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A Data Analysis Of Emotional Intelligence Interventions With Third Year Medical Students

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A DATA ANALYSIS OF EMOTIONAL INTELLIGENCE INTERVENTIONS WITH THIRD YEAR MEDICAL STUDENTS

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Abstract

The purpose of this quasi-experimental study was to conduct a comprehensive evaluation of a 10-exercise emotional intelligence (EI) series composed of exercises from the Lynn Leadership group in third-year medical students, taught over one year. This study sought to assess the education's efficacy as evidenced by the change in the overall EI score. The overarching aim of the 10-exercise EI series was to offset the decline in medical student empathy during the clinical years; empathy undergirds the EI construct of social awareness. The data were collected from medical student cohorts in their third year Core Clerkships at a Northeastern United States hospital and affiliated institutions from 2016-2019. The Management Performance Solutions EI assessment was deployed electronically and collected at specified pre-, mid-, and post-intervention stages. The analysis included the mean and statistical testing of a difference in each domain's overall score measurements at these three stages. Findings from the research determined that this 10-exercise EI series increases social awareness in third-year medical students. The increase in social awareness scores was statistically significant ($p < 0.05$) across all three cohorts. The findings contribute to the knowledge gap in the literature on EI and its use in undergraduate medical education programs. These implications are that this targeted EI intervention may be used with other healthcare professionals to replicate or improve upon this study's findings.

Keywords: Emotional Intelligence, EI, empathy, trait EI, medical student, medical education.

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CHAPTER ONE

INTRODUCTION

Salovey and Mayer gave the earliest definition of Emotional Intelligence (EI) in 1990 as "the ability to monitor one's own and others' feelings, to discriminate among them, and to use this information to guide one's thinking and action" (Salovey & Mayer, 1990). The defining of the EI construct as "ability" or as a "personality trait" is controversial in psychological literature. Some researchers suggest that EI is a personality trait unlike a form of intelligence (Petrides & Furnham, 2000). A literature review shows different classifications of the emotional intelligence construct based on either commercial intentions or scientific knowledge advancement through theoretical explanation and empirical data to validate the models' components. One of the scientific community's theoretical approaches is the emotional competencies model focused on the workplace by Daniel Goleman (1998).

In his second book in 1998, Daniel Goleman revolutionized the concept further and included 20 competencies within four emotional intelligence domains. These four domains are self-awareness, self-management, social awareness, and relationship management (Goleman, Boyatzis, & McKee, 2013). According to Goleman, these four dimensions form the theoretical basis to develop the organizational field's emotional competencies. This initial design model was to predict employees' effectiveness and personal outcomes, as EI is associated with job success and job satisfaction (Fernández-Berrocal & Extremera, 2006). More recently, EI was gaining popularity in the fields of education and health care. The relevance of emotions and feelings in work outcomes is considered an essential factor in the fast and wide diffusion of EI in the shifting healthcare field (Fernández-Berrocal & Extremera, 2006; Vinson & Underman, 2020). As the doctor-patient relationship shifts from a hierarchical model to one that demands the

expression of clinical empathy, these interpersonal and communication skills are needed to meet patient expectations (Vinson & Underman, 2020).

The healthcare environment has changed in that patients now demand services with a consumerist mindset (Kim, Liang, Walton, & Jung, 2018; Vinson & Underman, 2020). As patients are now consumers of healthcare, they actively participate with a vested interest in their healthcare, making the patient and their family members a part of the healthcare team (Wu, Rubenstein, & Yoon, 2018). This corporatization of healthcare is structured to achieve the Triple Aim: improving the population's health, improving patient experience, and reducing costs (Bodenheimer & Sinsky, 2014; Kim, Liang, Walton, & Jung, 2018). The introduction of business logic has taken a toll on healthcare providers by navigating challenging patient demands. As a result, healthcare providers are reaching significant levels of burnout, stress, and dissatisfaction (Friedberg et al., 2014; West, Dyrbye, & Shanafelt, 2018). Further, a high-functioning health care team's optimal performance can improve patient satisfaction scores, readmission rates, and health outcomes tied to reimbursement rates (Greer et al., 2020).

When high functioning healthcare teams perform optimally, collaboration and contribution are existing premiums, where clinical empathy is of primary importance within the healthcare team (Ortega et al., 2014; Vinson & Underman, 2020). The intentional increase in clinical empathy requires an awareness of what the other team members are thinking and feeling, along with the ability to interpret how these team members are displaying these thoughts and feelings; social awareness is a primary competency of Emotional Intelligence (Goleman, 1998; Vinson & Underman, 2020). Through developing Emotional Intelligence, or EI, health care professionals can display clinical empathy consistently, as they demonstrate importance and value to all team members, including the patient and their family. Advancements in

understanding how to train healthcare team members to achieve optimal function have resulted in benefits of the practice, reduced mortality, and improved patient outcomes (Salas et al., 2018). EI exercises are deployed throughout the health care organization to intentionally establish and utilize EI skills to increase healthcare teams' psychological safety and the facilitation of high functioning healthcare teams.

Statement of Problem

In a meta-analytic review of American college students, the authors have shown a considerable decline in empathy and perspectives taking among millennials (Baugh, Hoogland, & Baugh, 2020). Factors that are impacting the ability of millennials to empathize are an increase in narcissism, changes in the content and exposure of media, use of personal technology in everyday lives, replacing in-person social interactions with online communication, changing parenting styles, and increased interaction with acts of violence and bullying (Baugh, Hoogland, & Baugh, 2020). In addition to the factors mentioned above, medical students today may have to confront an additional set of challenges to their interpersonal and social skills while dealing with suffering patients and families' intense emotions throughout their medical education training (Helmich et al., 2018). Ignoring these emotions or reacting poorly to them can negatively impact the profession, practitioners, and patients (Helmich et al., 2018). In a case-control study published in 2005, the authors demonstrated that state medical boards' disciplinary action among practicing physicians was strongly associated with unprofessional behavior in medical school (Papadakis, 2005; Mak-van der Vossen et al., 2020).

In 2002, The Accreditation Council for Graduate Medical Education (ACGME) mandated that all residents be trained and assessed in competencies such as interpersonal and communication skills, professionalism, in addition to patient care, medical knowledge, practice-

based learning and improvement, and systems-based practice (ACGME, 2020). Few studies have demonstrated that EI is associated with a higher clinical performance and academic achievement. EI is related to improved physician empathy, patient-doctor relationships, and patient and provider satisfaction in clinical practice. Although emotional intelligence is considered a primary leadership and managerial competency (Freshman & Rubino, 2002), its dissemination and adaptation in the health care environment is not as desired. Today's medical education curricula are still heavily reliant on the cognitive models that give little importance to assessing and improving the medical students' or physicians' interpersonal skills (Mintle, Greer, & Russo, 2019). Qualities such as empathy, compassion, and maturity form the core skills of emotional intelligence (Mintle, Greer, & Russo, 2019). In a systematic review of emotional skills training for medical students, the authors showed positive outcomes with emotional skill training. However, little evidence exists regarding curriculum amount, frequency, timing, and content for effective teaching of emotional intelligence (Mintle, Greer, & Russo, 2019).

Purpose of the Study

The purpose of this data analysis is to conduct a comprehensive evaluation of the 10-exercise emotional intelligence series in third-year medical students to assess the education's efficacy as evidenced by the change in the overall emotional intelligence score. As a result of the demonstrated need for EI skill development in medical students, interventions must be designed to increase EI, and more specifically, empathy (Abe et al., 2013; Buffel du Vaure et al., 2017; Duke et al., 2015). Interventions designed around developing the EI competencies involve improving interpersonal skills, improving narrative skills, and often engaging in small group discussions (Hojat et al., 2020). EI training programs vary in design, from half-day workshops (Abe et al., 2013) to seven separate ninety-minute sessions over three months (Buffel du Vaure

et al., 2017), yet all produce an increase in empathy and the EI competencies. The Lynn Leadership Group (2002) published a series of recommended exercises. The participants capitalized on their strengths to assist in working on weaknesses through reflective writing and critical thinking. Although an increase in EI skill levels is the aim of an intervention, it is unknown if the key skill sets of Emotional Intelligence in third-year medical students will improve through education.

Research Questions

The research questions for this study are:

1. What are the proportion of low, medium, and high emotional intelligence in all four EI constructs (self-awareness, self-regulation, social awareness, relationship management) among third-year medical students?
2. What are the demographic characteristics of low, medium, and high EI subgroups?
3. What is the impact of the 10-exercise series on the EI competencies of self-awareness, self-regulation, social awareness, and relationship management among low, medium, and high EQ third-year medical students?
4. Which EI construct improves more successfully after the implementation of the 10-exercise series among low, medium, and high EQ third-year medical students?

Conceptual Framework

The theoretical framework that undergirds this study is Goleman's (2006) Emotional Intelligence Theory, with foundations in the emotional intelligence constructs from Salovey and Mayer (1990) and Petrides and Furnham (2000). Salovey and Mayer (1990) demonstrated the measurement of EI as an Emotional Quotient (EQ). Therefore, one may capture the participant's EQ pre and post EI intervention. Petrides and Furnham (2001) further elaborated upon this

finding where, due to emotions' subjectivity trait, EI (or trait emotional self-efficacy) is best captured in a self-report survey. When measuring EI as a trait, the results are better predictors of general satisfaction, reflective ability, appropriate coping responses, and overall well-being (Petrides, Pita, & Kokkinaki, 2007). The mixed-model EI theory from Goleman (2006) posits that the EI competencies of self-awareness, self-regulation, self-motivation, social awareness, and relationship management may increase as a result of targeted interventions.

Medical students must be intentionally trained and assessed in competencies such as interpersonal and communication skills, and professionalism through targeted interventions (ACGME, 2020). The most significant interpersonal interactions component hinge upon medical students' ability to be intentionally aware of themselves and others, regulate their emotions, and manage these relationships; these are all emotional intelligence competencies (Goleman, 2006). Ultimately the increased awareness of self and others, and the intentional ability to regulate one's response to manage relationships, will equip medical students to be intentional in interpersonal and communication skills with patients, peers, and attendings (Goleman, 2006). These theories and concepts have led to selecting this study's topic: examining whether education improves emotional intelligence's key skill sets in third-year medical students**.**

Assumptions, Limitations, and Scope

This study utilizes a quasi-experimental design where the researcher analyzed archival data from an EI series assessment completed by EI intervention participants. In the ordinary course of teaching an emotional intelligence series to third-year medical students, the survey data collection occurred at pre, mid, and post series as a standard curricular evaluation method. An assumption in this study is that the participants are willing and able to answer questions extensively, candidly, and honestly during interviews. The researcher has a dual role as the

instructor of the EI series and this study's researcher. Therefore, another assumption is that the medical students responding to the survey may create a bias in the data, as this work is not siloed within the third year's structure.

The methods to control for limitations are discussed here briefly but further elaborated in Chapter 3. A delimitation of this study is that it only focuses on one hospital in the Northeastern US. This site is accessible and provides a cohort of participants that have all undergone an EI intervention conducted by the researcher. A second delimitation of this study is that the data collected from three separate medical student cohorts are the focus of this study. This study only analyzed data obtained from medical students who have participated in an EI intervention between 2016-2019. A limitation of the study design is transferability, in that generalization to a larger population is limited, where findings are replicated solely across cohorts in the study.

The scope of this study is limited to a hospital within a Northeastern US healthcare system. This study's scope includes medical students who have undergone an EI intervention between 2016-2019. Reasons for including individuals from these cohorts are that (a) these individuals have participated in the 10 exercise EI intervention, and (b) the purpose of this study is to examine if education improves the key skill sets of Emotional Intelligence in third-year medical students.

Rationale and Significance

At this study site, several medical student cohorts have undergone a focused 10 exercise EI series based on exercises from the Lynn Leadership Group (Lynn, 2002). This training aims to help medical students intentionally develop and utilize EI skills to improve their interpersonal and communication skills and professionalism. These exercises are centered and built around the five EI competencies popularized by Daniel Goleman (1998): self-awareness, self-regulation,

self-motivation, social awareness, and relationship management, which are the EI competencies that are commonly measured or a derivative therein. The Lynn Leadership Group (Lynn, 2002) employs comparable emotional intelligence areas in their exercises: self-awareness and control, empathy, social expertness, personal influence, and mastery of purpose and vision. Interventions designed around developing these EI competencies involve improving interpersonal skills, improving narrative skills, and often engaging in small group discussions (Lynn, 2002). As participants learn these EI skills through a series of recommended exercises produced by the Lynn Leadership Group (Lynn, 2002), they capitalize on their strengths to assist in working on their weaknesses through reflective writing and critical thinking. These exercises' intended use is to develop EI further to equip medical students with the skills needed as future providers to participate in clinical activities and interpersonal interactions consistently, despite burnout, job dissatisfaction, and increased productivity demands (Weng et al., 2011).

Medical students with higher levels of burnout will exhibit lower levels of empathy, leading to less professional behaviors. Based on knowledge of this relationship, there is a burden to plan an intervention for the students' well-being (Brazeau, 2010). The current situation presents a disadvantage at all levels, which means that from the medical student up through the highest ranks of administration, everyone has a sense of urgency for equitable change that will improve the organization's overall culture (Kotter, 2012). In a study by Hojat et al. (2020), empathy declines significantly in the third year of medical school. Although not the study's specific aim, Hojat et al. (2020) listed different approaches to retaining empathy; improving interpersonal skills, improving narrative skills, and engaging in the Balint method of small-group discussion. In a longitudinal cohort of medical students in the third year during clinical rotations, a practical and relevant EI intervention must be utilized that would offset this decline in

empathy. A series of 10 exercises from the Lynn Leadership Group (2002) was applicable and relevant to healthcare and increased empathy in third-year medical students. These targeted EI interventions will offset burnout, increase job satisfaction, improve morale, and improve communication (Espinosa, & Kadić-Maglajlić, 2019; Weng et al., 2011).

EI interventions require several leadership styles to fully engage and bring all stakeholders on board to enact positive culture change in EI skills development. Initially and fundamentally, there must be credence given to a transactional leadership style, where the administration must ensure that there exists protected time through mandating the training (Bass, 2008). Addressing the anxiety surrounding the participant's transactional need will open the door for transformative change and move the culture towards a more interpersonally successful cohort of medical students through targeted EI interventions (Kotter, 2012). The modeled behavior of a servant leadership style is employed throughout all EI interventions to serve others with a reflective mindset to promote this set of interpersonal skills (Greenleaf & Spears, 1998). These combined leadership styles must be undergirded by a philosophical stance that embraces the theory that EI can be taught through targeted interventions, thereby increasing EQ (Goleman, 2006).

Definition of Terms

Burnout: The feeling of emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment (Weng et al., 2011).

