n
Gender - Female	100	42
Age		
20-30 yrs.	9.5	4
31-40 yrs.	23.8	10
41-50 yrs.	28.5	12
51-60 yrs.	28.5	12
61+ years	9.5	4
Ethnicity		
White	80.9	34
Hispanic	4.8	2
African-American	4.8	2
Undisclosed	9.5	4
Years of DH Clinical Practice		
0 - 3	0	0
3 – 5	7.1	3
5 – 7	9.5	4
7 – 10	11.9	5
10+	71.4	30
Years of DH Clinical Teaching Experience		
0 - 3	23.8	10
3 – 5	7.1	3
5 – 7	11.9	5
7 – 10	16.7	7
10+	40.5	17
Table 4.1. Continued	%	n
Highest Level of Education Achieved		
Associate Degree	4.8	2
Bachelor Degree	21.4	9
Master Degree	71.4	30
Doctoral Degree or Equivalent	2.4	1

The clinical instructors who participated in the study taught in programs from states (n=19) within the continental U.S., with the highest level of participation from the states of Michigan (n=5/11.9%) and Texas (n=5/11.9%) (Table 4.2).

Table 4.2. Participation by State	**%**	**n**
1. Arizona	7.1	3
2. Connecticut	2.4	1
3. Idaho	2.4	1
4. Louisiana	2.4	1
5. Massachusetts	7.1	3
6. Maine	9.5	4
7. Michigan	11.9	5
8. Nebraska	2.4	1
9. Nevada	4.8	2
10. New Hampshire	4.8	2
11. New Mexico	2.4	1
12. North Carolina	4.8	2
13. Ohio	4.8	2
14. Rhode Island	7.1	3
15. Tennessee	4.8	2
16. Texas	11.9	5
17. Utah	2.4	1
18. Washington	2.4	1
19. Wyoming	2.4	1
20. *Massachusetts/Rhode Island	2.4	1
*One participant reported teaching in both Rhode Island and Massachusetts		
Total	100	42

Outcomes of the NCTEI. The NCTEI questionnaire provided participants with a 5 point Likert scale on which to self-rate themselves on the 48 clinical attributes listed in the survey administered via a Qualtrics© online platform. The participants' response choices ranged from 1 (Never) to 5 (Always). The mean scores for the NCTEI outcomes (Table 4.3), regarding positive clinical teaching attributes, fell between 4.0 and 4.83, with instructors perceiving their ability to take responsibility for their own actions (μ = 4.83) to be their strongest attribute. Only two positive attributes produced responses from the NCTEI which fell below 4.0; the instructors' ability to

understand what students were asking or telling them (μ = 3.9) and their ability to direct students to useful literature in dental hygiene (μ = 3.83).

In regard to the participants' responses to the NCTEI attributes describing negative behaviors, only two attributes produced mean outcomes above 2.0; promoting student dependence (μ = 2.9) and/or possessing unrealistic expectations of students (μ = 2.02). Promoting student dependence outcomes was found to possess the greatest standard deviation (SD=1.5) among the participants. However, the majority of NCTEI outcomes indicated a low variance existed among the majority of the instructors' responses (SD < 1.0). The only other instructor attributes which produced a variance greater than 1.0 included (a) having little background reading done on clinical topics (SD=1.04), (b) being unapproachable (SD=1.31), and (c) the inability to use critical feedback as a means to improve teaching performance (SD= 1.01). The mode (Mo) and median (Md) outcomes also reflected a lack of variance in the participant's responses, with the only differences between the mode and median found to be in the NCTEI attributes were (a) promoting student dependence (Mo = 1; Md = 3) (b) lack of background reading completed on clinical topics (Mo = 1; Md = 2), and (c) possessing unrealistic expectations of students (Mo = 1; Md = 2).

Table 4.3. NCTEI Outcomes

Modified NCTEI Instructor Performance Criteria	***Statistical Outcomes**			
	Mean/μ	**SD**	**Mode/ Mo**	**Median/ Md**
1. Explained clearly	4.07	0.68	4	4
2. Emphasized what was important	4.33	0.61	4	4
3. Stimulated student's interest in the subject	4.10	0.58	4	4
4. Was not accessible to students	1.79	0.87	2	2
5. Demonstrated clinical procedures and techniques	4.43	0.74	5	5
6. Helped students identify and make use of practice opportunities	4.26	0.73	4	4
7. Offered special help when difficulties arise	4.60	0.63	5	5
8. Was poorly prepared for teaching	1.57	0.83	1	1
9. Enjoy teaching	4.76	0.58	5	5
10. Encouraged active participation in discussion	4.55	0.59	5	5
11. Geared instruction to students' level of readiness	4.24	0.58	4	4
12. Understood what students were asking or telling	3.90	0.73	4	4
13. Carefully and precisely answered questions raised by students	4.31	0.56	4	4
14. Questioned students to elicit underlying reasoning	4.21	0.68	4	4
15. Helped students organize their thoughts about patient problems	4.31	0.56	4	4
16. Promoted student dependence	2.95	1.5	1	3
17. Demonstrated poor clinical skills and judgment	1.48	0.89	1	1
18. Demonstrated good communication skills	4.33	0.61	4	4
19. Revealed little background reading had been done on clinical topics	1.85	1.04	1	2
20. Discussed current developments in the dental hygiene field	4.31	0.68	4	4
21. Directed students to useful literature in dental hygiene	3.83	0.82	4	4
22. Demonstrated a breadth of knowledge in dental hygiene	4.43	0.55	4	4
23. Recognized own limitations	4.40	0.70	5	5
24. Took responsibility for own actions	4.83	0.44	5	5
25. Was a good role model	4.71	0.46	5	5
26. Enjoy the profession of dental hygiene	4.81	0.40	5	5

Table 4.3. NCTEI Outcomes (Continued)

Modified NCTEI Instructor Performance Criteria	*Statistical Outcomes			
	Mean/ μ	SD	Mode/ Mo	Median/ Md
27. Made specific suggestions for improvement	4.57	0.50	5	5
28. Provided constructive feedback on students' performance	4.64	0.48	5	5
29. Identified students' strengths and limitations objectively	4.33	0.75	5	5
30. Observed students' performance	4.69	0.47	5	5
31. Communicated expectations of students poorly	1.90	0.96	2	2
32. Had unrealistic expectations of students	2.02	0.87	1	2
33. Gave students positive reinforcement for good contributions, observations, and performance	4.67	0.57	5	5
34. Corrected students' mistakes without belittling them	4.67	0.61	5	5
35. Did not criticize students in front of others	4.60	0.73	5	5
36. Provided support and encouragement to students	4.79	0.42	5	5
37. Was unapproachable	1.81	1.31	1	1
38. Encouraged a climate of mutual respect	4.73	0.50	5	5
39. Listened attentively	4.67	0.75	5	5
40. Showed a personal interest in students	4.55	0.63	5	5
41. Demonstrated empathy	4.79	0.47	5	5
42. Demonstrated enthusiasm	4.80	0.40	5	5
43. Was a dynamic, energetic person	4.50	0.59	5	5
44. Was self-confident	4.54	0.60	5	5
45. Used criticism of teaching performance constructively	4.00	1.01	4	4
46. Was open-minded and non-judgmental	4.31	0.68	4	4
47. Has a good sense of humor	4.71	0.46	5	5
48. Was disorganized	1.71	0.97	1	1

* Participants' response choices ranged from 1 = Never to 5= Always

Assessment outcomes of the MSCEIT. Each of the four branches of EI. i.e., perceiving, using, understanding, and managing emotions are scored on the MSCEIT

and are intended to assess an individual's emotional intelligence ability in each of these areas. In addition, an overall EI ability score is also calculated, with the outcomes for overall EI and the four branches categorized into one of five descriptors of ability (Table 4.4). These categories of EI ability included (a) needs improvement, (b) consider developing, (c) competent, (d) skilled, and (e) expert.

Table 4.4. MSCEIT Scores and Descriptors of Emotional Intelligence Ability

MSCEIT Score Range	**Descriptor of EI Ability**
0 - < 70	Needs Improvement
> = 70 and < 90	Consider Developing
> = 90 and < 110	Competent
> = 110 and < 130	Skilled
> = 130	Expert

The MSCEIT outcomes for the study's participants (Table 4.5) revealed instructors' emotional intelligence ability scores varied significantly across all four branches of EI as well as in overall EI ability.

Table 4.5. MSCEIT Outcomes

Participant Number	Perceiving Emotion	Using Emotion	Understanding Emotion	Managing Emotion	Overall MSCEIT Score
1	55.97	78.24	86.81	109.14	76.94
2	102.40	95.36	102.29	108.74	105.62
3	119.04	86.69	105.36	89.41	99.50
4	99.82	95.87	112.04	103.21	106.67
5	114.68	92.29	99.77	110.96	108.72
6	121.04	111.31	93.16	102.17	110.31
7	111.45	88.45	101.54	93.65	100.08
8	131.50	99.52	106.27	109.98	112.30
9	108.43	109.26	115.31	95.44	111.14
10	99.34	102.35	94.97	115.28	106.90
11	86.85	111.17	91.09	107.96	97.45
12	99.78	78.47	107.78	101.24	96.64
13	101.44	98.62	98.53	110.71	105.96
14	98.77	109.26	96.42	108.68	106.67
15	97.91	94.93	88.80	115.22	100.16
16	108.0	111.18	102.24	111.22	112.60
17	85.65	84.32	93.97	105.77	89.46
18	131.82	119.99	108.81	110.96	127.45
19	97.37	87.89	87.85	101.93	90.86
20	108.61	66.59	100.00	79.77	84.35
21	98.64	78.37	105.18	102.23	94.93
22	126.95	113.48	93.18	102.25	111.49
23	114.19	101.03	78.34	112.56	101.39
24	90.89	111.40	102.89	112.37	105.47
25	93.53	93.80	96.49	112.35	100.25
26	99.31	118.15	91.62	111.01	108.00
27	77.35	101.87	97.75	96.93	89.08
28	89.77	84.42	109.88	106.28	96.10
29	86.31	103.94	104.36	86.95	91.54
30	107.24	116.33	85.77	102.87	103.65
31	104.60	92.75	87.76	105.35	98.74
32	116.07	111.75	100.81	106.27	113.64
33	125.86	107.92	112.04	108.61	121.27
34	130.63	104.66	94.94	108.16	112.44
35	106.45	86.83	91.10	108.70	100.07
36	79.10	113.76	96.43	85.81	87.65
37	99.11	123.39	102.86	106.50	111.17
38	120.73	99.38	104.89	109.14	113.43
39	94.25	103.30	92.45	78.58	88.81
40	99.78	108.06	112.19	105.48	111.47
41	34.55	55.93	83.47	78.86	58.98
42	112.20	103.29	100.82	112.73	112.76

The greatest variance in the participants' MSCEIT outcomes (Table 4.6) was in the first branch of EI; the ability to perceive emotions (SD = 19.14), and overall EI scores also varied significantly among the study participants (SD = 12.35). The least variance in MSCEIT scores was in the area of understanding emotion (SD = 8.60).

Perceiving emotion. The highest score achieved by a participant in the area of perceiving emotion was 131.82 (expert), and the lowest was 34.55 (needs improvement); (n=2/4.67%) of the participants scored in the needs improvement range (Table 4.6). Most of the participants (n=20/47.6%) fell in the competent range for this EI ability, and it was the only branch of emotional ability where any participants (n=3/7.14%) scored in an expert range.

Using emotion. The highest score achieved by a participant in the area of using emotion was 123.39 (skilled), and the lowest was 55.93 (needs improvement); (n=2/4.67%) of the participants scored in the needs improvement range (Table 4.6). The majority of participants (n=22/52.3%) fell in the competent range for this EI ability, and none of the participants scored in the range of expert for the ability of using emotion.

Understanding emotion. The highest score achieved by a participant in the area of understanding emotion was 115.31 (skilled), and the lowest was 78.34 (consider developing) (Table 4.6). The majority of participants (n=31/73.80%) fell in the competent range for this EI ability, and none of the participants scored in the needs improvement or expert range regarding the ability to understand emotion.

Managing emotion. The highest score achieved by a participant in the area of understanding emotion was 115.28 (skilled), and the lowest was 78.58 (consider developing) (Table 4.6). The majority of participants (n=26/61.90%) fell in the competent range for this EI ability, and none of the participants scored in the needs improvement or expert range regarding the ability to manage emotion.

Overall emotional intelligence. The highest overall score achieved for emotional intelligence by a participant was 127.45 (skilled), and the lowest was 58.98 (needs improvement) (Table 4.6). The majority of participants (n=22 / 52.3%) fell in the competent range for overall EI ability; however, (n=1/ 2.38%) of the participants scored in the needs improvement range regarding their overall EI ability.

Table 4.6. MSCEIT Scores: Mean, Highest Score, Lowest Score, SD, Mode, Median

MSCEIT Ability	μ =	Highest Score	Lowest Score	SD	Mo=	Md=	Needs Improvement n=/%	Consider Developing n=/%	Competent n=/%	Skilled n=/%	Expert n=/%
Perceiving Emotion	102.22	131.82	34.55	19.14	99.78	100.63	2 / 4.76	6 / 14.29	20 / 47.61	11 / 26.19	3 / 7.14
Using Emotion	98.81	123.39	55.93	14.46	109.26	101.45	2 / 4.76	9 / 21.42	22 / 52.3	9 / 21.42	0 / 0
Understanding Emotion	98.49	115.31	78.34	8.60	112.04	99.15	0 / 0	7 / 16.67	31 / 73.80	4 / 9.52	0 / 0
Managing Emotion	103.55	115.28	78.58	9.79	109.14	106.39	0 / 0	6 / 14.29	26/ 61.90	10 / 23.80	0 / 0
Overall EI	101.98	127.45	58.98	12.35	106.67	104.56	1 / 2.38	6 / 14.29	22 / 52.3	13 / 30.95	0 / 0

Exploratory data analysis. Spearman's rank correlation coefficient was the statistical analysis model used to investigate statistically significant relationships, positive and/or negative, between the outcome variables. None of the data collected from the demographic questions, NCTEI or MSCEIT was normally distributed and was instead rank order data. For this reason, Spearman's rank correlation coefficient (or Spearman's rho) was the chosen model used for the study's analysis. Pearson's correlation coefficient was not chosen for the research analysis due to the non-normal nature of the data collected, i.e., the data was given nominal and ordinal values. As a result, Pearson's model would not have effectively identified correlations among the rank order data sets.

A statistical analysis was performed on the continuous variables, which were the overall EI scores and the four EI sub-scores, i.e., perceiving, using, understanding, and managing emotion, and these were compared to the demographic data (Table 4.7), and outcome variables from the NCTEI survey (Table 4.8A–4.8F). A two-tailed test for significance was performed, since both negative and positive relationships were investigated in the analysis. In regard to the Spearman's rho outcomes, the closer the r_s = was to +1, the more positive was the correlation found between the continuous EI variables and the NCTEI and demographic outcome variables; the closer the r_s = was to -1, the more negative was the correlation. In addition, the correlations between the MSCEIT outcomes and the NCTEI and demographic outcomes were deemed as significant at ρ = .05 or less, and of greater significance at ρ = .001.

Demographic data and emotional intelligence. Spearman's rho analysis found significant correlations existed between the MSCEIT outcomes, and the demographic data (Table 4.7). More specifically, positive correlations were found between a participant's age and their score regarding their ability to use emotion (r_s = .321, ρ = .039) and overall EI (r_s = .435, ρ = 004). A negative correlation was found between a participant's level of education and the score they achieved in the area of managing emotion (r_s = -.330, ρ = .033), while the degree program where the participant taught (bachelor vs. associate degree program) was negatively correlated to scores on the ability to understand emotion.

NCTEI outcomes and emotional intelligence. Significant correlations were also identified between the NCTEI clinical teaching effectiveness variables and the scores on the four branches of the MSCEIT, and between the NCTEI outcomes and overall MSCEIT scores (Table 4.8A-4.8F). A positive correlation was found to exist between scores on managing emotion and an instructor's self-assessed ability to help students identify and make use of practice opportunities (r_s = .306, ρ = .049); a negative correlation was found between scores on understanding emotion and this same NCTEI variable (r_s = -.319, ρ = .040) (Table 4.8A).

A negative correlation was also identified between those instructors who acknowledged they had helped students organize their thoughts about patient problems and their MSCEIT scores regarding the ability to understand emotions (r_s = -.329, ρ = .034) (Table 4.8B).

Table 4.7. Correlations Between MSCEIT Outcomes and Demographic Data

Branches of EI and Overall EI	Spearman's Rho	Years of DH Practice	Years of DH Teaching	Age	Higher Ed Degree Achieved	Degree Earned in Program Where Teaching	Faculty Teaching Role: Full-time, Part-time, Admin	Teaching Hours Per Week/Per Semester
Perceiving	Correlation Coefficient ($r_{s=}$)	.041	.096	.101	.057	.011	-.037	.028
	Sig. (2-tailed) (*p* =)	.796	.545	.523	.720	.943	.814	.858
	N	42	42	42	42	42	42	42
Using	Correlation Coefficient ($r_{s=}$)	.086	.079	.321*	.092	.010	-.084	.061
	Sig. (2-tailed) (*p* =)	.588	.621	.039	.561	.948	.598	.703
	N	42	42	42	42	42	42	42
Understanding	Correlation Coefficient ($r_{s=}$)	.139	-.228	.061	-.027	.317*	.046	.038
	Sig. (2-tailed) (*p* =)	.381	.146	.701	.863	.041	.770	.812
	N	42	42	42	42	42	42	42
Managing	Correlation Coefficient ($r_{s=}$)	-.199	-.289	-.023	-.330*	.056	.182	-.070
	Sig. (2-tailed) (*p* =)	.206	.063	.884	.033	.724	.250	.659
	N	42	42	42	42	42	42	42
Overall EI	Correlation Coefficient ($r_{s=}$)	.111	.154	.435**	.004	.058	-.053	-.054
	Sig. (2-tailed) (*p* =)	.485	.332	.004	.978	.715	.737	.733
	N	42	42	42	42	42	42	42

In addition, the NCTEI variable regarding an instructor's promotion of student dependence was negatively correlated to their MSCEIT overall ability score of emotional intelligence (r_s = -.356, ρ = .021) (Table 4.8B). Instructor outcomes on the NCTEI, regarding the ability to recognize their own limitations, was positively correlated to MSCEIT scores on the ability to perceive emotion (r_s = .376, ρ = .014), and also on the MSCEIT overall score of emotional intelligence (r_s = .328, ρ = .034) (Table 4.8C).

Negative correlations were found between the instructor responses to the NCTEI variable of communicating expectations of students poorly and MSCEIT outcomes regarding the ability to use emotion (r_s = -.401, ρ = .009) as well as overall EI ability scores (r_s = -.369, ρ = .016) (Table 4.8D). The NCTEI variable regarding instructors' unrealistic expectations of students had a negative correlation to three of the MSCEIT scores, i.e., using (r_s = -.313, ρ = .044) and managing emotion (r_s = -.326, ρ = .035), and a strong negative correlation to overall EI ability (r_s = -.431, ρ = .004) scores (Table 4.8D).

The NCTEI variable asking instructors to self-assess themselves, regarding the frequency with which they criticized students in front of others, was positively correlated to the MSCEIT outcomes of using (r_s = .341, ρ = .027) and managing emotion (r_s = .347, ρ = .024) (Table 4.8E). Instructors' responses regarding providing support and encouragement to students on the NCTEI was also positively correlated to the MSCEIT outcomes in the ability to manage emotion (r_s = .355, ρ = .021). A positive correlation was also identified between the overall emotional intelligence

ability scores achieved on the MSCEIT and those instructors who indicated they encouraged a climate of mutual respect with students (r_s = .385, ρ = .013) and instructors who self-assessed themselves as attentive listeners (r_s = .428, ρ = .005) (Table 8E). A negative correlation was found between instructors who identified themselves as being disorganized and MSCEIT outcomes of perceiving emotion (r_s = -.353, ρ = .022) and using emotion (r_s = -.316, ρ = .042) (Table 4.8F).

Table 4.8A. Spearman's Rho Analysis – MSCEIT and NCTEI

Branches of EI and Overall EI	Spearman's Rho	Explained Clearly	Emphasized What is Important	Stimulated Student Interest in the Subject	Was Not Accessible to Students	Demonstrated Clinical Procedures and Techniques	Helped Students Identify and Make Use of Practice Opportunities	Offered Special Help When Difficulties Arise	Was Poorly Prepared for Teaching
Perceiving	Correlation Coefficient	.131	-.067	-.183	-.094	-.128	-.145	-.136	.022
	Sig. (2-tailed) (p =)	.409	.672	.247	.552	.419	.361	.390	.889
	N	42	42	42	42	42	42	42	42
Using	Correlation Coefficient	.154	.115	.112	.029	-.169	.075	.121	-.181
	Sig. (2-tailed)	.330	.470	.481	.853	.284	.636	.446	.252
	N	42	42	42	42	42	42	42	42
Understanding	Correlation Coefficient	.008	-.168	-.229	.007	-.002	-.319*	-.223	.278
	Sig. (2-tailed)	.962	.287	.145	.966	.989	.040	.157	.075
	N	42	42	42	42	42	42	42	42
Managing	Correlation Coefficient	-.011	.001	.031	-.001	.061	.306*	.212	.056
	Sig. (2-tailed)	.945	.994	.846	.995	.702	.049	.179	.727
	N	42	42	42	42	42	42	42	42
Overall EI	Correlation Coefficient	.176	.012	-.122	-.244	-.073	-.083	.067	-.040
	Sig. (2-tailed)	.264	.940	.441	.120	.646	.602	.673	.803
	N	42	42	42	42	42	42	42	42

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4.8B. Spearman's Rho Analysis – MSCEIT and NCTEI

Branches of EI and Overall EI	Spearman's Rho	Enjoys Teaching	Encouraged Active Participation in Discussion	Geared Instruction to Students' Level of Readiness	Understood What Students Were Asking or Telling	Carefully and Precisely Answered Questions Raised by Students	Questioned Students to Elicit Underlying Reasoning	Helped Students Organize Their Thoughts about Patient Problems	Promoted Student Dependence	Demonstrated Poor Clinical Skills and Judgment
Perceiving	Correlation Coefficient	.264	.103	-.035	.178	.020	-.046	-.022	-.197	-.011
	Sig. (2-tailed) (p =)	.091	.517	.826	.260	.898	.774	.891	.212	.942
	N	42	42	42	42	42	42	42	42	42
Using	Correlation Coefficient	-.060	.022	.130	.169	.140	-.019	-.051	-.099	-.124
	Sig. (2-tailed)	.707	.888	.411	.283	.376	.904	.749	.534	.435
	N	42	42	42	42	42	42	42	42	42
Understanding	Correlation Coefficient	-.078	-.109	-.203	-.097	-.271	-.092	-.329*	-.003	.185
	Sig. (2-tailed)	.624	.493	.197	.540	.083	.561	.034	.982	.242
	N	42	42	42	42	42	42	42	42	42
Managing	Correlation Coefficient	.178	.125	.147	.124	.125	.072	.055	.202	.033
	Sig. (2-tailed)	.260	.429	.352	.432	.431	.651	.728	.199	.837
	N	42	42	42	42	42	42	42	42	42
Overall EI	Correlation Coefficient	.278	.100	-.028	.259	.062	-.043	-.045	-.356*	-.146
	Sig. (2-tailed)	.075	.530	.862	.098	.695	.787	.779	.021	.355
	N	42	42	42	42	42	42	42	42	42

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4.8C. Spearman's Rho Analysis – MSCEIT and NCTEI

Branches of EI and Overall EI	Spearman's Rho	Demonstrated Good Communication Skills	Revealed Little Background Reading Had Been Done on Clinical Topics	Discussed Current Developments in the Dental Hygiene Field	Directed Students to Useful Literature in Dental Hygiene	Demonstrated a Breadth of Knowledge in Dental Hygiene	Recognized Own Limitations	Took Responsibility for Own Actions	Was a Good Role Model
Perceiving	Correlation Coefficient	.045	.111	-.010	.071	.043	.376*	.170	-.105
	Sig. (2-tailed) (p =)	.778	.491	.948	.654	.788	.014	.283	.509
	N	42	41	42	42	42	42	42	42
Using	Correlation Coefficient	.227	-.302	.106	.191	.054	.205	.288	.264
	Sig. (2-tailed)	.148	.055	.505	.225	.735	.194	.065	.091
	N	42	41	42	42	42	42	42	42
Understanding	Correlation Coefficient	-.085	.160	-.178	-.149	.073	-.258	.069	-.093
	Sig. (2-tailed)	.593	.317	.260	.346	.645	.100	.662	.557
	N	42	41	42	42	42	42	42	42
Managing	Correlation Coefficient	.083	.168	.233	-.030	.128	.280	.166	.262
	Sig. (2-tailed)	.603	.294	.137	.850	.420	.072	.292	.094
	N	42	41	42	42	42	42	42	42
Overall EI	Correlation Coefficient	.146	-.028	.119	.160	.223	.328*	.280	.122
	Sig. (2-tailed)	.357	.863	.454	.312	.156	.034	.073	.441
	N	42	41	42	42	42	42	42	42

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4.8D. Spearman's Rho Analysis – MSCEIT and NCTEI