Emotional Intelligence: "The ability to monitor one's own and others' feelings, to discriminate among them, and to use this information to guide one's thinking and action" (Salovey & Mayer, 1990, p. 189).

Empathy: "The action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another… without having the feelings, thoughts, and experience fully communicated in an objectively explicit manner" (Larson & Yao, 2005, p. 1101).

Conclusion

During EI interventions, participants develop EI skills inside and outside the clinical environment to retain and apply learned skills, indicating a behavioral change. The intended outcome is for participants to extend their learnings to their role inside the clinical setting as they develop an increased awareness of the level of EI skill utilization. Numerous studies identified the need for emotional intelligence interventions to decrease burnout and increase resilience (Hojat et al. 2020; Weng et al., 2011). Still, other studies evaluate emotional intelligence intervention effectiveness (Abe et al., 2013; Buffel du Vaure et al., 2017; Joseph et al., 2019). However, there remains a need to examine if the key skill sets of Emotional Intelligence can be improved in third-year medical students through this 10-exercise series from the Lynn Leadership Group (2002).

The remainder of this dissertation consists of four chapters, a reference section, and appendices. Chapter 2 is a review of the literature drawn from the domains of empathy, emotional intelligence, and team learning. Chapter 3 describes the study design and methodology of the study, including the instrumentation for data collection and data analysis. Chapter 4 presents the findings of the data analysis and a discussion of these findings. Chapter 5 concludes with a summary of the study and recommendations for future studies. The reference section and appendices conclude this study.

CHAPTER 2

REVIEW OF THE LITERATURE

The following literature review draws from research within the domains of empathy and emotional intelligence. These theories and concepts have led to exploring how targeted EI interventions increase the key skill sets of EI in third-year medical students. There is a gap in the literature regarding curriculum amount, frequency, timing, and content for effective emotional intelligence teaching (Mintle, Greer, & Russo, 2019). This chapter focuses on three main areas (a) measuring empathy in healthcare, (b) measuring emotional intelligence in healthcare, and (c) emotional intelligence interventions in healthcare.

The Study Topic

The foundation of emotional intelligence (EI) was first introduced as a measurable concept by Salovey and Mayer (1990) and later popularized by Daniel Goleman (2006) as he introduced five competencies that comprised EI: self-awareness, self-regulation, self-motivation, others-awareness, and relationship management. These EI competencies apply to medical students. As they develop self-awareness, they become aware of their thoughts and emotions based on their needs and drives that highlight their interpersonal strengths and mask their weaknesses (Goleman, 2006). Individuals who display high amounts of self-regulation can reflect during an interaction that permits them to adapt to the circumstances. This ability also allows them to exhibit higher professionalism levels in keeping impulses at bay as they take steps to correct issues rather than ignore them (Goleman, 2006). Self-motivation, as described by Goleman (2006), is another crucial component for medical students. Individuals who have identified their drive to achieve and maintain their passion enjoy the challenges they face despite low morale in the organization (Goleman, 2006). Social awareness comes into play in every

interaction, as medical students attempt to (a) interact/communicate with constant consideration of others' feelings and (b) demonstrating compassionate patient-centered care (Goleman, 2006; Edmondson & Lei, 2014). Finally, the relationship management aspect of EI entails collaboratively moving people in the desired direction to achieve positive outcomes for the betterment of the team while keeping the patient as the primary focus (Edmondson & Lei, 2014; Goleman, 2006). The synchronous demonstration of all EI skills will often become more visible through the medical student's display of empathy in patient interactions (Edmondson & Lei, 2014).

In Larson and Yao's (2005) seminal theory, empathy consists of an affective process and a cognitive process, where each comprises the emotional labor that medical students as providers feel in their relationship with their patients. The affective process of empathy is a necessary component, where it enables the medical student to engage in the patient-provider relationship through generating appropriate affective responses, such as the feeling of joy at the birth of a newborn or heaviness when delivering difficult news of a diagnosis (Larson & Yao, 2005). Affective empathy must be kept in check, or the medical student may reflexively manifest the patient's emotions in an unhealthy manner, leading to burnout (Larson & Yao, 2005). The cognitive process of empathy relies on the medical student's ability to weed through past conditioning and associations that could negatively impact the present interaction while maintaining the ability to display appropriate emotion to facilitate positive outcomes (Larson & Yao, 2005). The display of cognitive empathy may strengthen the patient-provider relationship, where the medical student can understand what the patient is going through while maintaining proper emotional boundaries, thereby supporting and focusing on the patient's need and care.

The Context

The current state of healthcare has drastically transitioned to a consumerist environment, where the patient is the driver regarding their healthcare, resulting in the development of the Triple Aim initiative: improving the health of the population, improving patient experience, and reducing costs (Bodenheimer & Sinsky, 2014; Kim, Liang, Walton, & Jung, 2018). This shift in business logic has taken a toll on healthcare providers. This consumerist mindset demands more clinical empathy from the providers yet provides fewer resources to meet these demands (Bodenheimer & Sinsky,2014; Kim, Liang, Walton, & Jung, 2018). In addition to patient demands, increased electronic health record (EHR) paperwork, and administrative duties, healthcare providers are reaching significant levels of burnout, stress, and dissatisfaction (Friedberg et al., 2014; West, Dyrbye, & Shanafelt, 2018). This burnout, stress, and dissatisfaction felt by healthcare providers may produce emotional exhaustion, depersonalization, and a sense of reduced personal accomplishment (West et al., 2018). These factors may result in lower patient satisfaction, increased care costs, higher turnover rates, medication errors, lower levels of empathy, and ultimately poorer patient outcomes (West et al., 2018). In a study by Hojat et al. (2020), empathy declines significantly in the third year of medical school. Although not the specific aim of that study, they listed different approaches to retaining empathy: improving interpersonal skills, improving narrative skills, and engaging in the Balint method of small-group discussion. As future healthcare providers, medical students will face this struggle to fulfill the Triple Aim; it is reasonable to deliver an intervention to increase their interpersonal and communication skills.

Focus of Study

Medical students of today face challenges in retaining empathy even before stepping into their clinical rotations. They experience increased introduction to acts of violence and bullying, the context and exposure of media have changed, online communication has taken place in-person social interactions, and narcissism has been on the rise (Baugh, Hoogland, & Baugh, 2020). In addition to these factors, there is an expectation that medical students display empathy throughout their medical education; however, empathy is only gleaned through the hidden curriculum and not taught overtly (Vinson & Underman, 2020). As medical students step into the clinical environment, they face the intense emotions of suffering patients and families, representing a unique set of challenges in interpersonal and social skills (Helmich et al., 2018). If medical students respond improperly or overlook these emotions, they risk engendering negative consequences in the patient-doctor relationship (Helmich et al., 2018). This unprofessional behavior in medical school can later lead to state medical boards' disciplinary action, negatively impacting the practicing physician's career (Mak-van der Vossen et al., 2020; Papadakis, 2005).

This shift to the corporatization of healthcare and consumerism of the patient-doctor relationship has led the ACGME to promote various curricular interventions in medical education (Vinson & Underman, 2020). In 2002, the ACGME mandated that all residents be trained and assessed in competencies such as interpersonal and communication skills, professionalism, patient care, medical knowledge, practice-based learning and improvement, and systems-based practice (ACGME, 2020). These efforts have been formally fleshed out in medical education curricula in the form of Objective Structured Clinical Exams (OSCE) and simulated patient interaction as a component of practical board exams (Vinson & Underman, 2020). This heavy reliance on the cognitive models in today's medical education curricula does

not give adequate focus to forming medical students' interpersonal skills such as empathy, compassion, and maturity; these comprise the core of emotional intelligence (Mintle, Greer, & Russo, 2019). Emotional skills training has resulted in positive outcomes, such as navigating emotions, remaining empathetic, reflecting on potential consequences, and applying that thinking (Mintle, Greer, & Russo, 2019).

Hojat et al. (2020) found that medical students' empathy declines in medical school's clinical phase. Ironically, during this clinical phase, empathy plays a crucial role in positive clinical outcomes, professionalism in patient care, and even faculty perception of medical student clinical competence (Hojat et al., 2020). The emotional experience of providing care offers medical students an opportunity to practice interpersonal interaction and hone communication skills as they engage in the clinical environment (Vinson & Underman, 2020). With this in mind, interventions designed around developing the five EI competencies must involve improving interpersonal skills, improving narrative skills, and engaging in small group discussions (Hojat et al., 2020). The Lynn Leadership Group (2002) produced a series of recommended exercises, where participants capitalize on their strengths to assist in working on areas of weakness through reflective writing and critical thinking. In this data analysis, the researcher conducted a comprehensive evaluation of the 10-exercise emotional intelligence series in third-year medical students and assess the change in overall emotional intelligence (EI) score after the training.

Conceptual Framework

The concepts and theories of emotional intelligence define the framework for this study. The trait model of EI is particularly suited to operationalization due to the subjective nature of emotions (Petrides & Furnham, 2001). In trait EI, measuring self-perceived EI changes are best measured via self-report surveys to capture changes in participant EI pre- and post-intervention

(Petrides, Pita, & Kokkinaki, 2007). Exploring medical student improvement via the self-report measurement of the EI competencies can illuminate the efficacy of EI interventions in the clinical phase of medical education. Identifying the impact of intentional EI curricular efforts on improving medical student professionalism, interpersonal skills, and communications skills have highlighted the need for further research. Throughout reviewing the literature, a gap exists regarding literature regarding curriculum amount, frequency, timing, and content for effective teaching of emotional intelligence (Mintle, Greer, & Russo, 2019).

Personal interest

"Emotional Intelligence is fundamental to getting along in the healthcare environment" (Freshman & Rubino, 2002, p. 4). Not only is EI fundamental to getting along, but to ensure that medical students may operate in a highly functional manner to interact professionally, display clinical acumen, and increase patient outcomes and satisfaction (Vinson & Underman, 2020). Bodenheimer & Sinsky (2014) have proposed the quadruple aim. In addition to improved patient experience, reduced cost, and optimal quality of care, it is necessary to take care of the dissatisfied, anxious, depressed, and burnt-out healthcare providers tasked with providing the care. In addition to this corporatized environment, medical students face an additional challenge, as empathy traditionally decreases in the third year as they transition to the clinical setting (Hojat et al., 2020). Targeted interventions equip medical students to intentionally impact every interaction to achieve optimal interpersonal interaction and communication through intentional clinical empathy (Ortega et al., 2014). In turn, these interventions will combat the effects of unbalanced medical student workload and increase overall wellbeing (Friedberg et al., 2014; Weng et al., 2011; West et al., 2018).

As the researcher has consistently deployed EI exercises from the Lynn Leadership Group (Lynn, 2002) to various medical student cohorts, the intention has been to increase their EI for their

wellbeing and enhance their ability to be intentional in their interactions and communication. The EI trait model allows for tracking change as the EI competencies are taught and internalized, and address interpersonal challenges in the patient-provider relationship (Johnson, 2015). Medical education administrators note that EI interventions are useful in everyday healthcare team interactions and could also be beneficial for reflection and feedback in one-on-one coaching sessions with medical students who are disruptive and exhibiting a lack of professionalism (Redacted, Personal Communication, 2019). These EI interventions may increase an individual's EQ, but there is a gap in the literature regarding curriculum amount, frequency, timing, and content for effective teaching of emotional intelligence (Mintle, Greer, & Russo, 2019). Although targeted EI interventions may improve medical students' interpersonal and communication skills and professionalism, the next step is to explore the actual impact on medical student self-efficacy of the key skill sets of EI.

Topical Interest

The topical interest in this study arises from providing medical education administrators with a rationale for the necessity of this EI training to offset the decline in empathy of medical students during the clinical years. The potential increase in medical student empathy and professionalism justifies the investment of time and money in EI interventions (Vinson & Underman, 2020) and the applicability to patient outcomes of intentionally increasing interpersonal and communication skills (Edmondson & Lei, 2014; Ortega et al., 2014). This increase in interpersonal and communication skills provides a much fuller picture of EI interventions' real benefit to medical students. The literature is evident on the challenges they face regarding healthcare's corporatization and consumerism (Bodenheimer & Sinsky, 2014; Vinson & Underman, 2020). In the United States, there are currently an estimated 50% of physicians and 50-75% of resident physicians experiencing burnout (Shahid, Stirling, & Adams, 2018). These numbers alone speak of the necessity to ensure that some

course correction is enacted by medical education leadership to, in part, address the exhaustion, sense of futility, cynicism, and detachment through targeted EI interventions (Shahid, Stirling, & Adams, 2018). Efforts to improve medical student interpersonal and communication skills through EI interventions address the decline in empathy, leading to burnout and maladaptive coping skills (Shahid, Stirling, & Adams, 2018, Vinson & Underman, 2020).

EI interventions serve to mitigate burnout in medical students, as they are better able to utilize appropriate coping skills in stressful situations, consider and regulate responses based on potential consequences of their actions, and experience a better level of wellness (Petrides, Pita, & Kokkinaki, 2007; Shahid, Stirling, & Adams, 2018). There must be an intentional effort placed upon training and assessing the EI competencies through open discussions about errors and solutions in the clinical environment to increase interpersonal and communication skills (Hojat et al., 2020). As medical students play a role on the clinical team, it is a common-sense next step to train them in becoming more self- and others-aware, to have an increased ability to regulate their emotions, and to be able to manage relationships expertly (Goleman, 2006). The further aim of EI interventions with medical students is to promote wellness, increase resilience, form adaptive coping skills, and increase overall satisfaction in the profession. It is a logical conclusion that medical students trained in EI should interact and communicate professionally and empathetically on health care teams.

Theoretical Framework

The theoretical framework that undergirds this study is Goleman's (2006) Emotional Intelligence Theory, with foundations in the emotional intelligence constructs from Salovey and Mayer (1990) and Petrides and Furnham (2000). Salovey and Mayer (1990) demonstrated that EI could be measured as an Emotional Quotient (EQ). Therefore, one may capture the participant's

EQ pre and post EI intervention (Salovey & Mayer, 1990). Petrides and Furnham (2001) further elaborated upon this finding where trait EI is related to personality, and a self-report survey optimally captures this measure. The EI theory from Goleman (2006) posits that EI can be taught through targeted interventions, thereby increasing EQ.

Emotional Intelligence Theory

In the formulation of the initial theory of emotional intelligence, Salovey and Mayer (1990) demonstrated the measurement of emotional intelligence. As compared to other models of intelligence, EI was then defined as a subset of social intelligence, as the ability to process adequate information could impact interpersonal relationships (Salovey & Mayer, 1990). This initial EI model consisted of appraisal and expression of emotion in self and others, regulation of emotion in self and others, and utilization of emotion to manage relationships (Salovey & Mayer, 1990). This EI model demonstrates that EI can be measured as an Emotional Quotient (EQ); therefore, one may capture the participant's EQ pre and post EI intervention (Salovey & Mayer, 1990). Future research recommendations made by Salovey and Mayer (1990) suggest examining these components further through laboratory tasks, conventional scales, or tailored interventions to explore the acquisition and promotion of these EI skills.