Branches of EI and Overall EI	Spearman's Rho	Enjoys the Profession of Dental Hygiene	Made Specific Suggestions for Improvement	Provided Constructive Feedback on Students' Performance	Identified Students' Strengths and Limitations Objectively	Observed Students' Performance	Communicated Expectations of Students Poorly	Had Unrealistic Expectations of Students	Gave Students Positive Reinforcement for Good Contributions, Observations, and Performance
Perceiving	Correlation Coefficient	.255	-.066	.055	-.065	.203	-.087	-.174	.168
	Sig. (2-tailed) (p =)	.104	.678	.730	.683	.198	.585	.269	.288
	N	42	42	42	42	42	42	42	42
Using	Correlation Coefficient	-.128	.080	.027	.134	.253	-.401**	-.313*	.086
	Sig. (2-tailed)	.417	.613	.866	.398	.106	.009	.044	.586
	N	42	42	42	42	42	42	42	42
Understanding	Correlation Coefficient	-.192	-.034	-.205	-.018	-.003	-.159	-.141	-.093
	Sig. (2-tailed)	.224	.833	.193	.911	.986	.313	.374	.559
	N	42	42	42	42	42	42	42	42
Managing	Correlation Coefficient	.266	.285	.104	.024	.177	-.188	-.326*	.299
	Sig. (2-tailed)	.088	.068	.511	.878	.262	.233	.035	.055
	N	42	42	42	42	42	42	42	42
Overall EI	Correlation Coefficient	.171	.098	.140	.192	.510**	-.369*	-.431**	.222
	Sig. (2-tailed)	.279	.535	.377	.224	.001	.016	.004	.158
	N	42	42	42	42	42	42	42	42

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4.8E. Spearman's Rho Analysis – MSCEIT and NCTEI

Branches of EI and Overall EI	Spearman's Rho	Corrected Students Mistakes without Belittling Them	Did Not Criticize Students in Front of Others	Provided Support and Encouragement to Students	Was Unapproachable	Encouraged a Climate of Mutual Respect	Listened Attentively	Showed Personal Interest in Students	Demonstrated Empathy
Perceiving	Correlation Coefficient	.031	.137	.144	-.192	.221	.151	.241	-.083
	Sig. (2-tailed) (p =)	.845	.387	.364	.224	.166	.341	.125	.601
	N	42	42	42	42	41	42	42	42
Using	Correlation Coefficient	.140	.341*	.063	.069	.258	.267	-.147	.090
	Sig. (2-tailed)	.376	.027	.693	.665	.103	.087	.354	.571
	N	42	42	42	42	41	42	42	42
Understanding	Correlation Coefficient	-.101	-.093	-.084	.029	-.064	.001	-.208	.042
	Sig. (2-tailed)	.524	.559	.597	.854	.692	.997	.187	.790
	N	42	42	42	42	41	42	42	42
Managing	Correlation Coefficient	.192	.347*	.355*	-.250	.197	.177	.113	.087
	Sig. (2-tailed)	.223	.024	.021	.110	.216	.262	.476	.582
	N	42	42	42	42	41	42	42	42
Overall EI	Correlation Coefficient	.142	.219	.253	-.138	.385*	.428**	.105	.109
	Sig. (2-tailed)	.370	.163	.106	.384	.013	.005	.506	.492
	N	42	42	42	42	41	42	42	42

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Table 4.8F. Spearman's Rho Analysis – MSCEIT and NCTEI

Branches of EI and Overall EI	Spearman's Rho	Demonstrated Enthusiasm	Was a Dynamic and Energetic Person	Was Self-Confident	Used Criticism of Teaching Performance Constructively	Was Open-minded and Non-Judgmental	Had a Good Sense of Humor	Was Disorganized
Perceiving	Correlation Coefficient	.067	.041	.302	-.133	.165	.207	-.353*
	Sig. (2-tailed) (p =)	.679	.797	.055	.401	.298	.188	.022
	N	41	42	41	42	42	42	42
Using	Correlation Coefficient	-.014	.159	.231	-.086	.211	.043	-.316*
	Sig. (2-tailed)	.930	.314	.146	.589	.180	.788	.042
	N	41	42	41	42	42	42	42
Understanding	Correlation Coefficient	-.194	-.122	.067	-.110	.001	.113	.226
	Sig. (2-tailed)	.223	.442	.679	.490	.997	.476	.150
	N	41	42	41	42	42	42	42
Managing	Correlation Coefficient	.201	.246	.029	.093	.265	.191	.049
	Sig. (2-tailed)	.208	.117	.858	.556	.089	.225	.758
	N	41	42	41	42	42	42	42
Overall EI	Correlation Coefficient	.092	.071	.317*	-.106	.299	.072	-.160
	Sig. (2-tailed)	.566	.654	.044	.503	.054	.651	.313
	N	41	42	41	42	42	42	42

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

Regression analysis. Additional exploratory data analysis was performed, using a regression analysis, to identify those outcome variables which were the strongest predictors of emotional intelligence. A backward regression process was used to analyze the strongest correlations produced from the Spearman's rho analysis between overall EI scores achieved on the MSCEIT and NCTEI variables. This analysis produced a new set of outcome variable correlation coefficients and strengths. Another analysis was run, after the weakest correlation identified from the new data set was removed, which produced another data set with a new set of correlation coefficients and strengths. The process of removing the weakest correlation and running an analysis on the new data set was continued, until a model was produced identifying the strongest correlations predicting a high level of overall emotional intelligence.

The model produced by the analysis revealed the dental hygiene instructors who had unrealistic expectations of students, and who promoted dependence in their students, also possessed a lower level of overall emotional intelligence (Table 4.9). A test of the model began by taking the regression correlation coefficient (R= .621), which suggested a moderate to strong negative linear relationship existed between the two identified variable outcomes and the overall MSCEIT score of EI. The adjusted R^2 statistic (R^2 = .355) produced from the regression analysis, and which accounted for the study sample size, indicated the model accounted for 36% of the variance in overall EI of the study's participants. Research in behavioral science typically does not produce models with a statistical variance greater than 50% (Frost, 2013), therefore,

the variance of 36% produced from the analysis indicates a high level of strength exists in this model.

Table 4.9. Regression Analysis- Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig F. Change
1	.621[a]	.386	.355	.594	.386	12.269	2	39[a]	ρ = .000

a. Predictors: (Constant), Unrealistic Expectations, Promoting Student Dependence

The F-test of overall significance (Table 4.9) compared the model to a model with no predictors, and the *ρ value (ρ* =.000) supported the outcome of the regression analysis which suggested there is strength in the model, that is, an instructor's unrealistic expectations or promotion of student dependence are predictors of overall emotional intelligence.

The ANOVA (Table 4.10) determined if a statistically significant relationship existed between the dependent variable (overall emotional intelligence) and the NCTEI variables (unrealistic expectations and promoting student dependence). The *ρ value (ρ* =.000) produced by the ANOVA confirmed the existence of a linear relationship between the dependent and independent variables.

Table 4.10. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.652	2	4.326	12.269	ρ =.000[b]
	Residual	13.752	39	.353		
	Total	22.405	41			

a. Dependent Variable: Overall EI
b. Predictors: (Constant), Unrealistic Expectations, Promoting Student Dependence

When holding all demographic variables constant, the *ρ values for the* regression coefficients (Table 4.11), also indicated the variables of promoting student dependence (ρ =.001) and unrealistic expectations (ρ =.000) were strong predictors of overall emotional intelligence.

Table 4.11. Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.671	.327		14.307	ρ = .000
1 Promotes Student Dependence	-.229	.063	-.464	-3.636	ρ = .001
Unrealistic Expectations	-.433	.109	-.509	-3.983	ρ = .000

Thematic Analysis

Twenty-four (24) of the (n=42) participants who had indicated interest in participating in Phase II of the study, and who had completed both the NCTEI and the MSCEIT, were contacted via e-mail (Appendix K) and invited to participate in one-on-one interviews. Sixteen (16) of the (n=24) participants who were invited to participate in Phase II responded to the invitation, and (n=13) of the participants who responded scheduled a meeting day and time with the researcher. These thirteen (13) participants were sent a confirmation e-mail identifying the date and time of the scheduled interview, as well as a link for participants to access the virtual one-on-one Zoom© interview sessions. One of the 13 participants neglected to connect to the Zoom© session at the agreed upon day and time. Each of of the participant interviews

were held between the months of June and August of 2017, and had a duration of approximately 20-30 minutes.

Recordings of each of the Zoom© interviews were downloaded into an electronic MP4 video file, and then uploaded onto HappyScribe©, an online transcription service which uses cloud technology to transcribe and store the audio and video files. The raw transcription data was retrieved from the electronic document created and made available on the secured website. The transcribed data was placed into Word documents for use by the researcher. Once all interview data had been successfully retrieved from HappyScribe©, the interview files were deleted from the transcription service website.

The raw data from the transcribed interviews was reviewed and edited for accuracy in conjunction with replaying and listening to the video and audio recordings. After editing the transcribed data, a copy of the edited interview transcriptions was sent to each of the participants for their review to confirm accuracy. Each of the Phase II participants confirmed their respective interview transcriptions were accurate and required no correction or further editing. Once each of the participants had reviewed their interview transcript and confirmed its accuracy, the thematic analysis was launched.

The analysis began with the transcribed data and participants' responses being reviewed multiple times to identify potential patterns. The identified patterns were highlighted in the transcribed data and were compared to the codes developed prior to the study. Codes had been developed prior to the study, based on the approach

developed by DeCuir-Gunby, Marshall, and McCulloch, (2011). DeCuir-Gunby et al. (2011) used a theory-based approach to develop codes in three steps. The first step in this approach was to use the theory, on which the study was based, to develop codes, i.e., the Mayer-Salovey-Caruso (M-S-C) theoretical model of emotional intelligence, and the four branches of EI ability (Mayer, Salovey and Caruso, 2016). The codes developed prior to the beginning of the study are listed in Table 4.12.

Table 4.12. Pre-Data Collection Codes
Emotional Intelligence Defined
Perceiving Emotion in Self or Others Defined
Using Emotional (Empathizing) In Self or Others Defined
Understanding Emotion in Self or Others Defined
Managing Emotion in Self or Others Defined
Perceived Use of EI in DH Clinical Teaching
Perceiving Emotion in Self or Others
Using Emotional (Empathizing) in Self or Others
Understanding Emotion in Self or Others
Managing Emotion in Self or Others

The second step in the development of the codebook was to revise any pre-determined codes, or add additional codes based on the patterns which emerged from the thematic analysis. The revised codes which emerged from the data analysis are shared in Table 4.13.

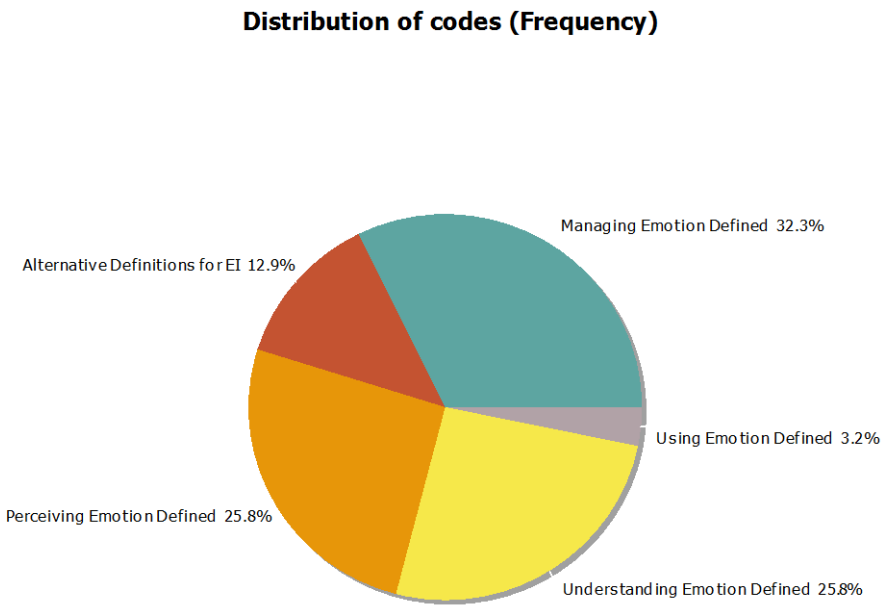
Table 4.13. Codes Developed from Thematic Analysis
Emotional Intelligence Defined
Perceiving Emotion in Self or Others Defined
Using Emotional (Empathizing) In Self or Others Defined
Understanding Emotion in Self or Others Defined
Managing Emotion in Self or Others Defined
*Alternative Definitions of EI
Perceived Use of EI in DH Clinical Teaching
Perceiving Emotion in Self or Others
Using Emotional (Empathizing) in Self or Others
Understanding Emotion in Self or Others
Managing Emotion in Self or Others
*Successful Interventions and Resolutions
*Immediate Intervention or Response
*Unsuccessful Interventions and Resolutions
*Delayed Intervention or Response
* Previous Personal Experience

* Codes created after conducting data analysis

Code Analysis Using QDA Miner Lite

The third step was to confirm the accuracy of the frequency of the codes developed as part of the thematic analysis of the data. For the purposes of this study, QDA Miner Lite v.2.0.2© (QDAML), an online qualitative analysis software program assists in the organization of qualitative data and can analyze the frequency of codes developed by the researcher, and helps with the efficient retrieval of interview data. The process to analyze code frequency began with the interview transcriptions being uploaded into the QDAML software, and entering the codes developed by the researcher (Table 4.13). Once the transcriptions and codes had been entered into the QDAML program, and analysis was performed to compare the results of the researcher's analysis to the software outcomes. The QDAML analysis supported the researcher's chosen codes and identification of frequency (Figure 4.1), i.e., participants' responses indicated managing emotion was the most frequently identified branch of EI by definition. Using emotion was the least identified branch of EI identified by the participants, and the identification of alternative definitions for EI, not found in the M-S-C model, were identified by participants more frequently than was the ability to use emotions.

Figure 4.1. Participants' Responses for Emotional Intelligence Defined



In regard to the use of EI in clinical teaching situations, the outcomes of the QDAML analysis revealed the most frequently identified branch of EI used in clinical teaching situations was managing emotion, while using emotion was identified with the least frequency (Figure 4.2). These outcomes supported the identified codes developed by the researcher and their frequency which provided guidance in the identification of the themes which emerged from the participants' responses.

Figure 4.2. Frequency of Participants' Identification of Branches of Emotional Intelligence

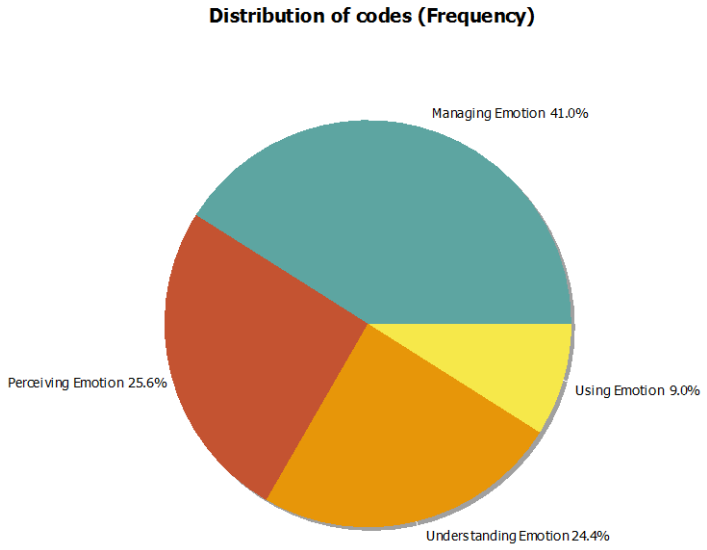


Table 4.14 shows the QDAML analysis of individual instructors' use of the four branches of the M-S-C ability model (Mayer et al., 2016), and the association between the immediate intervention and successful resolutions, and the relationship between delayed intervention and unsuccessful resolution. (Each of the participant numbers listed in Table 4.14 is cross-referenced with the participant number found in Table 4.5 which reported MSCEIT outcomes.) The QDAML analysis revealed only half of the participants used all four EI ability branches in their clinical teaching experiences, while all the participants (n=12) identified the use of managing emotions. This outcome supported the emerging theme identified by the researcher regarding the predominance of the use of managing emotions by instructors in their clinical teaching experiences. This theme will be explained further in a subsequent section which will discuss, more expansively, the emerging themes revealed from the thematic analysis.

Table 4.14. Mayer-Salovey-Caruso (2016) Branches of Emotional Intelligence Ability Use Identified by Participants and Relationships to Successful Interventions and Unsuccessful Outcomes

Participant	**Branches Identified by Participants in Response to Use of EI in Clinical Teaching**				**Relationships to Successful Interventions and Unsuccessful Outcomes**	
	Perceiving Emotion	Using Emotion	Understanding Emotion	Managing Emotion	Overlap of Immediate Intervention and Successful Resolution	Overlap of Delayed Intervention and Unsuccessful Resolution
1	x		x	x	x	
3	x	x	x	x	x	x
5	x	x	x	x	x	x
13		x	x	x	x	x
15	x	x	x	x		
16	x			x		x
18	x			x	x	
19	x	x	x	x	x	x
21	x	x	x	x	x	x
32	x	x	x	x	x	x
33			x	x	x	x
35	x		x	x	x	x

The overlap between the use of participants' EI ability, immediate intervention and their perceived successful resolution of a difficult situation with a student is also illustrated in Table 4.14. Conversely, an overlap was also identified between a lack of EI ability used in unsuccessful resolution to difficult situations, and delayed action by the instructor to resolve the student situation (Table 4.14). These outcomes supported the second and third emerging themes revealed by the researcher's thematic analysis which will be discussed later in the chapter.

Participants' Responses to Open-ended Questions

Demographic data for each of the (n=12) participants is outlined in Table 4.15. Each of the participant numbers listed in Table 4.15 is cross-referenced with the participant number found in Table 4.5 which reported MSCEIT outcomes.

Table 4.15. Demographic Data – *Phase II Participants

Participant #	Years of Age	State Where Participant Teaches	Years of DH Clinical Practice	Years of DH Clinical Teaching Experience	Highest Level of Education Achieved by Participant	Degree Earned by Students in Program Where Participant Teaches	Faculty Role in DH Program	Clinical Teaching Hours per Week/ per Semester
1	41-50	MA	10+	3-5	Masters	Associates	Full-time	9-16
3	41-50	LA	10+	10+	Masters	Bachelors	Full-time	17-24
5	41-50	MI	10+	0-3	Masters	Associates	Full-time	9-16
13	20-30	TX	3-5	0-3	Bachelors	Bachelors	Part-time	9-16
15	51-60	ME	10+	0-3	Bachelors	Bachelors	Part-time	4-8
16	61+	MA	10+	10+	Bachelors	Bachelors	Part-time	9-16
18	51-60	MA	10+	3-5	Associates	Bachelors	Part-time	4-8
19	41-50	NC	10+	10+	Masters	Associates	Full-time	9-16
21	31-40	NC	7-10	5-7	Associates	Associates	Part-time	9-16
32	51-60	RI	10+	10+	Masters	Associates	Full-time	17-24
33	41-50	AZ	10+	0-3	Masters	Bachelors	Full-time	9-16
35	41-50	RI/MA	10+	7-10	Masters	Associates	Part-time	17-24

*****All (n=12) participants reported their gender was female and ethnicity was Caucasian/white.

Each of the participants (n=12) who joined in the interviews were able to answer the questions posed to them, however many of them needed to have the questions repeated and also requested clarification regarding what the questions were asking. No relationships were identified between the participants' demographic data (Table 4.15) and their responses to the open-ended interview questions. This outcome from the thematic analysis contradicted the findings from the statistical analysis which found a significant correlation existed between a participant's age and the outcomes of the MSCEIT.

Recognizing EI ability in participant responses. The identification and interpretation of EI ability, reflected in participants' responses and the four branches of EI (Mayer et al., 2016), were performed and based on guidelines found in the MSCEIT training manual (Caruso, 2015). The identification of trigger words, statements and behaviors demonstrated, which reflect the four branches of EI ability (Mayer et al., 2016), are shared in Table 4.16.

Table 4.16. Key Words, Behaviors, and Statements Reflective of the Four Branches of Emotional Intelligence (Caruso, 2015; Mayer et al., 2016)

Branch of Emotional Intelligence	Words, Statements and Behaviors Reflective of the Four Branches of Emotional Intelligence (Mayer et al., 2016)
Perceiving Emotion	Key words: “recognizing,” “seeing,” “awareness of,” and “reading” facial cues; recognizing emotional behaviors in self and others; asking how an individual is feeling and recognizing physical sensations and behaviors in self and others
Using Emotion	Showing empathy or stating shared emotion between self and others; applying one’s emotions to others to generate emotion in others and build trust; matching the mood of self and others to the task at hand
Understanding Emotion	Identifying and predicting what may have occurred prior to and what will follow the display of emotion in self and others; possessing a strong and extensive emotional vocabulary when describing emotions and emotional situations
Managing Emotion	Decision-making and actions taken by self to resolve situation based one or all of the three other abilities of EI (perceiving, using and understanding emotion.); cope with stress and calm others down, engage and energize others, ability to manage self-emotion and identify when to share own emotion

Emerging Themes

A review of the transcripts and early analysis of the twelve interviews indicated data saturation had been reached, and no attempt was made to reschedule the last of the planned one-on-one interviews, or to recruit additional participants. The analysis of the responses from the (n=12) interviews revealed the original codes developed prior to data collection (Table 4.12) were reflective of the patterns which emerged from the participants' responses. However, additional patterns emerged from the analysis of the responses of participants, and additional codes were identified and added to the original list to reflect the additional patterns revealed from the data analysis (Table 4.13). The additional codes were in regard to the application of EI in clinical teaching and led to two of the emerging themes revealed by the data analysis.

Three major themes emerged from the thematic analysis, and these were in regard to the participants' perceived use of emotions in their role as DH clinical instructors. Although all four branches of EI were referenced by the participants as playing an important role in their approach to clinical teaching, a pattern of responses regarding management of emotions of students emerged as the central themes in the analysis.

Theme #1 –Management of emotions is the primary EI ability used by instructors in their clinical teaching, but is most successful in resolving difficult situations, when used in combination with other EI abilities. Participants' responses to the interview questions revealed instructors used multiple EI abilities, and an interrelation of these abilities, in dealing with difficult clinical teaching situations.

However, the use of managing emotions was the predominant EI ability identified by the participants; each of the 12 participants suggested its use when discussing resolution to difficult clinical teaching experiences. The participants who did not use other EI abilities, besides managing emotion, were also found to have lower MSCEIT scores. The first examples shared here illustrate how participants' responses reflected the use of multiple branches of EI in their approach to successfully managing difficult situations with students:

A profile of participant #21 is also shared here:

Participant #21 Age	**Years of DH Clinical Practice**	**Years of DH Teaching**	**Faculty Role**	**Level of Education Achieved**	**Overall MSCEIT Score**
31-40	7-10	5-7	Part-time	Associates	99.5

The responses to the interview questions from participant #21 reflected the use of perceiving and understanding emotion in conjunction with the use of managing emotion to resolve a difficult student situation:

"When we sat down and talked [after the session] she went from being frustrated, to feeling bad about herself and not living up to standards and feeling inadequate" (perceiving emotion). "I think recognizing" (perceiving emotion), "and understanding how [the student] must be feeling" (understanding emotion), "in that moment helped me to rectify the situation without making her overly upset or making the situation worse" (managing emotion).

Participant #18 also used a combination of two branches of EI ability to resolve a difficult student situation. Participant #18's profile is shared below and is

followed by her description of how she came to a successful resolution with the use of two branches of EI ability; understanding emotion and managing emotion.

Participant #18 Age	Years of DH Clinical Practice	Years of DH Teaching	Faculty Role	Level of Education Achieved	Overall MSCEIT Score
51-60	10+	3-5	Part-time	Associates	117.54

"I'd had difficulty with [the student] before and was thinking about how I could defuse the situation (understanding emotion). I decided that being loud, or being forceful myself, would have escalated things" (understanding emotion). "I decided to do exactly the opposite and became very quiet and give her the stage…that's how I diffused the situation" (managing emotion).

Participant #5 used two other EI abilities, together with managing emotion in a difficult situation. A profile for participant #5 is shared here, and is followed by the response given to the question which asked how she had used emotional intelligence to resolve a difficult situation:

Participant #5 Age	Years of DH Clinical Practice	Years of DH Teaching	Faculty Role	Level of Education Achieved	Overall MSCEIT Score
41-50	10+	0-3	Full-time	Masters	108.72

"[Students] are often in a place emotionally (perceiving emotion) where they can't learn from any instructor because they're worried or upset (understanding emotion). I had a student who was not going to pass clinic and be able to progress. I walked her through how her grade was tabulated. It ended up with her sobbing …and then this student took me to the Dean's office regarding the grade that she received in

clinic. [After this] I tried to redirect the student or help her in some way (managing emotion). Then the next semester the student turned around and asked me to mentor her…I would have missed out [on a good relationship with this student] (understanding emotion) if I had let my emotions and her emotions get in the way" (managing emotion).

An example of a participant whose responses did not suggest the use of multiple EI abilities when resolving a difficult situation follows. Participant #1 discussed only the management of an emotional student when describing her approach to a difficult situation, and is quoted following the profile of participant #1 shared here:

Participant #1 Age	**Years of DH Clinical Practice**	**Years of DH Teaching**	**Faculty Role**	**Level of Education Achieved**	**Overall MSCEIT Score**
41-50	10+	3-5	Full-time	Masters	76.9

"One example is when a student didn't perform well on an exam. They were upset with their overall grade because it wasn't indicative of how they performed over the course of the class. The way I handled that was to listen to the student…I had her come to my office and we went through the entire exam again to see where the issues were (managing emotion). I think after that she still felt she could have performed better, but she had a better understanding of why she deserved the grade that she got on the exam."