Petrides and Furnham (2001) further elaborated upon Salovey and Mayer's (1990) finding where they posit that the construct of trait EI (or trait emotional self-efficacy) assessed behavioral tendencies. Salovey and Mayer's ability model of EI exists as a cognitive definition of EI. When considering EI as a cognitive-emotional ability construct, the employment of objective criteria forms the basis for EI scoring; this is problematic as emotions are subjective (Petrides & Furnham, 2000). When attempting to measure the operationalization of EI, trait EI is best measured through a self-report survey due to the subjectivity of emotions (Petrides, Pita, and Kokkinaki, 2007). The

measurement of self-perceived abilities in subjective judgment and behaviors is significant in trait EI assessment (Petrides & Frunham, 2001). A strength of trait EI lies in the focus of self-perception, where emotions are subjective and best defined by the individual that is feeling them. When trait EI is measured psychometrically, the results are better predictors of general satisfaction, reflective ability, appropriate coping responses, and overall wellbeing (Petrides, Pita, & Kokkinaki, 2007). This approach to measuring trait EI is concurrent with the method described in this study.

Daniel Goleman continued to build upon Salovey and Mayer's (1990) and Petrides and Furnham's (2000) work and has defined the EI competencies as self-awareness, self-regulation, self-motivation, social awareness, and relationship management. In doing so, Goleman, Boyatzis, and McKee (2013) proposed that these building blocks be developed further for leadership applications to create resonance within the team. The EI theory from Goleman (2006) posits that EI can be taught through targeted interventions, thereby increasing EQ. As medical students develop and hone their EI skills, there is a potential impact on their organizations through intentional efforts of emotional flexibility that impact group dynamics and organizational performance (Goleman, 2006). The Lynn Leadership Group (Lynn, 2002) has expanded Goleman's (2006) foundational framework of EI skills to represent their EI skills model: self-awareness and control, empathy, social expertness, personal influence, and mastery of purpose and vision. In healthcare, EI is fundamental to interpersonal and communication skills, as medical students consider the impact of their emotions on others (Freshman & Rubino, 2002).

Measuring Empathy in Healthcare

Diminished empathy in medical students can have a distinct impact on their interpersonal and communication skills as future healthcare providers. Identifying and capturing empathetic expression's perceived impact is crucial when determining patient-provider relationships' effects

on patient satisfaction. The majority of studies utilize the Jefferson Scale of Physician Empathy (JSPE) as a standard measurement of empathy (Handford, Lemon, Grimm, & Vollmer-Conna, 2013; Hojat et al., 2020; Howick, Steinkopf, Ulyte, Roberts, & Meissner, 2017; Shariat & Habibi, 2013; Smith, Norman, & Decety, 2017). All found that empathy declines in the clinical environment and some studies call for an intervention to curtail this decline (Handford, Lemon, Grimm, & Vollmer-Conna, 2013; Hojat et al., 2020; Howick et al., 2017; Shariat & Habibi, 2013; Smith, Norman, & Decety, 2017).

Determining the Impact of Empathic Display

As providers seek to display empathy in the course of compassionate patient-centered care, this attempt at empathic expression should have a positive net impact on patient satisfaction and outcomes (Bharamanaikar, & Kadadi, 2017; Espinosa & Kadić-Maglajlić, 2019; Weng et al., 2011). Providers will encode empathic communication in a manner that is consistent with their style of cognitive empathy; however, the patient's perception of the provider's empathy is subjective and highly variable (Howick et al., 2017). The patient's outcomes impact the high variability of the patient's provider empathy rating (Howick et al., 2017). Regardless of all the provider's efforts, if the net patient outcome is negative, the provider is viewed as less empathetic (Howick et al., 2017). Although healthcare providers contribute to patient health outcomes, they are not the sole contributor. Patient lifestyle choices and decisions patients make regarding their care also impact their health outcomes. Therefore, the healthcare provider must be adept at reading the patient's body language to reflectively encode accurate empathetic communication in their attempt to facilitate the patient-provider relationship (Howick et al., 2017).

A provider's ability to empathetically read a patient's emotions with accuracy depends on their assessment of facial cues, overall body language cues, and the tonality of the patient's encoded communication. As clinicians display cognitive and affective empathy, their ability to accurately display proper empathy corresponds to the care effect experienced by the patient (Handford, Lemon, Grimm, & Vollmer-Conna, 2013). The clinical experience of appropriately reading a patient's body language and facial cues in the doctor-patient interaction improves empathetic accuracy, which connotes a shift from a doctor's self-focused response to an others-focused response (Handford et al., 2013). In the clinical encounter, the doctor must be adept at reading the patient's emotional state to capture an accurate picture of the patient's actual condition, despite the initial presenting complaint and reason for the visit (Handford et al., 2013). The present challenge is that the current consumeristic environment of healthcare demands this level of empathetic accuracy by all individuals present on the healthcare team, and not just the seasoned doctor (Handford et al., 2013). Targeted interventions that increase empathetic accuracy with all healthcare team members maintain high functioning teams, improve patient outcomes, and improve patient satisfaction (Ortega, Van den Bossche, Sánchez-Manzanares, Rico, & Gil, 2014).

The doctor's EI level has been a focus of interventions for improving empathetic accuracy due to their role in the patient-provider relationship (Weng et al., 2011). Furthermore, the doctor's skill and precision in delivering empathy can either make or break the high functioning patient-centered team (Ortega et al., 2014). As healthcare providers plunge into the clinical environment, the negative human interactions' reality produces a decline in empathy due to the new healthcare provider's inability to separate affective and cognitive empathy (Smith, Norman, & Decety, 2017). Medical students who are transitioning into third-year clinical

rotations begin to experience authentic interactions with patients. During these interactions, they attempt to decipher their patients' body language and facial cues to effectively collaborate within the healthcare team (Smith et al., 2017). As medical students advance through their third year and experience more face-to-face patient interactions, they develop the ability to separate affective and cognitive empathy, thereby delivering better patient care (Smith et al., 2017). A challenge during clinical rotations in the third year is that the medical student's access to authentic patient interactions may be hindered by (a) the supervising doctor's trust in their abilities, (b) by too many students sharing the clinical space, and (c) by a limited patient cohort from which to select. As a result of the complexity in combating the overall decline in empathy seen in healthcare, many medical schools, in conjunction with medical training facilities, have designed curricula to measure medical students' empathy and provide them with explicit practice (Smith et al., 2017).

Empathy Measured by the Jefferson Scale for Physician Empathy in Medical Students

As medical students progress throughout the third year, the clinical experiences may be fueled by altruism, resulting in a display of egoistic sympathy rooted in affective empathy and not cognitive empathy. The difficulty in this display of affective empathy is that it is detrimental to patient-physician relationships. This sympathetic desire may negatively impact clinical decision-making and the student doctor's performance (Burks & Kobus, 2012; Hojat et al., 2020). This overabundance in affective empathy can lead to burnout, increased stress, and dissatisfaction, where the proper display of cognitive empathy can lead to growth, positive patient outcomes, and satisfaction (Burks & Kobus, 2012; Hojat et al., 2020). Researchers deployed the Jefferson Scale for Physician Empathy (JSPE) to track the change over the third year to examine this potential for decreased overall empathy in medical students. In a study by

Hojat et al. (2020), overall empathy declined significantly over the medical students' third year, as measured by the JSPE in both men and women and across all specialties. This decline in overall empathy comes when patient-centered empathy is essential; therefore, educators must enact an intervention tailored to preserve cognitive empathy and increase interpersonal skills.

To determine where to enact an intervention, one must place the decline of empathy in medical students in the context of the bigger picture of medical education. The JSPE was utilized as the standard measurement for empathy in the United States to confirm the phenomenon of declining empathy during the third year of medical school (Hojat et al., 2020). As this use of the JSPE uncovered a targeted moment in the medical student's transition from basic science years to clinical experience, it is useful to extrapolate this further to encapsulate the full timeline of medical school across cultures. In a study by Shariat and Habibi (2013), they found that the JSPE demonstrated internal consistency and test re-test reliability with a large group of Iranian medical students in large and small universities, broken down into those that have not yet entered clinical training, those in clinical training, and interns. Empathy declined as the student progressed from pre-clinical, to clinical, to interns; this demonstrates that the decline is not limited to the United States and continues beyond the third year of medical school (Shariat & Habibi, 2013). The cross-cultural decline of empathy throughout medical school promulgates the necessity to address this decay in the form of a targeted intervention designed to increase empathy through intentional efforts to strengthen the EI competencies.

Measuring Emotional Intelligence in Healthcare

There are various reasons to measure EI across multiple healthcare professions, but the findings all share a common thread. Higher EI in medical students and medical professionals is associated with higher academic performance, more high-quality interpersonal communication,

and improved resiliency (Chew, Zain & Hassan, 2013; Libbrecht, Lievens, Carette, & Côté, 2014). There are differences in the populations measured, where concerns about declining empathy originated with medical students and branched out through the other healthcare professions (Hojat et al., 2020; Snowden, Watson, Stenhouse, & Hale, 2015; Zhao, Guo, Suhonen,& Leino-Kilpi, 2016). The concerns over declining provider empathy and the effect on patient outcomes and patient satisfaction can be further extrapolated and transitioned to the EI competencies (Burks & Kobus, 2012; Weng et al., 2011). EI interventions seek to develop, and iteratively build upon, intentional usage of the EI competencies (self-awareness, self-regulation, self-motivation, others awareness, and relationship management), as described by Daniel Goleman (2006). As many different medical schools have attempted to design and develop programs to address their particular needs, there are various methods to measure and increase EI.

EI and Medical Student Performance

Medical students are faced with a challenging curriculum given the rigor of the academic workload, coupled with the demands of medicine's interpersonal aspects (Hojat et al., 2020). In tense social situations, the medical student that is self-aware and displays the appropriate self-regulation will facilitate effective social interaction between medical professionals and patients (Libbrecht et al., 2014). The medical students that can understand the reasoning behind people's emotions, or are others-aware, will be better equipped to provide social support and develop close interpersonal bonds through relationship management (Chew et al., 2013). These facets of effective interpersonal communication offer a potential for EI to be included in the evaluation of medical students to predict how they will perform in interpersonal interactions, specifically during bedside patient encounters (Libbrecht et al., 2014). Medical students who have higher EI can better perceive their own emotions accurately and understand their origins, thereby leading

to more adaptive lifestyles and higher resilience despite medical school challenges (Chew et al., 2013). Just as high EI skills are essential for medical students' success, they are equally crucial in the success of the physician they will soon become.

Physician EI Level

Once high EI medical students survive the clinical years and become practicing physicians, the effects of these individuals' high EI can be seen in the patient-provider relationship. In a systematic review by Sharp, Bourke, and Rickard (2020), provider EI is positively associated with leadership skills, reduction in stress, burnout, and increased job satisfaction, translating to patient-centered care and contributing to improved teamwork and doctor-patient communication. Doctors with higher EI positively correlated with less burnout and higher job satisfaction levels, which correlates with higher patient satisfaction (Weng et al., 2011). Conversely, those doctors that strive to be unselfish and altruistic tend to display affective empathy, which may add to the likelihood of burnout, work-life imbalance, and dissatisfaction (Burks & Kobus, 2012). The learnings for medical education here are straightforward. Interventions designed to increase the prosocial behaviors of the EI competencies and intentional usage of cognitive empathy should focus on preventing burnout, negative stress, and dissatisfaction. Higher EI benefits are apparent in medical student education; therefore, other health professions students would benefit.

Medical Students' EI Levels as Related to Other Health Professionals' EI Levels

When considering the potential positive impact of high EI student doctors, one must consider the other healthcare team members' development and success as students. A component of team function for both nursing students and medical students is the ability to communicate in a manner that conveys importance and value to the other team members. Another essential

component for healthcare team members to develop is the resilience that enhances subjective wellbeing (Zhao et al., 2016). In nursing students, high EI is desirable. It manifests in traits such as compassion and caring, overall nursing student performance, and perceived competency in a profession that hinges on high interpersonal skills and ability (Snowden et al., 2015). Even broader, Ruiz-Aranda, Extremera, & Pineda-Galan (2014) found that higher EI can be a moderator of stress, despite the perception of that stress, across student groups of physiotherapy, nursing, occupational therapy, and chiropody. Healthcare professions students with high EI can display higher levels of skills necessary for optimal team function, despite the stressors and fluctuations inherent in the clinical environment (Ruiz-Aranda, Extremera, & Pineda-Galan, 2014). Therefore, it stands to reason that increasing EI should be a goal for all healthcare professionals across all specialties.

Learnings from EI Interventions

In evaluating the potential for an EI intervention, one must examine previous attempts and strategies to determine how to proceed within the workplace culture and given healthcare professional population. One instructional design that relies heavily on interpersonal communication is team-based learning, where each team member must contribute to the problem-solving process (Joseph, Zemen, McCord, & Fado, 2019). EI is an essential component in interpersonal communication tasks; therefore, the team-based learning setting of working through challenging cases as a class and debating choices offers a rich environment to implicitly facilitate this EI skill development (Joseph et al., 2019). Along with developing interpersonal communication, EI interventions may improve desirable traits such as leadership capacity and self-efficacy through interdisciplinary and holistic activities designed to offer students an arena to practice these EI skills (Ibrahim et al., 2017). EI interventions are worthwhile as they increase

the participants' EI through intentionally developing self-awareness and self-regulation, making stress management more effective as they continue through medical school onto residency (Ibrahim et al., 2017).

Medical school is extremely stressful and competitive as students attempt to obtain a residency position (Johnson, 2015). Interacting with fellow medical students and with preceptors requires a delicate balance, as those who have interpersonal issues will not perform as well clinically (Johnson, 2015). In this light, Johnson (2015) suggests that the respective school must support the EI intervention as a yearlong program with practice in the clinical environment. This EI intervention must focus on the continuous development of EI skills to address the specific aspects of the clinician-patient relationship that are not working well and must be conducted collaboratively by all stakeholders (Johnson, 2015). Implementation of interventions tailored to increase EI at all levels of training from medical school, residency, and beyond would produce practitioners with higher EI. These EI interventions would espouse specific goals to promote physician wellness, improve patient experience, and improve patient outcomes through the intentional usage of EI skills to facilitate a positive patient-provider relationship (Uchino et al., 2015).