Theme #2 –Immediate intervention and use of emotional intelligence ability when successfully managing difficult student situations. A second theme emerging from the analysis was the identification of a relationship between immediate

intervention in difficult student situations and the use of multiple branches of EI in reaching successful resolution. Participants who immediately intervened when managing difficult situations were also those who defined EI using more than one branch of EI in their definition. The participants who used multiple EI abilities also achieved MSCEIT scores which fell in the range of “competent” or “skilled” EI ability. Examples of the participants’ responses, which supported theme #2, are shared below.

Participant #3’s MSCEIT score indicated her EI ability fell in the “competent” range, and a profile of participant #3, and her responses, are shared here:

Participant #3 Age	**Years of DH Clinical Practice**	**Years of DH Teaching**	**Faculty Role**	**Level of Education Achieved**	**Overall MSCEIT Score**
41-50	10+	10+	Full-time	Masters	99.5

When asked to define emotional intelligence, Participant #3’s response included more than one branch of EI, and was as follows:

“I think it is the ability to recognize other people’s emotions” (perceiving emotion), “and where they are on the spectrum of dealing with their emotions” (understanding emotion).

Participant #3 went on to describe her immediate intervention, when resolving a difficult situation with a student as follows:

“Sometimes I will say, ‘Let’s step out here and let me talk to you about this.’ So I take them out of that situation and let them verbalize to me why they are upset. Then I try to repeat it back to them to help them get it out because most all of the time

it's about something that happened in the course of the appointment. So, once they get it out they usually can get it together and go on with what they were doing."

When asked to share an example of her most emotionally intelligent moment in a teaching situation, participant #3's response reflected the use of all four branches of emotion when describing this moment in the following response:

"We had a student commit suicide in the middle of the semester. It was over a weekend so we gathered the students together on Monday morning. You just kind of had to read everybody and what they needed" (perceiving emotion). "They just needed to know that we were all together and on the same page, and that this was horrible…they just needed to know that their faculty were just as hurt, and loved them and that we were all together" (using emotion). Some wanted to be hugged, and some wanted to be left alone…you don't know what they came in with. One [student] had a brother who committed suicide, and this particular episode had brought all that to the front again" (understanding emotion). "We cancelled classes and gathered them together …and on this day we stood there in the classroom and held hands and prayed together" (managing emotion).

Participant #33's responses to open-ended questions, and MSCEIT outcomes, provided another example of how the combination of EI ability, participants' perceived definition, and the use of immediate intervention to effectively resolve difficult student situations, led to emerging theme #2. Participant #33's overall MSCEIT outcomes also reflected her responses to the interview questions, as her EI

scores fell in the “skilled” range. Participant #33’s profile and responses to the interview questions is shared here:

Participant #33 Age	Years of DH Clinical Practice	Years of DH Teaching	Faculty Role	Level of Education Achieved	Overall MSCEIT Score
41-50	10+	0-3	Full-time	Masters	121.27

When asked to define EI, participant #33 responded as follows:

“I think it has to do with the ability to understand, notice (perceive emotion) and control your feelings (manage emotions) despite somebody else's response or emotions or feelings,” (understanding emotion).

The situation participant #33 described, when asked to share an example of how a difficult student situation was resolved, revealed the use of immediate intervention had led to successful resolution:

“One of my students had her brother-in-law as her patient and she let her emotions show [with him]. So, I pulled her out into the hallway and told her she needed to take a break. Once she told me what was going on and how I could help her it pretty much resolved itself.”

When asked to describe her most emotionally intelligent moment, participant #33 used an example which reflected the use of multiple branches of EI:

“Things were not going well [for this student] with the other students and she began to cry (understanding emotion). I just want to hug [the student], and I want to say it's going to be okay [using emotion]…I just let her cry and I let her have that feeling (managing emotion). We discussed maybe why she was having the feeling and

what she wanted to do from here, but I decided I was not going to take on [the student's emotion]. I'm going to just let her feel it and I'll be here to listen (managing emotion).”

Theme #3 - The ineffectiveness of delayed intervention in response to difficult situations. When participants were asked to identify a situation where they had been unsuccessful in resolving a difficult situation in the clinic, most were able to respond with a specific example. The majority of the participants also suggested a lack of resolution had occurred as a result of delaying their response to the student or attending to the issue at hand. In these instances the instructors suggested their lack of ability to manage emotion led to unsuccessful resolution. Most of these participants also shared alternative solutions and, in hindsight, suggested successful resolution would have resulted had they chosen to intervene at the time the difficult situation arose. These same participants were also those found to have used multiple branches of EI when describing their approach to resolving difficult student situations (Table 4.14), and also achieved scores on the MSCEIT falling in the range of “competent” or “skilled.” Examples of the responses and profiles of these participants, reflecting theme #3, are shared here:

When asked to share a difficult clinical situation which was not successfully resolved, participant #13 responded as follows:

Participant #13 Age	Years of DH Clinical Practice	Years of DH Teaching	Faculty Role	Level of Education Achieved	Overall MSCEIT Score
20-30	3-5	0-3	Part-time	Bachelors	105.96

"I had a student who believed she should receive more points or a higher level for the patient she was treating. She took it to another person right above me…our clinic director. I didn't feel as though that ended very smoothly…a discussion at the moment, rather than waiting until after she had already gone [to another instructor] and tried to get it approved, would have been better."

Participant #19 Age	Years of DH Clinical Practice	Years of DH Teaching	Faculty Role	Level of Education Achieved	Overall MSCEIT Score
41-50	10+	10+	Full-time	Masters	105.96

Participant #19 responded to the question regarding a difficult situation which had gone unresolved using this example:

"We were watching a student during an exam…it was very nerve-wracking for students to have faculty stand over them watching... she threw her instruments down and pulled her gloves off and got up and walked away from the patient. I think if I were to have that situation again, I would probably intervene earlier."

Participant #32 also reflected on how she would have changed her approach to a difficult student situation encountered, and was also reflective of theme #3. Her profile and response are shared as follows:

Participant #32 Age	Years of DH Clinical Practice	Years of DH Teaching	Faculty Role	Level of Education Achieved	Overall MSCEIT Score
51-60	10+	10+	Full-time	Masters	113.64

"I had a difficult situation with a student when I was trying to correct them and the student received what I said in a different way. She [the student] had received it as

a negative. I don't think I read her the right way. I think it's all about realizing somebody's perception, not only for yourself, but also for the student and seeing those cues properly. At the end [of the clinic session] I said, ‘Why didn't you say something to me about that?’ So I told [the student] I wish I had known so I could have helped her differently.”

Summary

The exploratory data analysis, and backward regression analysis, identified statistically significant correlations between the NCTEI and MSCEIT outcomes. The thematic analysis produced emerging themes reflecting the instructors’ perceptions of role and use of emotional intelligence in DH clinical teaching effectiveness. The next chapter will interpret the outcomes produced by these findings, and also compare the quantitative findings to the qualitative outcomes. From this discussion, limitations to the study identified, conclusions will be drawn, and recommendations for future research made.

Chapter Five: Conclusions

Dental hygiene students have identified clinical instructors' emotional support, and their ability to empathize, as highly important instructor attributes in the clinical learning environment (Paulis, 2011). Despite this evidence, the existence of a link between a clinical instructor's level of emotional intelligence (EI) and their effectiveness as a clinical instructor has not been examined in DH education. This study sought to identify the existence of a relationship between the teaching effectiveness of dental hygiene (DH) clinical instructors and their level of emotional intelligence (EI).

Summary of the Study

The behaviors contributing to strong interpersonal relationships between clinical instructors, found to contribute to effective clinical teaching (Esmaeili, Cheraghi, Salsali & Ghiyasvandian, 2014; Smith, Swain & Penprase, 2011), were also the elements found in the framework and constructs of EI theory (Bar-On, 2010; Goleman, Boyatzis, R., & McKee, 2002; Mayer, Salovey & Caruso, 2016). The majority of literature investigating EI constructs, has focused on the validity of emotional intelligence models and the instruments used to measure EI (Joseph & Newman, 2010; Roberts, MacCann, Matthews & Zeidner, 2010). In addition, two major emotional intelligence constructs have consistently emerged from the literature; an ability-based and two trait-based EI models (Joseph & Newman, 2010; Roberts et al., 2010). However, the trait-based models have been found to lack significant correlation with cognitive ability, while the ability-based construct have been highly

correlated with cognitive ability (Van Rooy, Viswesvaran & Pluta, 2005). The ability-based EI model was found to be used most frequently in the studies investigating EI in health professions education, however, the ability-based model was not found to be used in any studies examining the relationship between EI and clinical teaching effectiveness.

Two validated assessments used to measure CTE and EI were identified for use in the study, i.e., the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) and the modified version of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI). The clinical instructors (n=42) who participated in the mixed methods study were recruited from dental hygiene programs throughout the US, with 19 states represented in the study. Statistical analysis was performed on the outcomes of both the NCTEI and the MSCEIT, with demographic data collected from participants also included in the statistical analysis. The exploratory data analysis, using Spearman's ranked correlation coefficient and regression analysis, revealed strong correlations existed between DH instructors with unrealistic expectations of students, or who promoted student dependence, and lower MSCEIT scores.

The participants (n=12) who continued onto the second phase of the study were recruited from the pool of participants who had completed both the NCTEI and MSCEIT assessments. An online virtual meeting platform was used to conduct one-on-one interviews with participants, with open-ended questions asked regarding the participants' perceptions of emotional intelligence and its role in DH clinical teaching. A thematic analysis was performed on the qualitative data collected from the

interviews, and results compared to the quantitative outcomes produced from the NCTEI and the MSCEIT.

Discussion

The findings from the study supported much of the previous research on effective clinical teaching in the health professions, but other outcomes from the research contradicted findings from earlier studies. The mixed methods approach used in the study was found to be successful in interpreting many of the quantitative outcomes. However, in parallel to outcomes identified in previous research, contradictions were also found between the participants' responses in the interviews and the quantitative outcomes. This next section will discuss the parallels, and attempt to explain the contradictions, revealed from the research.

Demographic data and NCTEI and MSCEIT outcomes. The positive correlation identified in this study between a person's age and their EI ability was in contrast to the Allen et al. study (2012) which did not find any correlation between EI ability and an individual's age. In addition, the correlation revealed in this study's statistical analysis, between age and EI ability was not supported in the findings from the qualitative analysis.

The contradictory outcomes found in this study, and with those of Allen et al. (2012), are reflected in the lack of consensus found in previous research on the relationship between EI and an individual's age (Fariselli, Ghini, & Freedman, 2008; Shipley, N., Jackson, M., & Segrest, S., 2010). In their white paper from 2008, Fariselli et al. purported age as a predictor of emotional intelligence. Fariselli, et al.

(2008) also proposed EI was an ability which can be developed over the lifespan, and a result of cumulative life experience. In contrast, the findings of Shipley et al. (2010), suggested there was no correlation between age and EI ability. Based on differences found between this study's outcomes, and the findings identified in previous research, it could be posited the existence of a relationship between an individual's age and their level of EI ability is still unknown.

MSCEIT outcomes. The outcomes of the MSCEIT revealed the DH clinical instructors were overall competent in EI ability, particularly in the area of managing emotions. These outcomes were in parallel to the findings from the Allen, Ploeg, and Kaasalainen study (2012) in their investigation of the relationship between emotional intelligence and clinical teaching effectiveness. The Allen et al. study (2012) revealed clinical nursing instructors fell into an average range of EI ability, and in managing emotion. However, the Allen et al. study (2012) used a different research instrument to measure EI (the EQ-i:S) (Bar-On, 2010), and this may impact the ability to draw this parallel between this study, and Allen et al.'s (2012) research.

MSCEIT and NCTEI outcomes and analysis. The findings and conclusions which suggest a link exists between emotional intelligence ability and a DH clinical instructors' teaching effectiveness, is supported by previous research, i.e., emotional competencies overlap the attributes identified by both students and faculty as important to clinical teaching effectiveness (Allison-Jones & Hirt, 2004; Elcigil & Sari, 2008; Esmaeili et al., 2014; Hou et al., 2011; Knox & Mogan, 1985; Mogan & Knox, 1987; Nehring, 1990**;** Oyeyemi, et al., 2013; Paulis, 2011; Schönwetter, et.al.,

2006; Smith et al., 2011). The Allen et al. (2012) research, which was in close parallel to this study, found a correlation between CTE and EI in nursing education, and this outcome confirmed the link revealed in this study between CTE and EI in the DH clinical teaching setting.

Further, the strong correlation identified in the outcomes of the exploratory data analysis performed on the NCTEI and MSCEIT outcomes supported previous research which suggested an overlap exists between dental hygiene instructors' clinical teaching effectiveness (CTE) and their EI ability (Paulis, 2011; Schönwetter, et al., 2006). However, the specific relationship between negative teaching behaviors and low scores on the MSCEIT, identified by the backward regression analysis performed in this study, is a new finding which has not yet been identified in previous research.

Thematic analysis outcomes. The outcomes of the thematic analysis were strengthened by the use of triangulation and strengthened the validity of the qualitative data (Patton, 2002). More specifically, each of the participants were provided a copy of their interview transcripts for their review and confirmation of the accuracy of their statements. In addition to the manually performed thematic analysis, the use of an online qualitative analysis software program, QDA Miner Lite©, was employed to confirm the frequency of the codes developed by the researcher.

The emerging themes produced from the analysis of the qualitative data, which suggested immediate intervention is more effective than a delayed response in addressing difficult situations in the DH clinical setting, was supported by research

conducted by Beattie et al., (2014). In the Beattie et al. (2014) study, conducted in the dental and dental hygiene educational settings, a conflict resolution model was used to measure its effectiveness in improving the skills of students when addressing difficult instructor and patient situations. The conclusions drawn by the authors suggested the set of conflict resolution skills provided to students, helped them to manage difficult patient and instructor situations when used in the midst of patient care sessions (Beattie et al., 2014). Although the skill set was evaluated using student participants, improved conflict resolutions were observed in difficult clinical situations when employed during the patient care session (Beattie et al., 2014).

The comparison of the quantitative and qualitative data. The interviews conducted with participants were intended to help explain the MSCEIT scores, and the NCTEI self-assessments. The interview responses of the 12 participants, who participated in Phase II of the study, were found to provide further understanding of and reflected the Phase I quantitative outcomes. When compared to their MSCEIT scores, most of the participants' responses to the interview questions were reflective of both their strong and weak areas of EI ability.

For example, participant #19 scored higher on the MSCEIT in their ability to perceive and manage emotion than in their ability to use or understand emotion. This participant's outcomes were supported in the outcomes shared in Table 4.5, from the previous chapter, which revealed participant #19's responses to the open-ended questions demonstrated a stronger ability to perceive and manage emotion, than in

their ability to use and understanding emotion. This was illustrated through the following response from participant #19:

"This [student] was never very receptive or very responsive. She was always edgy, and by the time she left there she hated every one of us" (perceiving emotion). "We were watching her [during the exam] and…she throws her instruments down and pulls her gloves off and gets up and walks away from the patient. [Next time] rather than have us all watching I would say, 'You're a little bit nervous right now. Let's give you a couple minutes,' and I would walk away from that situation" (managing emotion).

Another example of the qualitative data helping to explain the quantitative outcomes, was in looking at the outcomes of participant #1. This participant's MSCEIT scores fell in the range of "consider developing" for each of the areas with the exception of her ability to manage emotions. The responses of participant #1 to the interview questions reflected the MSCEIT outcomes (Table 4.5) and this instructor's ability to manage emotion, but a lack of ability in using the three other branches of EI. In the following response from participant #1, the student's emotions were not recognized and the focus by the instructor was only on managing the situation with the student:

"The student was doing something that I didn't agree with them doing and I kind of jumped in. But unbeknownst to me they were told by another instructor that they could do this. How I resolved that was after I found that the student was told to

do [the skill] that way, I pulled the student aside and told them I had not realized that the other instructor had told the students that they could do what they were doing."

In addition to the correlation found between participant #1's MSCEIT scores, and the responses to the interview questions, her NCTEI scores fell below the mean in the self-assessment of the negative teaching behaviors; promoting dependence and possessing unrealistic expectations of students. This outcome supports the findings from the regression analysis which found a strong correlation between participants' low MSCEIT scores and self-assessed negative teaching behaviors.

Participant #1's MSCEIT scores, and lack of ability in each of the other EI branches, contradict the concept of managing emotion. Mayer et al., (2016) have purported the ability to manage emotion is related to possessing EI ability in the other three branches, i.e., perceiving, using, and understanding emotion. However, the outcomes of participant #1 may be explained by an individual's ability to successfully manage emotion by rote (Caruso, 2015). That is, when individuals have identified a pattern of success in outcomes from previous experiences they may use this in the management of themselves and others to resolve difficult situations (Caruso, 2015).

Further, if the use of additional MSCEIT sub-scores, including experiential and reasoning, scatter, and positive and negative bias scores, had been considered in the analysis, it may also have provided further explanations for any of the seemingly contradictory qualitative outcomes (Caruso, 2015). For example, participant #16 achieved an overall EI score of 112.60, and a using emotion score of 111.18, placing her in the "skilled" range, for overall EI and in the ability to use emotion. These scores

appeared to contradict her statements. Not only did the clinical teaching situation she relayed lack identification of a resolution to the student situation, none of the words, statements and behaviors identified in her response to the question reflected use of any of the branches of EI (Table 4.16).

Participant #16:

"[The student] just stared at me as if to say 'I thought I was going to be taught this.' He had kind of an expectation of this from me. I said, 'You really have to do your part at home so that when you come in [the skills we are doing in clinic] make sense,' but he did not have a clue about what was being taught."

Further analysis of participant #16's MSCIET score, and inclusion of other sub-scores in interpreting the MSCEIT outcomes, explain the seemingly contradictory response shared in this example (Caruso, 2015). More specifically, if an individual has scored high in using emotions, but also has a high positive bias score, they may be more likely to exhibit impatience for individuals who are struggling or seemingly helpless (Caruso, 2015).

Other contradictions revealed between MSCEIT outcomes and the participants' responses may be explained by Mayer et al.'s (2002) early work. Mayer et al.'s model of EI (2016) recognizes EI as an ability and form of intelligence which is measured in the same way as other forms of intelligence. As a result, the self-reporting nature of EI ability evaluated through the open-ended questions used in the study may not necessarily have reflected an individual's ability or level of emotional intelligence (Mayer et al., 2002). This explanation for contradictory outcomes was

illustrated in participant #21's description of her use of empathy with students in the clinical setting:

"I'll talk with the students about my very first experience failing an exam. Because everybody thinks that I did perfect throughout my entire career, right? So we will stand in clinic, and I tell them about the Gracey instrumentation exam where I thought I did a beautiful job. I ended up failing my exam. I tell them how that crushed me. I had done so well on so many things and that it was very "ego blowing."

Although participant #21 suggested in her response of the use of the ability to use emotion with students in the clinical setting, relaying her own experiences as a student may not have demonstrated true empathy or an application of her emotion to the students' situation. Interestingly, this participant's MSCEIT outcome, regarding her ability to use emotion (78.37), fell in the range of "consider developing."

Despite the outcomes of the participants' responses to the interview questions appearing to be contradictory to their MSCEIT scores, further analysis using additional MSCEIT sub-scores could help to explain the relationship between the quantitative outcomes and the participants' interview responses. The omission of the analysis using MSCEIT sub-scores may be a limitation of the study and will be discussed next along with other limitations identified by the researcher.

Limitations

The interpretation of the interrelationship between the branches of EI proposed in the Mayer et al. (2016) model, and lack of integration of the use of the subset of data produced by the MSCEIT in the data analysis, were both limitations of the study.

In addition, the bias of the researcher, in interpreting the EI abilities identified in the responses of participants regarding their teaching practices, may also have been a study limitation. The self-assessment design of the NCTEI may also have led to subjectivity and bias on the part of the participants, as well as recall bias regarding situations which have occurred in the DH clinical teaching setting.

Misinterpretation by participants of the NCTEI survey, and CTE attributes, used to assess their CTE, may have also occurred. In addition, reliance on the NCTEI, which was a tool designed for use in nursing education, may not have addressed all the CTE attributes important to DH clinical teaching. The participants also self-elected to participate in the study, and this may have resulted in the inclusion of only those participants who had a heightened interest in emotional intelligence, or who already possessed a sense of their level of EI ability. Knowledge of EI may have also been gained from participating in the MSCEIT, and this may have influenced the responses of the participants who provided perceptions of their use of EI in the interview sessions. Finally, the size of the study sample was small and may also have been a study limitation preventing generalizability of the findings to other DH instructors who teach in the clinical setting.

Conclusions

The conclusions drawn from the study are based on the outcomes from the exploratory data analysis performed on the quantitative data, and thematic analysis performed on the qualitative data. The mixed methods design of the study, which allowed for comparison between individual instructor's MSCEIT outcomes and their

responses to the questions asked, also led to some additional conclusions being drawn from the study.

Dental hygiene clinical instructors are overall competent in EI ability with their strongest EI skill being the ability to manage emotion in others, and the weakest area of EI is in their ability to empathize (use emotion). The scores for the participants' overall EI fell in the competent range (μ = 101.98), and the mean scores regarding managing emotion (μ = 103.55) and using emotion (μ = 98.81) also support this conclusion. In addition to these quantitative outcomes, the instructors' responses shared in the one-on-one interviews were in parallel to the MSCEIT scores, i.e., instructors most frequently described resolution to difficult situations with the use of managing emotions. However, empathy for students was not an emotional ability widely used in an instructor's perceived successful resolution of difficult situations with students.

Emotional intelligence ability may be linked to a DH clinical instructors' teaching effectiveness, and negative teaching behaviors may be predictors of low emotional intelligence. This conclusion supports the proposed alternative hypothesis for the quantitative phase of the study. Multiple negative and positive correlations, identified by Spearman's rho, found statistical significance existed between the MSCEIT scores and the NCTEI outcomes. Of greatest significance were the correlations identified between the NCTEI's negative teaching behaviors and the MSCEIT scores reflecting an instructor's low level of emotional intelligence ability.

The backward regression analysis performed on the variables identified a significant correlation exists between EI and CTE. More specifically the dependent variable, overall emotional intelligence, had a strong linear relationship to the NCTEI variables, unrealistic expectations (ρ =.000) and promoting student dependence (ρ =.001).

Immediate intervention using EI skills will more likely lead to successful resolutions when difficult situations arise in the DH clinical teaching setting. Conversely, when difficult situations with DH students occur in the clinical teaching setting, they are unsuccessfully resolved if attempts to address the issue are delayed. This conclusion is based on the thematic analysis outcome and the instructor responses to the questions asked regarding the use of EI when resolving difficult situations in the clinical setting. The majority of the participants described a successful resolution to a clinical situation when they intervened as soon as the student issue emerged.

Dental hygiene clinical instructors may self-identify and perceive their interactions with students as reflecting emotional intelligence ability, however this may not reflect their actual level of EI ability. Several instructors responded to the open-ended interview questions with examples of interactions with students in the DH clinical setting they perceived as demonstrating emotionally intelligence which was not reflected in their MSCEIT outcomes. Conversely, although DH instructors may achieve a “competent” or “skilled” level of EI ability on the MSCEIT, they do not necessarily exhibit emotionally intelligent behavior in their approach to clinical

teaching. Several instructors who scored in the “competent” or “skilled” ranges for overall EI ability, described resolution to difficult situations in the clinical setting with behaviors which did not reflect the use of EI ability in their actions.

If an individual EI branch score, or overall EI score on the MSCEIT falls in a range which contradicts an instructor’s self-perception of emotionally intelligent behavior, gaining a better understanding of the their MSCEIT outcomes could raise awareness of weak areas of EI ability. This increased understanding of EI ability could lead to the successful development of improved EI skills when working with students in the DH clinical setting.

Recommendations for Future Research

More extensive analysis is recommended in future research investigating the relationship between NCTEI outcomes and the individual EI branches (Mayer, et al., 2016). Inclusion of a more expansive data set would provide increased insight into the relationship between CTE attributes and multiple EI abilities, and also improve the interpretation of the responses of participants and its relationship to the quantitative outcomes. The development of a research instrument designed for use to measure CTE in the DH clinical teaching setting, is also suggested in order to ensure the attributes important in DH clinical education are included in the assessment of an instructor’s CTE.

Future research should also include the participation of DH students when assessing the CTE of dental hygiene instructors. Comparing both instructors and students’ outcomes from a CTE assessment, to outcomes of the MSCEIT, would help

to validate the instructor's CTE self-assessment, and increase understanding of the importance of a DH instructor's emotional intelligence in their approach to clinical teaching.

Recommendations for Future Practice

Outcomes from this research study revealed the emotional intelligence of instructors played an important role in their clinical teaching effectiveness in DH education. It also revealed instructors who have a low level of emotional intelligence may also demonstrate negative teaching behaviors. Caruso (2015) has proposed teams with members who have higher levels of EI will become a more cohesive unit and perform more effectively in a shorter period of time, and also possess a clearer group vision. These factors combined lead to two ways the use of EI could be integrated into health professions education; hiring practices of health professions educators and faculty development.

If EI is a predictor of work performance, and a faculty member's level of EI contributes to a more effective clinical teaching team in the educational setting, the evaluation of a potential employee's EI could be an effective tool when hiring clinical faculty. In their 2010 meta-analysis, on the topic of EI as a predictor of job success, Joseph and Newman concluded EI was not necessarily a predictor of job success with one exception, i.e., those jobs which hold emotional aspects. The multiple emotional situations faced by the DH clinical faculty participants shared in this study suggest teaching roles in health professions education possess emotional facets requiring EI ability in the members of a clinical teaching team. Human resources personnel, and/or

those responsible for making hiring decisions in health professions education, could benefit from workshops and educational experiences to learn more about the role EI could play in hiring practices. The use of evaluation tools, like the MSCEIT, could help these personnel identify potential new hires and instructors who would be more likely to provide effective clinical teaching experiences for health professions students.