The Impact of EI Interventions in Healthcare

Targeted interventions enhance healthcare teams' benefit as they increase EI for the individual participant, considering the needs of those attending the EI interventions and the organization where they practice. Interventions in healthcare can improve EI skills/competencies while employing diverse methods to achieve this end. EI interventions in healthcare schools and healthcare organizations may differ in the processes of curricular deployment, length, and duration of workshops, and the participants involved (Abe et al., 2013; Alconero-Camarero et al.,

2018; Barbosa et al., 2013; Bond et al., 2013; Buffel du Vaure et al., 2017; Flowers et al., 2014; Gordon, 2014). The commonality in these groups of healthcare professionals and students was that the EI interventions led to improved EI skills/competencies that had the potential to impact patient care positively and increase team function (DeBourgh et al., 2012; Kelm et al., 2014; Monroe & English, 2013; Sarabia-Cobo et al., 2017).

Mindfulness-Based EI Interventions

An overriding theme throughout medical school and residency is the amount of stress induced from the medical profession's rigors (Barbosa et al., 2013; Bond et al., 2013; Gordon, 2014). As a result, the following interventions were initiated to increase the EI competency of self-regulation to manage the stress. One behavioral intervention designed to mitigate this high-stress level is Mindfulness-Based Stress Reduction (MBSR) (Barbosa et al., 2013). During MBSR, participants learn self-regulatory EI skills specifically designed to help them manage stress and emotions (Barbosa et al., 2013). The MBSR intervention can demonstrate an increase in empathy as measured by the JSPE and reduce anxiety and burnout in individuals across healthcare specialties (Barbosa et al., 2013). In another course similar to MBSR, a mind-body intervention targeting the improvement of psychological wellbeing in pre-clinical medical students results in a positive effect on their self-regulation and self-compassion, and upward trends in empathy perceived stress (Bond et al., 2013). In yet another intervention, the Mind-Body Skills Group (MBSG), the intention was to reduce stress, this time through increasing the EI skills of self-awareness and self-regulation (Gordon, 2014). This MBSG has been offered to students at more than 15 U.S. medical schools to reconnect the students to the passion that initiated their interest in medical school (Gordon, 2014). Although these interventions may promote stress reduction by developing the EI skill of self-regulation, this is an inadequate

attempt to prepare the pre-clinical student for immersion into the clinical realm. This clinical realm demands all EI skills to be developed and deployed simultaneously for success in patient interactions.

Competency-Based EI Interventions

During the clinical years, medical students face difficult conversations, challenging interactions with patients and providers, ineffective role models, and an active untwining of affective and cognitive empathy (Abe et al., 2013; Buffel du Vaure et al., 2017; Cherry et al., 2014; Monroe & English, 2013). EI development occurs through emotion-driven communication exercises about grief and loss in the clinical environment. Participants practice listening to others' feelings and then reflect before expressing their own emotions (Abe et al., 2013). Balint groups can provide medical students in clinical rotations opportunities to increase empathy as students react to interpersonal conflict within difficult clinical situations. Balint groups are led by two facilitators that ensure a safe place for 6-10 providers to discuss the interpersonal interactions with their patients amongst sympathetic peers and see their patients as human beings by reaching a deeper understanding of the feelings surrounding the relationship (Roberts, 2012). Likewise, these opportunities are facilitated by a trained supervisor as the occasion is provided for students to practice their interpersonal skills in a standardized patient interaction (Buffel du Vaure et al., 2017). EI development training workshops may be deployed during clinical rotations in addition to the undergraduate medical curricula to facilitate improvement in EI scores, communication skills during observed structured clinical education sessions, and overall emotional awareness (Cherry et al., 2014). EI interventions can take many forms, based upon the geographic culture, healthcare student cohort, and the overarching goals of involved stakeholders (administration, patients, providers, and students). Ultimately, to ensure success at any level of

education, it is crucial to find EI champions among faculty and practitioners. These champions allow for building a strong knowledge base by tapping into expert knowledge and creating a vision for success by providing a learning framework that applies across healthcare professions (Monroe & English, 2013).

EI Interventions with Nurses/Nursing Groups

As another component of the healthcare team, nurses and nursing students play a pivotal role in the patient care process because they spend the most time with the patient. Given the context of the nursing role, EI interventions address challenging situations in the areas of palliative (end of life) care, patient safety, and patient outcomes, coping, and collaboration with others (Alconero-Camarero et al., 2018; DeBourgh, 2012; Sarabia-Cobo et al., 2017). In iterative, low-risk, palliative care simulation exercises, nursing students are allowed to make mistakes while retaining the feelings of value and capability (Alconero-Camarero et al., 2018). This practice results in an improved ability to cope with stress through increased EI (Alconero-Camarero et al., 2018). Interventions may also focus on patient safety and quality standards through EI-enhanced communication skills (DeBourgh, 2012). These interventions result in a heightened awareness of the safety goals, raised care-sensitive patient outcomes, increased participation and communication on healthcare teams, and a perceived impact on patient care outcomes (DeBourgh, 2012). EI interventions that enhance all EI competencies may produce measurable short-term and long-term EI increases (Sarabia-Cobo et al., 2017). Daily application of the learnings from short lectures, role play, group discussions, pairs work, and readings from the sessions sustain these EI increases (Sarabia-Cobo et al., 2017). Although these interventions differ from the EI interventions designed for medical students, they focus on the areas that nurses and nursing students are most likely to encounter.

EI Interventions - Spanning Healthcare Professions and Levels of Training

Finally, EI interventions addressing the role that emotion plays in dealing with healthcare teams' challenges are a much-needed component across levels of training, specialties, and professions (Flowers, Thomas-Squance, Brainin-Rodriguez, & Yancey, 2014). Furthermore, increasing EI interventions' availability will generate awareness of the need for social and interpersonal skill development. EI interventions do not need to follow a prescribed deployment method but can adapt to the learning environment and each group's needs (Flowers et al., 2014). Leaders with high EI could catalyze policy and systems changes to facilitate increased interprofessional collaborations, making the complex healthcare system more navigable and practical (Flowers et al., 2014). Interventions must persist beyond the immediate post-intervention period to increase EI and empathy in healthcare professionals (Kelm, Womer, Walter, & Feudtner, 2014). The process of fostering continual development of EI skills may start with pre-clinical students and continuing with practicing physicians (Kelm et al., 2014). Educators may tailor comprehensive EI interventions to increase EI and empathy among healthcare professionals, improve patient satisfaction and outcomes, and ultimately equip healthcare teams to facilitate interpersonal communication that will decrease medical errors (Flowers et al., 2014; Kelm et al., 2014).

Medical Errors, Patient Safety, and Intentional EI skill Usage

There is an overwhelming concern for the rise of medical errors to the detriment of patient safety in the United States (James, 2013; Lee & Doran, 2017; Makary & Daniel, 2016). Medical errors and patient safety are an underlying current in numerous healthcare-related articles, but each presents the information with a slightly different focus (James, 2013; Lee & Doran, 2017; Makary & Daniel, 2016; Rodziewicz & Hipskind, 2020). At the core of these

articles is the need for increasing the interpersonal skills of healthcare professionals to facilitate communication surrounding patient safety and medical errors (Rodziewicz & Hipskind, 2020). Effective communication about these concerns decreases medical errors and increases patient safety (Rodziewicz & Hipskind, 2020). The healthcare provider's EI can either facilitate or impede healthcare team collaboration, impacting the collaboration and contribution within the patient-provider relationship (Espinosa, & Kadić-Maglajlić, 2019; Lee & Doran, 2017). Central to healthcare team collaboration is the interpersonal processes surrounding perception, evaluation, and feedback, encompassing relational communicative behavior in the patient-provider relationship (Lee & Doran, 2017). Lee and Doran (2017) note that as relational conduct in healthcare team members varies, there is a direct impact on collaborative behavior, which changes team communication, thereby affecting patient safety outcomes. Providers that utilize this intention in the patient-provider relationship optimize healthcare team communication and collaboration to improve patient safety and resolve conflicts (Lee & Doran, 2017). The patient-provider relationship hinges upon the patient's trust in the provider to do no harm by placing their safety at the forefront of every interaction (Kalocsai et al., 2018). In this sense, ultimately, the healthcare provider's EI level will drive patient satisfaction and patient outcomes (Espinosa, & Kadić-Maglajlić, 2019; Lee & Doran, 2017).

The Impact of EI on Patient-Provider Relationships in Healthcare

High functioning healthcare teams require solid interpersonal relationships to facilitate communication between patients and providers, perform better as a team, and improve patient safety (Lee & Doran, 2017). Healthcare team members must identify methods to clarify perceptions, prevent misunderstandings, and mediate conflicts and discourse while demonstrating importance and value to team members through the intentional usage of EI skills

and empathy. As team-minded providers use more empathic statements through shared decision-making and open prognostic information, outcomes and patient satisfaction improve throughout the care process (Schram et al., 2017). Despite each patient case's inherent complexities, such as patient mortality and end-of-life care, the intentional usage of EI skills and empathy increases trust (Kalocsai et al., 2018). Trust is the cornerstone of interpersonal relationships as providers attempt to facilitate these conversations, whether those relationships be patient-provider, doctor-nurse, or between allied health professionals; it is the foundation that allows team members to be vulnerable, open, and honest with one another (Bharamanaikar, & Kadadi, 2017; Weng, 2011). The nurse maintains close contact with the patient, spending more time gathering valuable physiological and psychological information. Likewise, physicians with high EI can place the nurse's valuable input at a premium when considering treatment options, which results in optimum patient-centered care (Bharamanaikar, & Kadadi, 2017; Weng, 2011). High EI demonstrations of integrity, reliability, professional respect, and mutual trust between doctors and nurses serve to undergird interpersonal relationships within the healthcare team as they provide patient-centered care (Bharamanaikar, & Kadadi, 2017; Weng, 2011). These components of high functioning teams may seem elusive to untrained medical students. Still, there is a potential to facilitate understanding and leadership ability through intentional EI skills training focused on improving professionalism, interpersonal and communication skills.

Conclusion

The contribution of this literature on the use of EI interventions to improve medical student professionalism, interpersonal and communication skills with the ability to increase clinical empathy is of vital importance. The intentional use of EI skills could potentially mitigate the decline in medical student empathy while offsetting burnout, increasing resilience, and

improving patient satisfaction and outcomes. The development of the EI competencies, self-awareness, self-regulation, others awareness, and relationship management have a crucial role in medical student professional growth. The medical student who demonstrates self-awareness possesses knowledge of who they are and what triggers will cause an emotional response; therefore, they can reflectively respond in tense or difficult situations. The next step is self-regulation, where the interchange with difficult individuals must be controlled and measured. This self-regulation ensures that the medical student can demonstrate a professional response through proper interpersonal communication skills despite another's reaction. The medical student employing other-awareness can understand another's perspective and present a cognitively empathetic acknowledgment, enabling the medical student to partner successfully with those in the clinical environment. Finally, the medical student's relationship management skills will give rise to building familiarity and a bond that transcends the challenging clinical environment to form a sincere connection with the healthcare team.

The literature's strength is that there are a demonstrable process and evolution of thought in these publications. As empathy is measured, they find that more years of education and time spent in the clinical environment will cause this critical ability to decline. As empathy declines, medical student burnout increases, and resilience decreases, directly affecting the clinical relationships. As a result, a call went forth for interventions to preserve empathy. As medical students reflected on what they were thinking and feeling and what patients were thinking and feeling, resulting in the preservation of cognitive empathy; these are EI competencies in use. The studies then measured EI and initiated interventions to increase EI as an undergirding factor in provider empathy increase/retention. EI interventions were successful in increasing EI, and the delivery of cognitively empathetic care theoretically improves patient satisfaction and outcomes.

Although an increase in EI skills should enable medical students to interact and communicate empathetically professionally, there still exists a gap in specified curricular parameters that produce results.

It seems reasonable that the EI interventions would retain or improve empathy, interpersonal skills, communication skills, and professionalism in medical students; however, little evidence exists regarding curriculum amount, frequency, timing, and content for effective teaching of emotional intelligence (Mintle, Greer, & Russo, 2019). Suppose EI skills result in an improvement in medical student empathy and subsequent interpersonal skills. What is the root cause of medical education's present condition, where burnout, job dissatisfaction, and empathy loss are rife? If EI interventions work, then it would stand to reason that there would be an intentional deployment of specified EI training throughout medical education to curtail these issues. It rests on medical education administrators' shoulders to address this gap in the overt curriculum to develop EI, aside from relying on the social cues provided in medicine's hidden curriculum and hierarchy.

The next step is to investigate the actual impact of a targeted EI intervention in a clinical setting, specifically with medical students that have previously participated in an EI intervention. The EI interventions teach participants to be reflectively intentional in their interactions; therefore, participants should intentionally utilize the EI skills. Those individuals without the EI intervention training would not have the heightened awareness to use a targeted analysis of their interpersonal interactions intentionally. The proposed result would be that trained individuals can apply the EI skills to display clinical competence through professional interpersonal and communication skills in an empathetic manner, thereby improving clinical outcomes.

Based on this literature review, the research recommendations reside in the initiation of a conversation about the existing gap in the literature, specifically if the medical student EI skills improve in educational training. Conducting a study to see if education improves these EI skills would determine if further EI initiatives would be fruitful. If an intervention does not impact these EI skills, deploying massive intervention efforts would be wasteful and not supported by the literature. The researcher conducted a quantitative study to determine if the key skill sets of EI can be improved through targeted education with third-year medical students. Former participants in an EI intervention were assessed in four EI competencies (self-awareness, self-regulation, social awareness, relationship management) to determine the impact of a 10-exercise series. If these EI skills are increased and support the assumptions in the literature, then strides to deploy the EI interventions may be made.

CHAPTER 3

METHODOLOGY

The healthcare environment has changed in that patients now demand services with a consumerist mindset (Kim, Liang, Walton, & Jung, 2018; Vinson & Underman, 2020). As patients are now consumers of healthcare, they actively participate with a vested interest in their healthcare, making the patient and their family members a part of the healthcare team (Wu, Rubenstein, & Yoon, 2018). This corporatization of healthcare is structured to achieve the Triple Aim: improving the population's health, improving patient experience, and reducing costs (Bodenheimer & Sinsky, 2014; Kim, Liang, Walton, & Jung, 2018). The introduction of business logic has taken a toll on healthcare providers by navigating challenging patient demands. As a result, healthcare providers are reaching significant levels of burnout, stress, and dissatisfaction (Friedberg et al., 2014; West, Dyrbye, & Shanafelt, 2018). Further, patient satisfaction scores, readmission rates, and health outcomes impact reimbursement rates, and through the optimal performance of a high-functioning health care team, these factors can be improved (Greer et al., 2020).