In regard to faculty development, providing “in house” workshops to teach health professions faculty about the role EI plays in CTE could be provided to faculty teams in higher education. Educational sessions could be followed up with EI evaluations for each faculty member, with one-on-one sessions conducted to provide individuals with an understanding of their EI strengths and weaknesses. Although Mayer, Salovey and Caruso (2016) do not suggest EI ability can be taught, increasing an individual’s awareness of their areas of weakness in EI ability can assist them in identifying situations where they may not effectively perceive, use, understand or manage the emotions of themselves or others.

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APPENDICES

Appendix A

IRB Approval

Tue 12/13/2016 12:18 PM

Richman, Kenneth kenneth.richman@mcphs.edu

Notice of IRB approval

To: Smallidge, Dianne dianne.smallidge@mcphs.edu

Dear Professor Smallidge:

Thank you for submitting your protocol, *An Investigation of the Impact of Dental Hygiene Clinical Instructors' Emotional Intelligence on Clinical Teaching Effectiveness*, to the MCPHS Institutional Review Board. Because the research study involves surveys carrying minimal risk to participants, it has the status "exempt" in accordance with 45 CFR 46.101(B)(2). Your project is now approved and has been assigned protocol number IRB121316R. Please refer to this protocol number in any future correspondence regarding this project. You may begin recruiting participants and collecting data.
Please also make careful note of the following:

RECRUITING: University policies prohibit using MCPHS e-mail services to invite MCPHS students to participate in research. Announcements, paper flyers, and online postings are allowed.

ADVERSE EVENTS: You are responsible for reporting to the IRB any adverse events, including unintentional distress or loss of confidentiality experienced by any participants.

AMENDMENTS: Any substantial changes to the goals of the project or to the study documents should be submitted as an amendment for approval before proceeding with the change. Substantial changes include, but are not limited to, changes in the data collected, changes in key personnel, changes in the number of expected participants, changes in recruitment procedures or changes in the research question being investigated.

CONTINUING REVIEW: IRB approval is for one year. If you expect to recruit subjects, collect data or analyze data more than one year from the date of this notice, you must apply for continuing review. Please allow adequate time for review and approval prior to the expiry date.

Thank you for submitting your protocol to the IRB. I wish you all good luck for a successful thesis project.

Yours sincerely,

Ken Richman
Chair, Institutional Review Board

Appendix B

Informed Consent Statement for MCPHS University for Online Test and Survey

You are being asked to complete two online assessments; a revised version of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI) and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT). The NCTEI is a self-assessment of clinical teaching effectiveness and the MSCEIT is a performance-based test measuring emotional intelligence ability. Both assessments can be completed within a total of one hour and outcomes for both the MSCEIT and the NCTEI will be confidential and participation is voluntary. No one will know who did or did not participate in the study.

The data collected from the test outcomes will be analyzed to determine if a relationship exists between EI test outcomes and clinical faculty's perceived teaching effectiveness. Once the data from the assessments has been collected, some study participants may be contacted via e-mail and asked to volunteer to participate in a follow up interview to garner their perceptions of EI and its relationship to clinical teaching.

Minimal risk is involved in completing these surveys. The information obtained will be kept confidential and recorded in such a manner that human subjects cannot be identified, directly or indirectly. If you have any questions about this research study, please contact the Principal Investigator, Dianne Smallidge, via e-mail at dianne.smallidge@mcphs.edu. If you have any questions about your rights as a

participant in research, please contact Kenneth Richman, Chair of the MCPHS University Institutional Review Board at 617-732-2927.

Appendix C

Informed Consent Statement for MCPHS University for One-on-One Interviews

You are being invited to participate in a follow up interview to the surveys (the MSCEIT and NCTEI) you completed online as part of this research study. The purpose of this research study is to collect qualitative data to help increase the understanding of your responses to the MSCEIT and the NCTEI. The one on one interview face-to-face you are being asked to participate in will be audio recorded. If the interview is being conducted virtually it will be recorded and require the use of a laptop computer with a video camera to allow us to both see and hear each other. The interview are expected to last approximately 45 minutes. You do not need to participate in this research study and there is no penalty for deciding not to participate. Minimal to no risk is involved in the participation of this focus group. The information received will be kept confidential and recorded in such a manner that human subjects cannot be identified, directly, or indirectly.

If you have any questions about the research study, please contact the Principal Investigator:

Dianne Smallidge, RDH, MDH

Associate Professor, Forsyth School of Dental Hygiene, MCPHS University

617-735-1528

dianne.smallidge@mcphs.edu

If you have any questions about your rights as a participant in research, please contact:

Kenneth Richman, PhD, IRB Chair

Associate Professor of Philosophy and Health Care Ethics

MCPHS University

617-732-2927

kenneth.richman@mcphs.edu

Informed Consent for Virtual Interviews:

I have read the informed consent form to the participant, confirmed that he or she understood the form, and received verbal agreement from the participant to continue with this research interview.

Principal Investigator:

_____

Informed Consent for Face-to-face Interview:

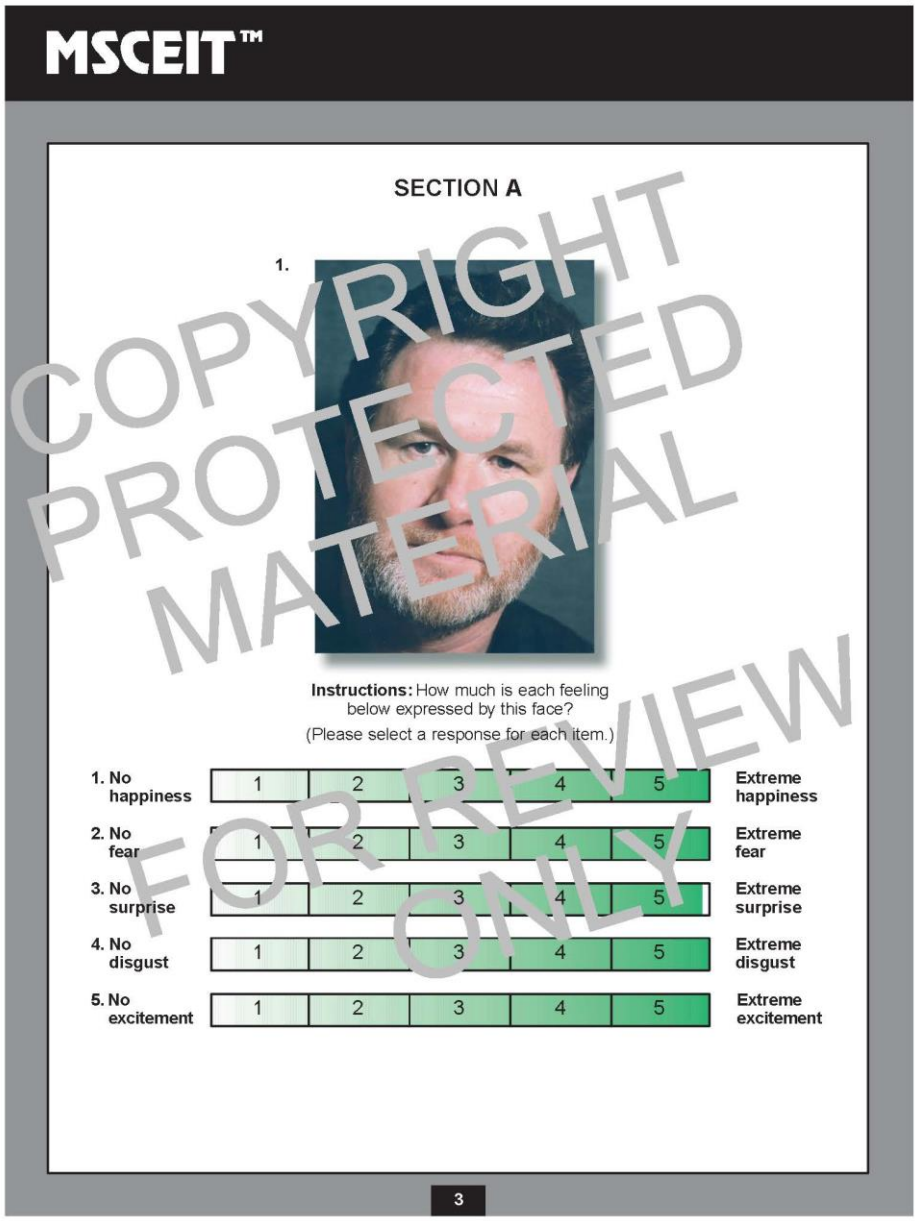
I have read the informed consent statement, understand the statement, and agree to continue with this research interview.

Participant Signature: _____

Appendix D

Mayer-Salovey- Caruso Emotional Intelligence Test (MSCEIT) (Mayer, et al., 2004)

Sections A - D



MSCEIT™

SECTION A

1.

Instructions: How much is each feeling below expressed by this face?
(Please select a response for each item.)

1. No happiness	1	2	3	4	5	Extreme happiness
2. No fear	1	2	3	4	5	Extreme fear
3. No surprise	1	2	3	4	5	Extreme surprise
4. No disgust	1	2	3	4	5	Extreme disgust
5. No excitement	1	2	3	4	5	Extreme excitement

3

MSCEIT™

SECTION B

Instructions: Please select a response for each item.

1. What mood(s) might be helpful to feel when creating new, exciting decorations for a birthday party?

	Not Useful				Useful
a. annoyance	1	2	3	4	5
b. boredom	1	2	3	4	5
c. joy	1	2	3	4	5

2. What mood(s) might be helpful to feel when composing an inspiring military march?

	Not Useful				Useful
a. anger	1	2	3	4	5
b. excitement	1	2	3	4	5
c. frustration	1	2	3	4	5

3. What mood(s) might be helpful to feel when following a very complicated, demanding, cooking recipe?

	Not Useful				Useful
a. tension	1	2	3	4	5
b. sorrow	1	2	3	4	5
c. neutral mood	1	2	3	4	5

4. What mood(s) might be helpful to feel when figuring out what caused a fight among three young children? Each of the three young children is telling a different story about how the fight started. Figuring out what happened requires attending to the details of the stories and weighing many facts.

	Not Useful				Useful
a. happiness	1	2	3	4	5
b. surprise	1	2	3	4	5
c. sadness	1	2	3	4	5

MSCEIT™

5. **What mood(s) might be helpful for a doctor to feel when selecting a treatment plan for a patient with a cancerous tumor? The doctor must apply several known, but conflicting, principles in the treatment of the tumor.**

	Not Useful				Useful
a. happiness	1	2	3	4	5
b. neutral mood	1	2	3	4	5
c. anger and defiance	1	2	3	4	5

SECTION C

Instructions: Select the best alternative for each of these questions.

1. **Marjorie felt more and more ashamed, and began to feel worthless. She then felt _____.**
   a. overwhelmed
   b. depressed
   c. ashamed
   d. self-conscious
   e. jittery

2. **Kenji felt content as he thought of his life, and the more he thought about the good things he had done and the joy his acts had brought to others, the more he felt _____.**
   a. surprised b. depressed c. acceptance d. happiness
   e. amazement

3. **Natalie had never been more surprised in her life. But as she recovered a bit from the shock of the loss and realized she could gain some advantage from the situation if she planned carefully, she became _____.**
   a. amazed
   b. confused
   c. denying of the situation
   d. expectant
   e. pensive

MSCEIT™

SECTION D

Instructions: Please select an answer for every action.

1. Mara woke up feeling pretty well. She had slept well, felt well rested, and had no particular cares or concerns. How well would each action help her preserve her mood?

Action 1: She got up and enjoyed the rest of the day.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Action 2: Mara enjoyed the feeling and decided to think about and appreciate all the things that were going well for her.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Action 3: She decided it was best to ignore the feeling since it wouldn't last anyway.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Action 4: She used the positive feeling to call her mother, who had been depressed, and tried to cheer her up.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

2. Andrew works as hard, if not harder, than one of his colleagues. In fact, his ideas are usually better at getting positive results for the company. His colleague does a mediocre job but engages in office politics so as to get ahead. So, when Andrew's boss announces that the annual merit award is being given to this colleague, Andrew is very angry. How effective would each action be in helping Andrew feel better?

Action 1: Andrew sat down and thought about all of the good things in his life and his work.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Action 2: Andrew made a list of the positive and negative traits of his colleague.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Action 3: Andrew felt terrible that he felt that way, and he told himself that it wasn't right to be so upset over an event not under his control.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Action 4: Andrew decided to tell people what a poor job his colleague had done, and that he did not deserve the merit award. Andrew gathered memos and notes to prove his point, so it wasn't just his word.
a. Very ineffective b. Somewhat ineffective c. Neutral d. Somewhat effective e. Very effective

Appendix E

Part A of Online Survey- Demographics Questions:

1. Do you currently teach students in the clinical setting of the dental hygiene program where you are employed? (To include radiology, dental materials and pre-clinical laboratory settings.)

a. Yes
b. No

If you answered "no" to this question, please discontinue taking this survey. Thank you for your willingness to participate in this study.