This shift to the corporatization of healthcare and consumerism of the patient-doctor relationship has led the ACGME to promote various curricular interventions in medical education (Vinson & Underman, 2020). In 2002, the ACGME mandated that all residents be trained and assessed in competencies such as interpersonal and communication skills, professionalism, in addition to patient care, medical knowledge, practice-based learning and improvement, and systems-based practice (ACGME, 2020). Emotional skills training has shown positive outcomes, such as navigating emotions, remaining empathetic, reflecting on potential consequences, and applying that thinking (Mintle, Greer, & Russo, 2019). Hojat et al. (2020)

found that medical student empathy declines in medical school's clinical phase. Ironically, during this clinical phase, empathy plays a crucial role in positive clinical outcomes, professionalism in patient care, and even faculty's perception of medical student clinical competence (Hojat et al., 2020). With this in mind, interventions designed around developing the five EI competencies must involve improving interpersonal skills, improving narrative skills, and engaging in small group discussions (Hojat et al., 2020).

During EI interventions, participants develop EI skills inside and outside the clinical environment to retain and apply learned skills, indicating a behavioral change. The intended outcome is for participants to extend their learnings to their role inside the clinical setting as they develop an increased awareness of the level of EI skill utilization. Numerous studies identified the need for emotional intelligence interventions to decrease burnout and increase resilience (Hojat et al. 2020; Weng et al., 2011). Still, other studies evaluate emotional intelligence intervention effectiveness (Abe et al., 2013; Buffel du Vaure et al., 2017; Joseph et al., 2019). However, there remains a need to examine if the key skill sets of Emotional Intelligence can be improved in third-year medical students through this 10-exercise series from the Lynn Leadership Group (2002).

Purpose of The Study

Emotional intelligence is defined as fundamental for getting along in the workplace (Freshman & Rubino, 2002). Also, the development of emotional intelligence is a necessary step in the process of decreasing burnout (Weng et al., 2011) and increasing others awareness in medical students (Goleman, 2006), which offsets the decline in empathy (Hojat et al., 2020). Few studies have demonstrated that EI is associated with a higher clinical performance and academic achievement. EI is related to improved physician empathy, patient-doctor

relationships, and patient and provider satisfaction in clinical practice. However, the dissemination and adaptation of EI skills in the health care environment are not as desired. Today's medical education curricula are still heavily reliant on cognitive models that give little importance to assessing and improving the medical students' or physicians' interpersonal skills; qualities such as empathy, compassion, and maturity which form the core skills of emotional intelligence (Mintle, Greer, & Russo, 2019). In a systematic review of emotional skills training for medical students, the authors showed positive outcomes with emotional skill training; however, little evidence exists regarding curriculum amount, frequency, timing, and content for effective emotional intelligence teaching (Mintle, Greer, & Russo, 2019).

The purpose of this data analysis was to conduct a comprehensive evaluation of the 10-exercise emotional intelligence series regarding the education's efficacy as evidenced by the change in the overall emotional intelligence score in third-year medical students. As a result of the demonstrated need for EI skill development in medical students, interventions must be designed to increase EI, and more specifically, empathy (Abe et al., 2013; Buffel du Vaure et al., 2017; Duke et al., 2015). Interventions designed around developing the EI competencies involve improving interpersonal skills, improving narrative skills, and often engaging in small group discussions (Hojat et al., 2020). EI training programs vary in design, from half-day workshops (Abe et al., 2013) to seven separate ninety-minute sessions over three months (Buffel du Vaure et al., 2017), yet all produce an increase in empathy and the EI competencies. The Lynn Leadership Group (2002) published a series of recommended exercises, where participants capitalize on their strengths to assist in working on areas of weakness through reflective writing and critical thinking. Although an increase in EI skill levels is the aim of an intervention, it was

unknown if the key skill sets of Emotional Intelligence in third-year medical students improve through education.

Research Questions and Research Design

This quasi-experimental study explored if the key skill sets of Emotional Intelligence could be improved in third-year medical students through education. EI interventions' current purpose is to increase participants' EI skill levels and positively impact interpersonal interactions. This study's structure includes a researcher who implemented EI series composed of exercises from the Lynn Leadership Group (Lynn, 2002) as an intervention and an analysis of data obtained via a self-report EI assessment tool developed by Management Performance Solutions (n.d.). There is a potential for desired behavioral changes to occur in the transfer of learned EI skills, creating a net positive impact on medical students' empathy and professionalism by improving interpersonal and communication skills. Linking the curriculum amount, frequency, timing, and content to improve the key skill sets of EI is where the literature gap exists. The research questions for this study are:

1. What are the proportion of low and medium, and high emotional intelligence in all four EI constructs (self-awareness, self-regulation, social awareness, relationship management) among third-year medical students?
2. What are the demographic characteristics of low, medium, and high EI subgroups?
3. What is the impact of the 10-exercise series on the EI competencies of self-awareness, self-regulation, social awareness, and relationship management among low, medium, and high EQ third-year medical students?
4. Which EI construct improves more successfully after the implementation of the 10-exercise series among low, medium, and high EQ third-year medical students?

Site Information and Participants

This hospital is within a Northeastern US healthcare system and is the specialty referral hospital for the northern two-thirds of the state. This site provides access to three successive cohorts of third-year medical students who were required to participate in a 10 exercise EI series. The participants completed the self-report surveys throughout the year-long series. All participants in the EI series from 2016-2019 comprise this convenience sample due to the mandated EI educational series, per administrative permissions. This study design aimed to replicate findings across subsequent cohorts, with literal replication amongst each medical student cohort to compare them to the other medical student cohorts (Etikan, Musa, & Alkassim, 2016). Utilizing the intended cohorts of medical students provided data for theoretical replication to draw comparisons between the cohorts, thus highlighting the medical student cohort's improvement (Etikan, Musa, &Alkassim, 2016).

Participation/ Sample

All third-year medical students (n=66) at a Northeastern United States hospital participated in the emotional intelligence series that ran from July of 2016 through June of 2019. The researcher conducted a data analysis on all archival data gathered from medical students doing their third year Core Clerkships through a Northeastern United States hospital and affiliated institutions from 2016-2019. There were approximately 36 third-year medical students in a cohort each year. The Emotional Intelligence 10 exercise series was mandatory for all third-year medical students at the site; there are no exclusion criteria. Although the 10-exercise EI series was initiated with the 2019-2020 cohort at this site, the series was cut short in March of 2020 due to the COVID-19 pandemic.

Instruments

The intervention was a 10-exercise emotional intelligence series taught over one year and comprised of exercises from Adele B. Lynn (2002) (Appendix A). The emotional intelligence assessment developed by Management Performance Solutions is a 40-item questionnaire that measures four dimensions of emotional intelligence: self-awareness, self-regulation, social awareness, and relationship management (Appendix B). Each domain includes ten items measured on a 5-point Likert scale. Scores can range from 0-50 on each domain. Scores up to 30 represent low scores, 31-40 represent medium scores, and scores between 41 and 50 represent high emotional intelligence. Administration occurred at the beginning, in the middle of, and after the series to assess pre, mid, and post-intervention Emotional Intelligence (EI) scores among participants. The data analysis was a one-way analysis of variance (ANOVA) due to the factors' multilevel nature.

The researcher must address the construct validity, content validity, and criterion validity of the Management Performance Solutions emotional intelligence self-assessment used in this study (Creswell, 2012). Several other studies have cross-referenced use of the Management Performance Solutions survey (Chauhan, Sharma, & Mishra, 2017; Hindle & Miller, 1997; Marwaha, 2015; Mohanraj, Katiravan, Kaliannan, Mutalemwa, Qian, Yu, ... & Yuan, 2019; Shaikh, 2018; Subramanian & Manjunatha, 2019). The trait model of EI is particularly suited to operationalization due to the subjective nature of emotions (Petrides & Furnham, 2001). In trait EI, self-perceived changes in EI are best measured via self-report surveys to capture changes in participant EI pre and post-intervention (Petrides, Pita, & Kokkinaki, 2007). In this study, the construct validity is addressed as the Management Performance Solutions self-report survey questions directly measure the trait EI competencies

of self-awareness, self-regulation, others awareness, and relationship management. This instrument tests participants' scores on content related to what the test is purported to measure, specifically employing a Likert scale to measure the EI competencies. This instrument's content and format are consistent with the definition of the variables that are to be measured, specifically the EI competencies. Although this is the only instrument utilized in this study, the researcher used the instrument with three separate yearlong medical student cohorts, which accounts for criterion validity. The data obtained from this instrument were presented by the researcher as archival data.

Data Collection

The researcher provided education through the EI intervention sessions with the participating third-year medical students. All EI classes were conducted on the main campus, while students at ancillary sites joined through teleconference technology. Students that missed a session were provided with self-directed exercises designed to deliver the same course objectives. This study's primary purpose was to assess the progression of the four domains of emotional intelligence at three stages in the EQ series amongst medical student cohorts. The Management Performance Solutions assessment measured the efficacy of a 10-exercise series that medical students received during this study.

The emotional intelligence assessment tool developed by Management Performance Solutions (n.d.) was administered electronically at the beginning of the third year, half-way through the course, and after the third-year program to assess pre, mid-course, and post-intervention EI scores among participants. The researcher collected data in an excel spreadsheet as a part of regular student evaluation. Each subject was assigned a unique alphanumerical ID, which was not associated with any identifiers. The ID list and the original subject list were stored

on a password-protected thumb drive for matching purposes. Only the PI, the dissertation committee, and the site's IRB have access to it, not for distribution or sharing with anyone else. All identifier information was coded numerically and stored only in the coded format. This separate data key allowed coding of the same student's responses through the three surveys. This tracking was needed to evaluate potential differences in response to the series between low, medium, and high EQ subjects. Access to the data key was with the PI only. The administering of the questionnaire was part of the medical education 10 exercise series standard process; hence, informed consent was unnecessary. A bit locker protected thumb drive will store all data collected pertaining to this study for no more than three years after the publication of this dissertation; to be deleted at that time.

Procedures for Data Analysis

In this quasi-experimental study, the Management Performance Solutions EI assessment was deployed electronically and collected at specified intervals of pre, mid-course, and post-intervention throughout a yearlong 10-exercise EI series. The analysis included the mean and statistical testing of a difference in each domain's overall score measurements at three stages. The four EQ domains that were under consideration are self-awareness (SA), self-regulation (SR), social awareness (SC), and relationship management (RM). The de-identified data analysis was conducted per the specific aims listed in the research questions. All quantitative data was analyzed using Microsoft Excel.

For research question one, the population with low or medium, or high scores on the baseline EQ questionnaire was divided by the total population to obtain each group's proportion. The differences of the average scores across the three stages for each domain was broken down by years and presented in a visual display. This visual representation of average scores provides

context for each phase of the series and brings to light potential trends across all three years, whether increasing, decreasing, or remaining unchanged. With the visual as preliminary evidence, the researcher performed several statistical tests of significance for statistical evidence of differences in domain scores.

For research question 2, demographic characteristics are presented as aggregates in the form of means for continuous variables and proportions for categorical variables. For research question 3, to determine if a construct has significantly improved, the difference between overall mean scores on each construct at baseline and follow up were tested with a paired sample t-test. For research question 4, due to the factors' multilevel nature (stages), a one-way analysis of variance (ANOVA) was used. ANOVA was run on all four domains for all three years separately, and the researcher displayed the results in a table. The p-values that indicate the statistical evidence for the difference in average scores for the three stages are significant at 95% confidence level, with p-values less than 0.05 (Creswell, 2012). The researcher utilized this data to evaluate the EQ series' efficacy concerning the participants' EQ competencies.

Limitations and Delimitations of the Research Design

A limitation of this quasi-experimental study design was that findings are only replicated across the three yearlong cohorts of third-year medical students in the study, which may not adequately reflect a larger population. A second limitation was that the researcher had a dual role as the EI instructor and this study's researcher. Therefore, another assumption was that the medical students responding to the survey may have created a bias, as this was not siloed work within the third year's structure. A delimitation of this study was that it only focuses on one hospital in the Northeastern US. This site was accessible and provided a cohort of participants that have all undergone an EI intervention conducted by the researcher. A second delimitation of

this study was that the data collected from three separate medical student cohorts were the focus of this study. The only data obtained in this study was from medical students who have participated in an EI intervention between 2016-2019. Reasons for including individuals from these cohorts are that (a) these individuals have undergone the 10 exercise EI intervention, and (b) the gap in this study sought to examine if the key skill sets of Emotional Intelligence can be improved in third-year medical students through education.

Internal and External Validity

In this quasi-experimental study, one must address the internal validity threats of testing, history, maturation, and external validity threat to generalization (Creswell, 2012). The potential threat to the internal validity of testing existed in using a pre-test for initial assessment, which may have given the students insight into the outcome measures. The concern existed that participants would score higher on posttest assessments with this insight. Participants completed EI assessments at an interval of approximately six months apart to mitigate the testing threat to internal validity; a pre-test, a mid-point, and a posttest. If familiarity with outcome measures improved scores substantially in all EI skill sets on the mid-point test and increase further on the posttest, then this threat has been validated. However, if all EI skill sets did not increase uniformly over the mid-point and subsequent posttest, testing was no longer a threat to internal validity. A threat of history exists because although the EI series and assessments are all standardized and deployed by the same instructor, the sequence of clinical specialty rotations was randomized. Therefore, the events outside of the EI intervention that students experience may have played a role (positive or negative) in student development. Conducting the yearlong series with three successive medical student cohorts between 2016-2019 serves to mitigate history's threat. A final threat to internal validity existed in maturation, where medical students

naturally matured due to time spent on the clinical rotation. However, empathy has shown to decline in third-year medical students, and empathy is one of EI's significant components; therefore, the expectation was that as empathy decreases, so would EI. Control for this threat was in the connection of empathy to the EI competencies.

In this quasi-experimental study, convenience sampling was prone to limited generalizability (Creswell, 2012). All third-year medical students at this site were mandated to take the EI intervention and assessments. A second sampling limit in the study population was that all medical students in this study come from one medical school to one clinical site in the northeast. The EI intervention and assessments were deployed in the same order, timeline, and structure by the same educator (the researcher). Also, it was not feasible to invest the time and resources to obtain a random sample. A final consideration in this study was that these EI sessions aim to improve the participants' professional development, interpersonal skills, and communications skills so withholding training would disadvantage those excluded; to do so would be unethical.

Ethical Issues in the Study

As the Medical Educator at the site, the researcher has provided various educational services ancillary to the third-year medical students' EI interventions. Where this study was a data analysis of data utilized as a common curricular evaluation method, informed consent was not required. There existed little to no harm to participants in this study, but confidentiality took precedence in this study's described data collection protocol. All data were de-identified, as the presented study data set includes no identifier information. All data were reported as aggregates. This study had no funding allocated, nor any public or private funds. All data were reported

honestly and in the highest ethical manner. The researcher ensured compliance with all IRB regulations.

Confidentiality

All third-year medical students attend the mandatory 10 exercise EI series as part of their 3rd year at the study site. They are required to complete the Management Performance Solutions questionnaire as a method of curricular assessment. It also helps participants with self-awareness, one of the skill sets taught, as this questionnaire was an exercise in reflection and self-discovery. For these reasons, it was acceptable for the researcher, who also taught the course, to ask the medical students to complete the questionnaires. In addition to the questionnaire's responses, the researcher created a separate data key to code the same student's responses through the three surveys. This tracking was needed to evaluate potential differences in response to the 10-exercise series between low, medium, and high EQ subjects. No identifier information was included in the study data. Data were taken directly from the questionnaire, without alteration or adjustment of any type.

No identifying information was kept as part of the dataset. There was a key used to assign subject numbers to returned questionnaires to allow a repeated-measures analysis of the data. The Key contains no results of the questionnaires, and the dataset contains no identifying information. Only the PI has access to both files. Data was stored electronically on a bit locker protected thumb drive. Control of this access required the approval of the Investigator. Only the Principle Investigator has access to the data on the bit locker-protected thumb drive. The Principal Investigator maintains adequate records for the study, all correspondence with the IRB, and any other relevant data for at least three years following the study's termination. All study-related data will be destroyed after three years of study completion.

Summary of Chapter

The overarching aim of this quasi-experimental study was to explore the impact of targeted emotional intelligence interventions designed to equip medical students to increase empathy, professionalism, interpersonal skills, and communication skills. Emotional intelligence skills training includes navigating emotions, remaining empathetic, reflecting on potential consequences, and applying that thinking leads to positive outcomes (Mintle, Greer, & Russo, 2019). Although an increase in EI skill levels was the aim of an intervention, it was unknown if the key skill sets of Emotional Intelligence can be improved in third-year medical students through education. In this data analysis, a comprehensive evaluation of the 10-exercise emotional intelligence series in third-year medical students was conducted to assess the education's efficacy as evidenced by the change in the overall emotional intelligence score.

Chapter 3 describes the study's research design and methodology, including instrumentation for data collection and data analysis. Chapter 4 presents the findings of the data analysis and a discussion of these findings. Chapter 5 concludes with a summary of the study and recommendations for future studies. The references and appendices conclude this study.

CHAPTER FOUR

RESEARCH RESULTS

The purpose of this data analysis was to conduct a comprehensive evaluation of a 10-exercise emotional intelligence (EI) intervention series in third-year medical students. The EI curriculum comprised of focused exercises in a 10 exercise intervention series to assess the education's efficacy as evidenced by the change in the overall emotional intelligence scores over one year during the third year of medical school. Although an increase in EI skill levels is the aim of an intervention, it is unknown if the key skill sets of Emotional Intelligence in third-year medical students will improve through education. This data analysis assesses the progression of the four domains of emotional intelligence (self-awareness, self-management, social awareness, and relationship management) at three stages (pre-intervention, mid-intervention, post-intervention) in the EI series amongst medical student cohorts. The Management Performance Solutions assessment measured the efficacy of a 10-week exercise-based EI series that medical students received during this study.

All third-year medical students at a Northeastern United States hospital participated in the emotional intelligence exercise series that ran from July of 2016 through June of 2019. These three successive cohorts (2016-2019) comprise this convenience sample due to the mandated EI educational series, per administrative permissions. This study design aimed to replicate findings across subsequent cohorts, with literal replication amongst each medical student cohort to compare them to the other medical student cohorts (Etikan, Musa, & Alkassim, 2016). Utilizing the intended cohorts of medical students will then provide data for theoretical replication to draw comparisons between the cohorts, thus highlighting the medical student

cohort's improvement (Etikan, Musa, &Alkassim, 2016). To that end, the research questions applied for this study are:

1. What is the proportion of low and medium, and high emotional intelligence in all four EI constructs (self-awareness, self-regulation, social awareness, relationship management) among third-year medical students?
2. What are the demographic characteristics of the low, medium, and high EI subgroups?
3. What is the impact of the 10-exercise series on the EI competencies of self-awareness, self-regulation, social awareness, and relationship management among low, medium, and high EQ third-year medical students?
4. Which EI construct improves more successfully after implementing the 10-exercise series among low and medium, and high Emotional Quotient (EQ) third-year medical students?

The emotional intelligence assessment tool developed by Management Performance Solutions is a 40-item questionnaire that measures four dimensions of emotional intelligence: self-awareness, self-regulation, social awareness, and relationship management (Appendix B). Each domain includes ten items measured on a 5-point Likert scale. Scores can range from 0-50 on each domain. Scores up to 30 represent low scores, 31-40 represent medium scores, and scores between 41 and 50 represent high emotional intelligence. Administration occurs at the beginning, in the middle of, and after the series to assess pre, mid, and post-intervention Emotional Intelligence (EI) scores among participants. The data analysis will be a one-way analysis of variance (ANOVA) due to the factors' multilevel nature.

Statistical Analysis Method

Data were collected on an excel spreadsheet for medical students by this researcher as part of the yearlong 10-exercise EI series to evaluate medical student EI skill development. Each

subject was assigned a unique alphanumerical ID, which the researcher utilized to track the de-identified data to code the same student's responses through the three surveys. The analysis includes the mean and statistical testing of a difference in each domain's overall score measurements at three stages. The four EI domains under consideration are self-awareness (SA), self-regulation (SR), social awareness (SC), and relationship management (RM). The de-identified data analysis is per the specific aims listed in the research questions. All quantitative data were analyzed using Microsoft Excel with $p < 0.05$, denoting statistical significance. A total of 66 medical students participated in the 10-exercise EI series from 2016-2019.

Research Question 1

What is the proportion of low, medium, and high emotional intelligence in all four EQ constructs (self-awareness, self-regulation, social awareness, relationship management) among third-year medical students? For research question one, the population with low, medium, or high scores on the baseline EQ questionnaire was divided by the total population to obtain each group's proportion. The further extrapolation of the low, medium, and high EI scores are delineated by year, dimension, and stage (pre-test, mid-test, post-test).

2016-2017 cohort

In the 2016-2017 cohort results (n = 16), participants did not initially score low on the EI competencies; however, the distribution of scores for each EI competency did not remain static (Tables 1-4). The absence of pre-test low score proportions can be noted in all four EI competencies in the following Figures (1-4). For the 2016-2017 cohort, the most remarkable change was found in the social awareness high score proportion that initially dropped from pre-test (56%) to mid-test (44%), then increased at the post-test (75%).

2016-2017 Self-Awareness Scoring

As shown in Figure 1 and Table 1, self-awareness low score proportions remain at the same level from pre-test to mid-test to post-test with no change in trend. There is a change in medium score proportions decreasing pre-test to mid-test, then post-test medium score proportion increase with an overall upward trend. The high score proportion increases slightly between the pre-test and mid-test, but the post-test scores decrease below previous proportions for a downward trend overall. The post-test scoring shows no scores and no change in trend in the low range, increased proportions and an upward trend in the medium range, and varying proportions with a downward trend in the high range; this results in the majority of scores in the medium range at post-test.

Figure 1.

2016-2017 Self-Awareness Results by Stage and EI score level.

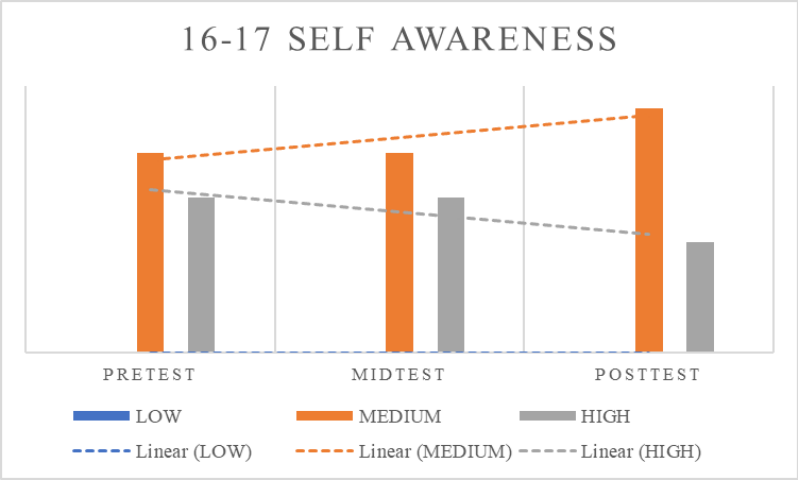


Table 1.

2016-2017 Self-Awareness Results by Stage and EI score level (numerically and percentage).

16-17 DOMAIN DISTRIBUTION L/M/H			
SA	PRETEST	MIDTEST	POSTTEST
LOW	0	0	0
MEDIUM	9	9	11
HIGH	7	7	5

16-17 DOMAIN % L/M/H			
SA	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	0%
MEDIUM	56%	56%	69%
HIGH	44%	44%	31%

2016-2017 Self-Regulation Scoring

As shown in Figure 2 and Table 2, self-regulation low score proportions remain at the same level from pre-test to mid-test but increase with an upward trend at the post-test. There is no change in medium score proportions between pre-test to mid-test in a similar pattern, but there is an increase with an upward trend at the post-test. The high score proportion remains the same from the pre-test and mid-test, but the post-test scores decrease below previous proportions for a downward trend overall. The post-test scoring shows low scores increasing in proportion and an upward trend, increased proportions and an upward trend in the medium range, and decreased proportions with a downward trend in the high range; this results in the majority of scores in the medium range at post-test.

Figure 2.

2016-2017 Self-Regulation Results by Stage and EI score level.

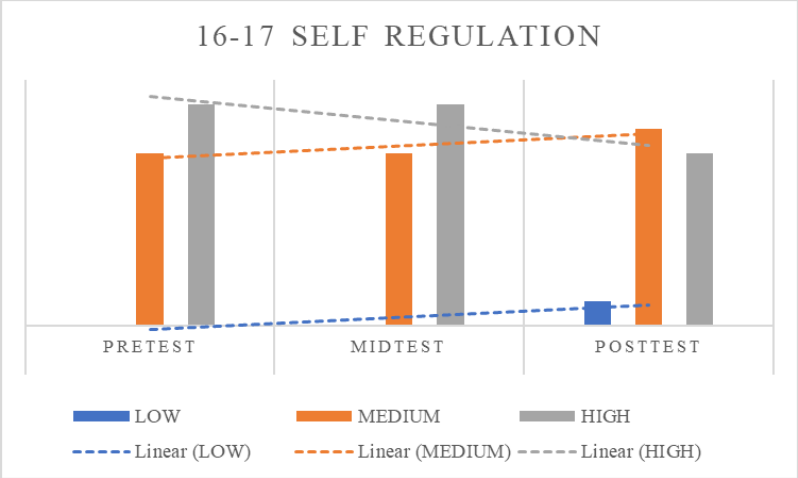


Table 2.

2016-2017 Self-Regulation Results by Stage and EI score level (numerically and percentage).

16-17 DOMAIN DISTRIBUTION L/M/H			
SR	PRETEST	MIDTEST	POSTTEST
LOW	0	0	1
MEDIUM	7	7	8
HIGH	9	9	7

16-17 DOMAIN % L/M/H			
SR	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	6%
MEDIUM	44%	44%	50%
HIGH	56%	56%	44%

2016-2017 Social-Awareness Scoring

As shown in Figure 3 and Table 3, social awareness low score proportions remain at the same level from pre-test to mid-test to post-test, presenting no change in trend. There is a change in medium score proportions rising between pre-test and mid-test, but the post-test medium score proportion decreases and trends downward. The high score proportion decreases between the pre-test and mid-test but increases substantially in proportion for a sharp trend upward with the post-test. The post-test scoring shows no low scores, decreased proportions and a downward

trend in the medium range, and varying proportions with an upward trend in the high range; this results in the majority of scores in the high-range at post-test.

Figure 3.

2016-2017 Social-Awareness Results by Stage and EI score level.

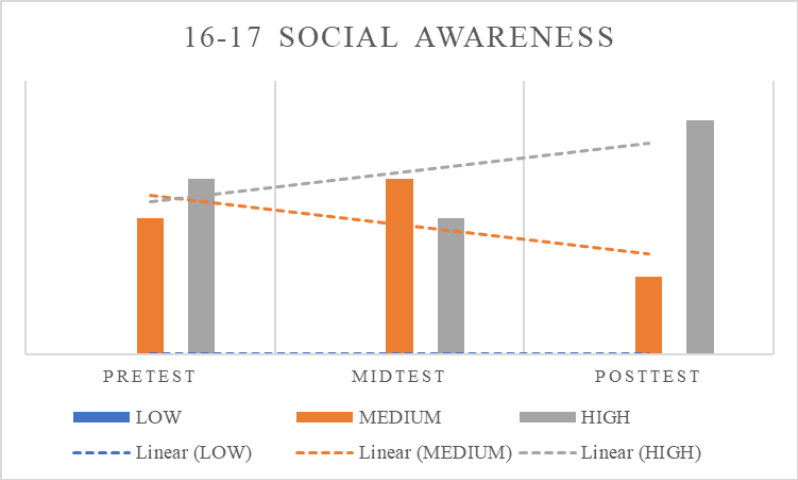


Table 3.

2016-2017 Social-Awareness Results by Stage and EI score level (numerically and percentage).

16-17 DOMAIN DISTRIBUTION L/M/H			
SC	PRETEST	MIDTEST	POSTTEST
LOW	0	0	0
MEDIUM	7	9	4
HIGH	9	7	12

16-17 DOMAIN % L/M/H			
SC	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	0%
MEDIUM	44%	56%	25%
HIGH	56%	44%	75%

2016-2017 Relationship Management Scoring

As shown in Figure 4 and Table 4, relationship management low score proportions remain at the same level with no change in trend from pre-test to mid-test but increase with an upward trend at the post-test. There a change in medium score proportions decreasing from pre-test to mid-test, but with the post-test medium score proportion increases but still trends downward overall. The high score proportion increases between the pre-test and mid-test, but the

post-test scores decrease back to pre-test in proportion for a flat trend overall. The post-test scoring shows increased proportions and an upward trend in the low range, decreased proportions and a downward trend in the medium range, while high score proportions trend flat; this results in the majority of scores in the medium range at post-test.

Figure 4.

2016-2017 Relationship Management Results by Stage and EI score level.