2. How many years of experience have you had as a dental hygienist in clinical practice?

a. 0 to 3

b. 3 to 5

c. 5 to 7

d. 7 to 10

e. 10 or more

3. How many years of experience have you had as a dental hygiene clinical instructor?

a. 0 to 3

b. 3 to 5

c. 5 to 7

d. 7 to 10

e. 10 or more

4. In what state are you employed as a dental hygiene clinical instructor?

_____

5. What is your age?

a. 20 to 30

b. 31 to 40

c. 41 to 50

d. 51 to 60

e. 61+

6. What is your gender?

a. Male

b. Female

c. Identify as transgender

7. What is the highest level of education you have achieved?

a. Associates degree

b. Bachelors degree

c. Masters degree

d. Doctoral degree

e. Other _____

8. What degree is earned by students in the entry level program in which you teach?

a. Associates degree

b. Bachelors degree

c. Students can earn either a Bachelors or Associates degree from the program in which I teach.

d. Other _____

9. What is your teaching/educator role/title at the institution where you are employed? (Check all that apply)

a. Program Director/Dean

b. Full-time faculty

c. Adjunct clinical faculty

d. Adjunct didactic faculty

e. Other _____

10. On average, how many hours per week do you teach each semester in the clinical setting?

a. 4 to 8 hours

b. 9 to 16 hours

c. 17 to 24 hours

d. 25+ hours per week

Part B of Online Survey - NCTEI

The Nursing Clinical Teaching Effectiveness Inventory (NCTEI) (Allison-Jones, 2002; Mogan & Knox, 1985)

Revised for Use in Dental Hygiene Clinical Instruction

Modified Nursing Clinical Teacher Effectiveness Inventory (NCTEI) Form

For Dental Hygiene Clinical Faculty

1. Explained clearly

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

2. Emphasized what is important

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

3. Stimulated student's interest in the subject

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

4. Was not accessible to students

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

5. Demonstrated clinical procedures and techniques

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

6. Helped students identify and make use of practice opportunities

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

7. Offered special help when difficulties arise

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

8. Was poorly prepared for teaching

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

9. Enjoy teaching

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

10. Encouraged active participation in discussion

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

11. Geared instruction to students' level of readiness

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

12. Understood what students were asking or telling

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

13. Carefully and precisely answered questions raised by students

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

14. Questioned students to elicit underlying reasoning

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

15. Helped students organize their thoughts about patient problems

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

16. Promoted student dependence

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

17. Demonstrated poor clinical skills and judgment

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

18. Demonstrated good communication skills

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

19. Revealed little background reading had been done on clinical topics

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

20. Discussed current developments in the dental hygiene field

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

21. Directed students to useful literature in dental hygiene

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

22. Demonstrated a breadth of knowledge in dental hygiene

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

23. Recognized own limitations

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

24. Took responsibility for own actions

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

25. Was a good role model

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

26. Enjoy the profession of dental hygiene

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

27. Made specific suggestions for improvement

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

28. Provided constructive feedback on students' performance

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

29. Identified students strengths and limitations objectively

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

30. Observed students' performance

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

31. Communicated expectations of students poorly

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

32. Had unrealistic expectations of students

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

33. Gave students positive reinforcement for good contributions, observations, and performance

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

34. Corrected students mistakes without belittling them

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

35. Did not criticize students in front of others

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

36. Provided support and encouragement to students

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

37. Was unapproachable

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

38. Encouraged a climate of mutual respect

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

39. Listened attentively

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

40. Showed a personal interest in students

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

41. Demonstrated empathy

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

42. Demonstrated enthusiasm

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

43. Was a dynamic, energetic person

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

44. Was self-confident

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

45. Used criticism of teaching performance constructively

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

46. Was open-minded and non-judgmental

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

47. Had a good sense of humor

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

48. Was disorganized

|_____|_____|_____|_____|_____|_____|

1 3 5 7

NEVER ALWAYS

Adapted NCTEI from Allison-Jones (2002). *Student and faculty perceptions of teaching effectiveness of full- time and part-time associate degree nursing faculty.* Ph.D. dissertation. Virginia Polytechnic Institute and State University.

If you would be interested in participating in a follow up interview as part of this research study, after completion of both the NCTEI and MSCEIT, please provide an e-mail address where you can be contacted below. Not all participants will be asked to participate in the interview phase of the study, and will be chosen randomly from a pool of participants who complete both the MSCEIT and the Dental Hygiene revised NCTEI. The interviews, which will cover the topics of emotional intelligence and effective clinical instruction, will be conducted face-to-face, or through the use of a virtual platform using online video conferencing. Interviews should last no longer than 45 minutes and participation in the interviews will be kept confidential, with all audio or video recordings being deleted from password protected storage files at the end of the study. If you would be interested in participating in a follow up interview please provide an e-mail address in the box below:

If you would like to be entered in a drawing for a $100 gift card as thanks for your participation in the study, please provide your e-mail address in the box below. One participant will be chosen at random to receive the gift card, and once the drawing has occurred all e-mail addresses provided by participants will be deleted. E-mail address to be used for notification of gift card drawing:

Appendix F

Open-ended Questions for Qualitative Aspect of Study/Interviews

1. **Please define the term emotional intelligence.**

2. **Please think of a time when you had a difficult situation with a student in a clinical learning environment and successfully resolved it. What did you say and do to resolve this situation?**

3. **Please think of a time when you had a difficult situation with a student in a clinical learning environment and the outcome was negative for one or both of you. What did you say and do to try and resolve this situation? What could you have done differently?**

4. **How do you use emotional intelligence? That is, perceiving, (using) empathizing, understanding or managing emotions, in your role as a clinical instructor.**

5. **What would you say has been your most emotionally intelligent moment as a clinical instructor?**

Appendix G - Consent from Janet Knox for Use of NCTEI

Smallidge, Dianne

From: Knox, Janet <Janet.Knox@nshealth.ca>
Sent: Wednesday, June 01, 2016 7:04AM
To: Smallidge, Dianne
Subject: NCTEI

Hello Dr Smallidge, It is a pleasure to know that this work that Judy Mogan and I completed so many years ago while on faculty at the University of British Columbia still resonates with clinical educators. I wish you much success with your work, agree that you can use this instrument, and would enjoy hearing if this is helpful to you. Best wishes for successful work with your educators. Janet Knox

Janet Knox
President & CEO
Nova Scotia Health Authority
90 Lovett Lake Court
2"d Floor, Suite 216
Halifax, NS B3S OH6
Office: 902-491-5860
Fax: 902-454-01 26
Cathy.Casey@nshealth.ca (Executive Assistant)
www.nshealth.ca

Please observe our scent-free policy to keep the workplace safe and healthy for everyone.

Appendix H –Consent from Lisa Allison-Jones for Use of Modified NCTEI

Tue 2/2/2016 1:40 PM

Allison-Jones, Lisa <LAllisonJones@jchs.edu>

RE: The NCTEI

To Smallidge, Dianne

You replied to this message on 2/2/2016 6:20 PM.

Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Message | Faculty NCTEI.xlsx (22 KB) | Student NCTEI.xlsx (22 KB) | NCTEIReliability&Validity.pdf (3 MB)

Hi Dianne, I am excited to hear of your interest in the NCTEI, I found it to be a very useful tool. I was able to obtain the NCTEI, information about reliability and validity, and perm
contacting Judith Mogan. Ms. Mogan is retired from the School of Nursing at the University of British Columbia, T201-2211 Westbrook Mall, Vancouver, BS, Canada, V6T 2B5. Th
my request to her.

The tool was originally designed to identify those qualities that contributed to teaching effectiveness. I revised it to measure student and faculty perception of effectiveness of clini
to provide you with the attached copies of my revised tool and information on its reliability and validity from my own dissertation. Of course, you would not be able to use my revi
obtaining permission to use the original tool.

I hope that you will consider sharing your results with me. The relationship between good clinical teaching and EI is intriguing. Best wishes on your work!

Lisa Allison-Jones, PhD
Dean for Academic Affairs
lallisonjones@jchs.edu

Appendix I

Draft of E-mail to Program Directors for Study Recruitment

Dear _____,

Thank you for taking the time to talk with me at the __(professional conference)_____ in ____(month)_____regarding my proposed study investigating the role emotional intelligence (EI) plays in effective dental hygiene (DH) clinical instruction. If you recall, my research will measure the EI ability of DH clinical instructors using the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) and will also measure clinical teaching effectiveness (CTE) using a revised version of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI). The MSCEIT is a performance-based test and the NCTEI a self-assessment of CTE. Both assessments will be administered online.

Data collected from the test outcomes will be analyzed to determine if a relationship exists between the EI test outcomes and clinical faculty's self-assessed CTE. The outcomes for both the MSCEIT and the NCTEI will be kept confidential, and participation will also be anonymous. Once the data from the assessments has been collected, some participants may be asked to participate in a follow up interview and interviewed about their perceptions of EI and its relationship to clinical teaching. In addition, as $100 gift card is being offered as an incentive for participation and will be given to a randomly chosen study participant who completes both assessments.

If you are currently teaching in a clinical course in the program you oversee, you are also invited to participate in this study. Please contact me if you have any questions

about my proposed research and thank you in advance for your help in recruiting participants for this study. I believe the outcomes of my research will provide dental hygiene educators with important information regarding the role EI may play in our approach to teaching DH students in the clinical setting.

Finally, MCPHS University will oversee the protection of the study participants per the guidelines of the U.S. Department of Health and Human Services. The study was deemed _____ and was assigned protocol number _____ by the MCPHS IRB.

Thank you,

Dianne Smallidge, RDH. MDH

Appendix J

Draft of E-mail to Study Participants/Clinical Instructors

Dear _____,

I am seeking your help to increase understanding of the impact dental hygiene (DH) clinical instructors have on the learning experiences of DH students. More specifically, I am asking for your participation in a study designed to investigate the emotional intelligence (EI) of DH clinical instructors and its relationship to effective clinical instruction.

You are being asked to complete two online assessments; the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) and a revised version of the Nursing Clinical Teaching Effectiveness Inventory (NCTEI). The MSCEIT is a performance-based test measuring emotional intelligence ability and the NCTEI is a self-assessment of clinical teaching effectiveness. Both assessments can be completed within a total of one hour and can be accessed via the links provided at the end of this e-mail. Outcomes for both the MSCEIT and the NCTEI will be confidential and participation is voluntary. No one will know who did or did not participate in the study. A $100 gift card will be given to a participant randomly chosen from those who complete both the MSCEIT and the NCTEI.

The data collected from the test outcomes will be analyzed to determine if a relationship exists between EI test outcomes and clinical faculty's perceived teaching effectiveness. Once the data from the assessments has been collected, some study

participants may be contacted via e-mail and asked to volunteer to participate in a follow up interview to garner their perceptions of EI and its relationship to clinical teaching. The interviews, which will cover the topics of emotional intelligence and effective clinical instruction, will be conducted face-to-face, or through the use of a virtual platform using online video conferencing. Interviews will last no more than 45 minutes and participation in the interviews will be kept confidential, with all audio or video recordings being deleted from password protected storage files at the end of the study.

Minimal risk is involved in completing these surveys. The information obtained will be kept confidential and recorded in such a manner that human subjects cannot be identified, directly or indirectly. If you have any questions about this research study, please contact the Principal Investigator, Dianne Smallidge, via e-mail at dianne.smallidge@mcphs.edu. If you have any questions about your rights as a participant in research, please contact Kenneth Richman, Chair of the MCPHS University Institutional Review Board at 617-732-2927.

The MSCEIT and the NCTEI can be completed by going to the link shared below. At the completion of the NCTEI you will be directed to a link to access and complete the MSCEIT. Please complete online questionnaire and test no later than _____. The link to access both the MSCEIT and NCTEI is listed below:

Thank you in advance for your participation in this research study,

Dianne Smallidge, RDH, MDH

Appendix K

E-mail Invitation to Phase I Study Participants to Join Interview Session

Hello (Participant ID #),

Your e-mail address and ID number were randomly chosen from the list of DH educators who completed the NCTEI and the MSCEIT as part of my dissertation research on EI and Clinical Teaching Effectiveness. Thank you very much for taking the time to complete Phase I of my study!

Since you also submitted an e-mail address and expressed willingness to participate in an interview, I am reaching out to see if you would be available to participate in a 20-30 minute interview, to answer some follow up questions regarding your perceptions of EI and its role in DH Clinical Teaching.

If you could please let me know at your earliest convenience if you would be available to participate in a follow up interview I would appreciate it.

Thank you again for your participation in Phase I of my research!

Dianne