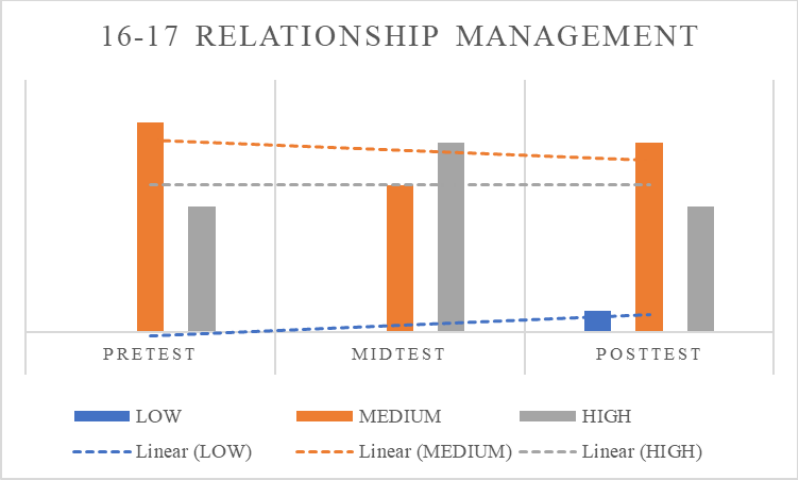


Table 4.

2016-2017 Relationship Management Results by Stage and EI score level (numerically and percentage).

16-17 DOMAIN DISTRIBUTION L/M/H			
RM	PRETEST	MIDTEST	POSTTEST
LOW	0	0	1
MEDIUM	10	7	9
HIGH	6	9	6

16-17 DOMAIN % L/M/H			
RM	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	6%
MEDIUM	63%	44%	56%
HIGH	38%	56%	38%

2017-2018 cohort

In the 2017-2018 cohort results (n = 30), the proportions of low, medium, and high scores demonstrated dynamic changes across the EI dimensions (Figures 5-8 and Tables 5-8). For the

2017-2018 cohort, the most remarkable change was found in the social awareness high score proportion that rose from pre-test (20%) to mid-test (23%), then increased at the post-test (77%).

2017-2018 Self-Awareness Scoring

As shown in Figure 5 and Table 5, self-awareness low score proportions remain at the same level with no change in trend from pre-test to mid-test but decrease with a downward trend at the post-test. There is a change in medium score proportions increasing slightly from pre-test to mid-test score proportions, with the post-test medium score proportion holding at the same level with a slight upward trend overall. The high score proportion decreases between the pre-test and mid-test, but the post-test scores increase above previous proportions for a slightly upward trend overall. The post-test scoring shows decreased proportions and a downward trend in the low range, increased proportions and a slight upward trend in the medium range, with overall increased high score proportions trending slightly upward; this results in the majority of scores in the medium range at post-test.

Figure 5.

2017-2018 Self-Awareness Results by Stage and EI score level.

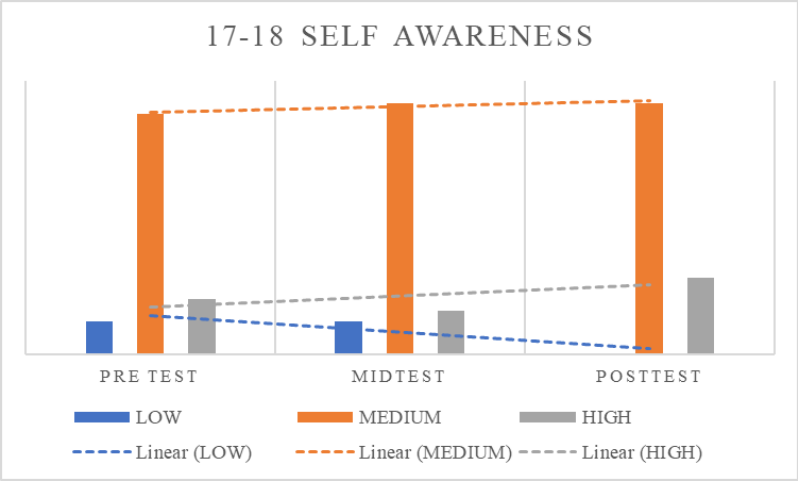


Table 5.

2017-2018 Self-Awareness Results by Stage and EI score level (numerically and percentage).

17-18 DOMAIN DIST L/M/H			
SA	PRETEST	MIDTEST	POSTTEST
LOW	3	3	0
MEDIUM	22	23	23
HIGH	5	4	7

17-18 DOMAIN % L/M/H			
SA	PRETEST	MIDTEST	POSTTEST
LOW	10%	10%	0%
MEDIUM	73%	77%	77%
HIGH	17%	13%	23%

2017-2018 Self-Regulation Scoring

As can be seen in Figure 6 and Table 6, self-regulation low score proportions increase from pre-test to mid-test but decrease at the post-test with an overall upward trend. There is a change in medium score proportions decreasing pre-test to mid-test to post-test, resulting in a downward trend. The high score proportion decreases slightly between the pre-test and mid-test, but the post-test scores increase above previous proportions for a slightly upward trend overall. The post-test scoring shows varying proportions and a downward trend in the low range, decreased proportions and a downward trend in the medium range, and varying proportions and an upward trend in the high range; this results in the majority of scores in the medium range at post-test.

Figure 6.

2017-2018 Self-Regulation Results by Stage and EI score level.

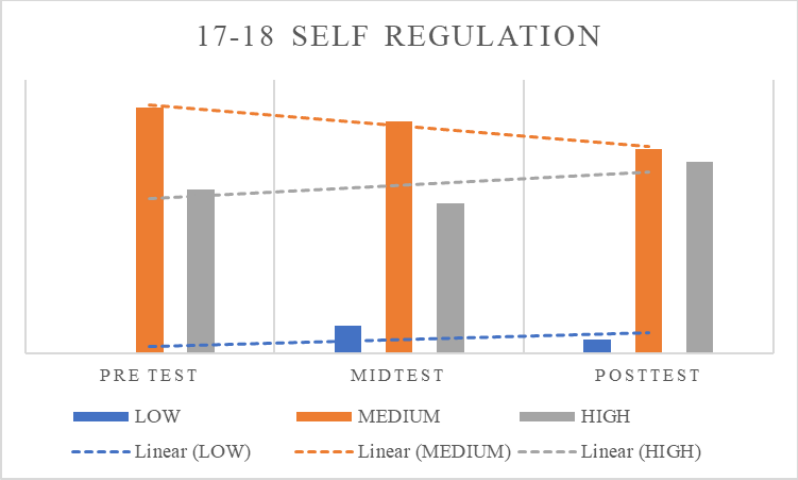


Table 6.

2017-2018 Self-Regulation Results by Stage and EI score level (numerically and percentage).

17-18 DOMAIN DIST L/M/H			
SR	PRETEST	MIDTEST	POSTTEST
LOW	0	2	1
MEDIUM	18	17	15
HIGH	12	11	14

17-18 DOMAIN % L/M/H			
SR	PRETEST	MIDTEST	POSTTEST
LOW	0%	7%	3%
MEDIUM	60%	57%	50%
HIGH	40%	37%	47%

2017-2018 Social Awareness Scoring

As shown in Figure 7 and Table 7, social awareness low score proportions remain at the same level from pre-test to mid-test to post-test, presenting no change in trend. There is a change in medium score proportions decreasing slightly from pre-test to mid-test score proportions, with the post-test medium score proportion decreasing sharply with a downward trend. The high score proportion increases slightly between the pre-test and mid-test, but the post-test scores increase sharply for an upward trend. The post-test scoring shows no scores and a downward trend in the low range, decreased proportions and a downward trend in the medium range, increased

proportions and a sharp trend upward in the high range; this results in the majority of scores in the high range at post-test.

Figure 7.

2017-2018 Social Awareness Results by Stage and EI score level.

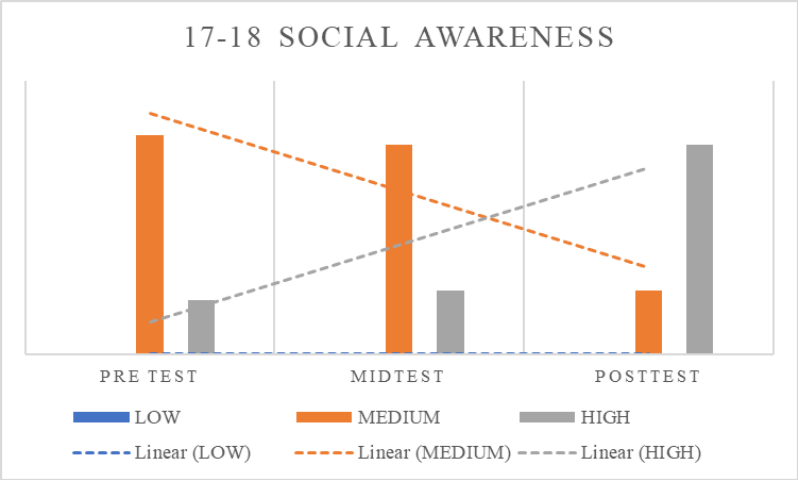


Table 7.

2017-2018 Social Awareness Results by Stage and EI score level (numerically and percentage).

17-18 DOMAIN DIST L/M/H			
SC	PRETEST	MIDTEST	POSTTEST
LOW	0	0	0
MEDIUM	24	23	7
HIGH	6	7	23

17-18 DOMAIN % L/M/H			
SC	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	0%
MEDIUM	80%	77%	23%
HIGH	20%	23%	77%

2017-2018 Relationship Management Scoring

As shown in Figure 8 and Table 8, relationship management low score proportions increase from pre-test to mid-test, reducing to no low scores at post-test, presenting a downward trend. There is a change in medium score proportions increasing from pre-test to mid-test score proportions, with the post-test medium score proportion decreasing with a downward trend overall. The high score proportion decreases between the pre-test and mid-test, but the post-test

scores increase above previous levels for an upward trend overall. The post-test scoring shows no scores and a downward trend in the low range, decreased proportions and a downward trend in the medium range, increased proportions and an upward trend in the high range; this results in the majority of scores in the high range at post-test.

Figure 8.

2017-2018 Relationship Management Results by Stage and EI score level.

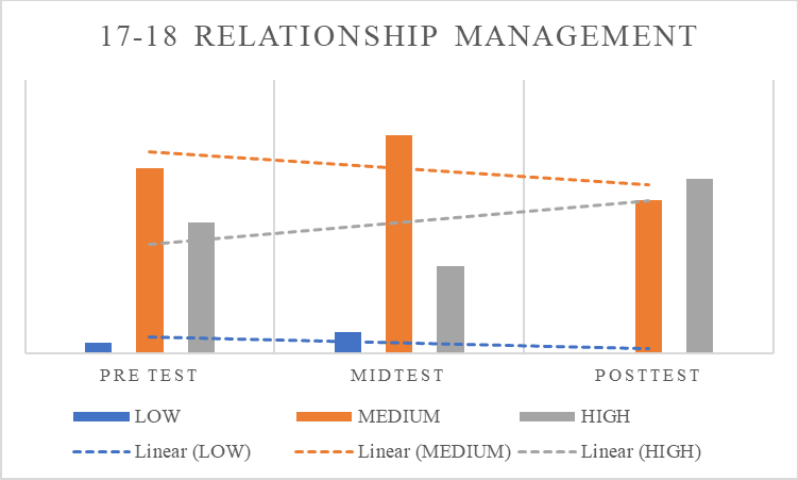


Table 8.

2017-2018 Relationship Management Results by Stage and EI score level (numerically and percentage).

17-18 DOMAIN DIST L/M/H			
RM	PRETEST	MIDTEST	POSTTEST
LOW	1	2	0
MEDIUM	17	20	14
HIGH	12	8	16

17-18 DOMAIN % L/M/H			
RM	PRETEST	MIDTEST	POSTTEST
LOW	3%	7%	0%
MEDIUM	57%	67%	47%
HIGH	40%	27%	53%

2018-2019 cohort

In the 2018-2019 cohort results (n = 20), the low, medium, and high score proportions demonstrated dynamic changes across the EI dimensions (Figures 9-12 and Tables 9-12). For the

2018-2019 cohort, the most remarkable change was found in the high score proportions of social awareness and relationship management. The social awareness high score proportions remain unchanged from pre-test (40%) to mid-test (40%), then increased at the post-test (80%). The relationship management high score proportions rose from pre-test (45%) to mid-test (50%), then increased at the post-test (70%).

2018-2019 Self-Awareness Scoring

As shown in Figure 9 and Table 9, self-awareness low score proportions decrease from pre-test to mid-test, and return to pre-test level at post-test, presenting a flat trend. There is a change in medium score proportions decreasing from pre-test to mid-test, with the post-test medium score proportion increasing slightly with a downward trend overall. The high score proportion increases between the pre-test and mid-test, but the post-test scores decrease to remain above previous pre-test levels for an upward trend overall. The post-test scoring shows varied proportions and a flat trend in the low range, varied proportions and a downward trend in the medium range, varied proportions and an upward trend in the high range; this results in the majority of scores in the medium range at post-test.

Figure 9.

2018-2019 Self-Awareness Results by Stage and EI score level.

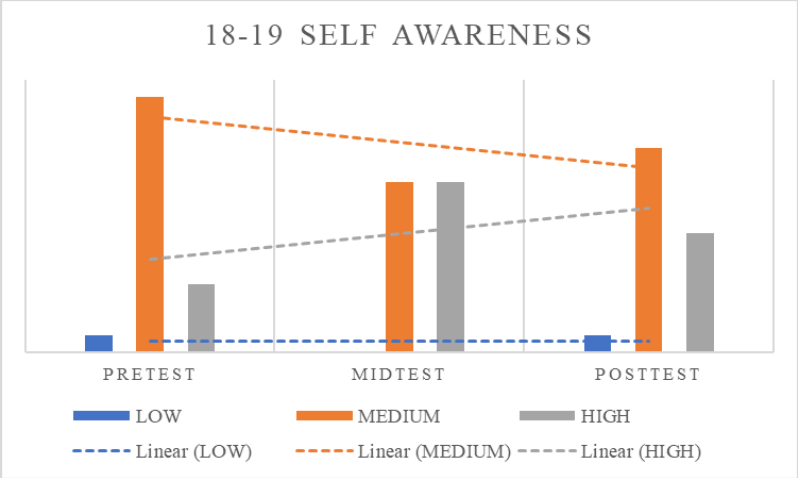


Table 9.

2018-2019 Self-Awareness Results by Stage and EI score level (numerically and percentage).

18-19 DOMAIN DIST L/M/H			
SA	PRETEST	MIDTEST	POSTTEST
LOW	1	0	1
MEDIUM	15	10	12
HIGH	4	10	7

18-19 DOMAIN % L/M/H			
SA	PRETEST	MIDTEST	POSTTEST
LOW	5%	0%	5%
MEDIUM	75%	50%	60%
HIGH	20%	50%	35%

2018-2019 Self-Regulation Scoring

As shown in Figure 10 and Table 10, self-regulation low score proportions remain at the same level from pre-test to mid-test to post-test, presenting no change in trend. There is a change in medium score proportions decreasing from pre-test to mid-test, with the post-test medium score proportion increasing to pre-test levels with a flat trend overall. The high score proportion increases between the pre-test and mid-test, but the post-test scores decrease to pre-test levels for a flat trend overall. The post-test scoring shows no scores and a flat trend in the low range, varied

proportions and a flat trend in the medium range, varied proportions and a flat trend in the high range; this results in the majority of scores in the medium range at post-test.

Figure 10.

2018-2019 Self-Regulation Results by Stage and EI score level.

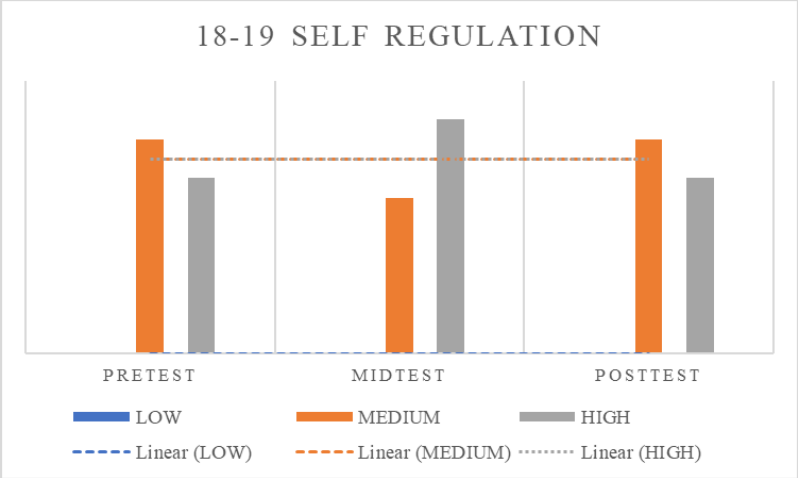


Table 10.

2018-2019 Self-Regulation Results by Stage and EI score level (numerically and percentage).

18-19 DOMAIN DIST L/M/H			
SR	PRETEST	MIDTEST	POSTTEST
LOW	0	0	0
MEDIUM	11	8	11
HIGH	9	12	9

18-19 DOMAIN % L/M/H			
SR	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	0%
MEDIUM	55%	40%	55%
HIGH	45%	60%	45%

2018-2019 Social Awareness Scoring

As shown in Figure 11 and Table 11, social-awareness low score proportions decrease from pre-test to no scores at mid-test and remain at no scores at post-test, presenting a downward trend. There is a change in medium score proportions increasing from pre-test to mid-test, with the post-test medium score proportion decreasing sharply with a downward trend overall. The

high score proportion remains unchanged between the pre-test and mid-test, but the post-test score proportions increase sharply for an upward trend overall. The post-test scoring shows decreasing proportions and a decreasing trend in the low range, varied proportions and a downward trend in the medium range, increasing proportions and an upward trend in the high range; this results in the majority of scores in the high range at post-test.

Figure 11.

2018-2019 Social Awareness Results by Stage and EI score level.

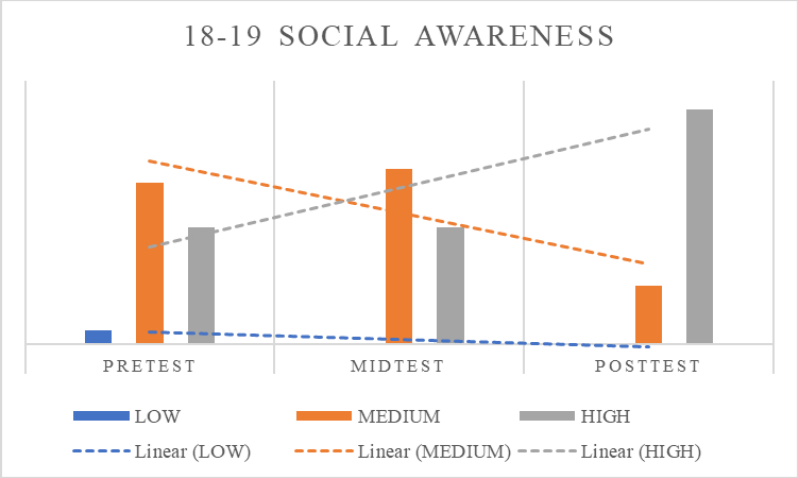


Table 11.

2018-2019 Social Awareness Results by Stage and EI score level (numerically and percentage).

18-19 DOMAIN DIST L/M/H			
SC	PRETEST	MIDTEST	POSTTEST
LOW	1	0	0
MEDIUM	11	12	4
HIGH	8	8	16

18-19 DOMAIN % L/M/H			
SC	PRETEST	MIDTEST	POSTTEST
LOW	5%	0%	0%
MEDIUM	55%	60%	20%
HIGH	40%	40%	80%

2018-2019 Relationship Management Scoring

As shown in Figure 12 and Table 12, relationship management low score proportions remain at the same level with no change in trend from pre-test to mid-test but increase with an

upward trend at the post-test. There is a change in medium score proportions decreasing from pre-test to mid-test to post-test with a downward trend. The high score proportion increases slightly between the pre-test and mid-test, but the post-test score proportions increase sharply for an upward trend overall. The post-test scoring shows slightly increasing proportions and an increasing trend in the low range, decreasing proportions and a downward trend in the medium range, increasing proportions and an upward trend in the high range; this results in the majority of scores in the high range at post-test.

Figure 12.

2018-2019 Relationship Management Results by Stage and EI score level.

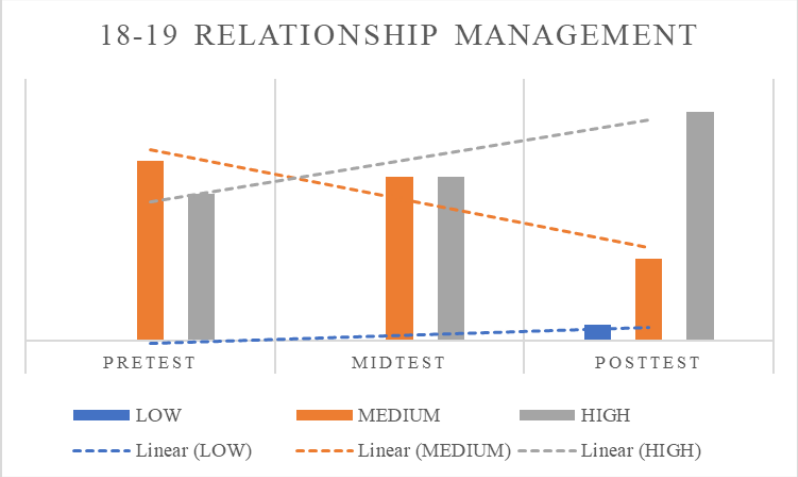


Table 12.

2018-2019 Relationship Management Results by Stage and EI score level (numerically and percentage).

18-19 DOMAIN DIST L/M/H			
RM	PRETEST	MIDTEST	POSTTEST
LOW	0	0	1
MEDIUM	11	10	5
HIGH	9	10	14

18-19 DOMAIN % L/M/H			
RM	PRETEST	MIDTEST	POSTTEST
LOW	0%	0%	5%
MEDIUM	55%	50%	25%
HIGH	45%	50%	70%

In summary, the findings for research question 1 demonstrate that the low score proportions remain at low to no scores across EI competencies and all three cohorts. The post-test medium score proportions are at the greatest levels for self-awareness and self-regulation across all three cohorts. Post-test high score proportions are at the greatest levels for social-awareness across all three cohorts; 2016-2017 (75%), 2017-2018 (77%), 2018-2019 (70%). The EI competency of relationship management shows varied post-test score proportions where medium score proportions are greatest for the 2016-2017 cohort, but the high score proportions are greatest for the 2017-2018 and 2018-2019 cohorts. The researcher further examines these findings of low, medium, and high emotional intelligence proportions across the EI competencies, as each cohort's demographic characteristics are explored in research question 2.

Research Question 2

What are the demographic characteristics of low, medium, and high EI subgroups? For research question 2, demographic characteristics are presented as a count and percentage for low, medium, and high EI subgroups in each cohort. Demographic characteristics are summarized as aggregates in the form of means for continuous variables and proportions for categorical variables in Table 25.

2016-2017 cohort

In the 2016-2017 cohort results (n = 16), delineation of demographic characteristics by F (female, n = 6) and M (male, n = 10) further describes the incidence of low, medium, and high EI subgroups. The absence of pre-test low score proportions can be noted in Figures 13-16. For the 2016-2017 cohort, the most remarkable change was found in the social awareness high score proportion. For the F subgroup, social awareness high score proportions increased from pre-test (n = 2) to mid-test (n = 3) to post-test (n = 4). For the M subgroup, social awareness high score

proportions decreased from pre-test (n = 7) to mid-test (n = 4), then increased at post-test (n = 8). The F subgroup (n = 4) and the M subgroup (n = 8) comprise the 75% high score proportion of the total 2016-2017 cohort population.

2016-2017 Self-Awareness Scoring

As shown in Figure 13 and Table 13, self-awareness low score proportions remain at no scores for pre-test, mid-test, or post-test for either subgroup. There is a change in medium score proportions for the F subgroup, increasing pre-test to mid-test, then remaining the same at post-test. The medium score proportions for the M subgroup decrease from pre-test to mid-test but rise above previous levels at post-test. The high score proportion for the F subgroup decreases between the pre-test and mid-test, remaining at the same level at the post-test. High score proportions for the M subgroup increase from pre-test to mid-test, then decrease at post-test. The post-test scoring is similar for both subgroups, where there are no scores in the low range, increased proportions in the medium range, and decreased proportions in the high range; this results in the majority of scores in the medium range at post-test for both subgroups.

Figure 13.

16-17 Self Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

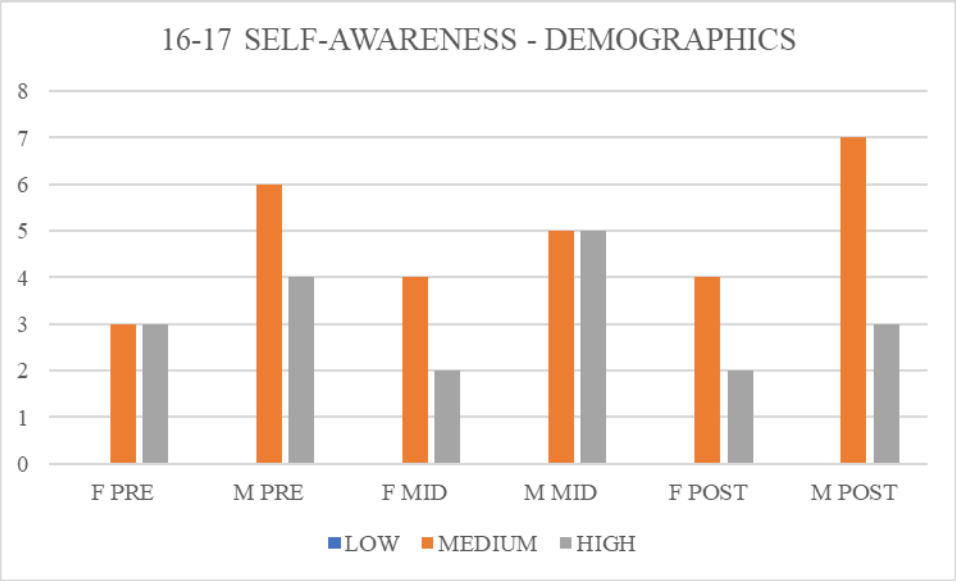


Table 13.

16-17 Self Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

16-17 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
SA	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	0	0
MEDIUM	3	6	4	5	4	7
HIGH	3	4	2	5	2	3

16-17 DOMAIN DEMOGRAPHIC % BY L/M/H						
SA	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	0%	0%
MEDIUM	19%	38%	25%	31%	25%	44%
HIGH	19%	25%	13%	31%	13%	19%

2016-2017 Self-Regulation Scoring

As shown in Figure 14 and Table 14, self-regulation low score proportions remain at no score from pre-test to mid-test for both subgroups; however, the F subgroup low score proportion increases at the post-test, while the M subgroup stays at no score. Medium score proportions decrease from pre-test to mid-test to the post-test for the F subgroup while the M subgroup increases across stages. The F subgroup shows high score proportion increases from the pre-test

and mid-test, remaining the same at post-test, while the M subgroup decreases consistently across stages. The post-test scoring shows increased proportions of low and high scores for the F subgroup and increased proportions in the medium range for the M subgroup. However, 51% of the 2016-2017 cohort scores are in the medium range at the post-test.

Figure 14.

16-17 Self-Regulation Demographic Characteristics of Low, Medium, and High EI subgroups.

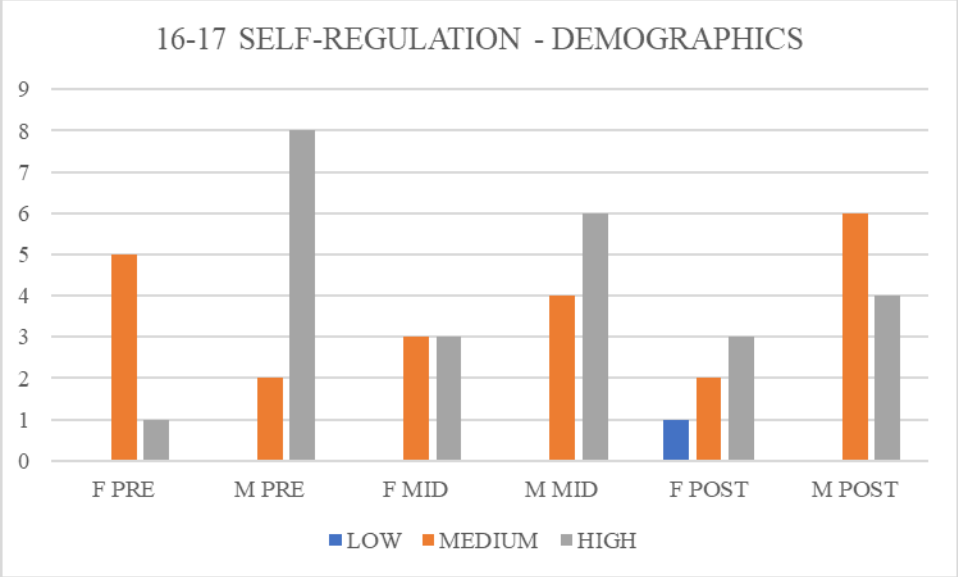


Table 14.

16-17 Self-Regulation Demographic Characteristics of Low, Medium, and High EI subgroups.

16-17 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
SR	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	1	0
MEDIUM	5	2	3	4	2	6
HIGH	1	8	3	6	3	4

16-17 DOMAIN DEMOGRAPHIC % BY L/M/H						
SR	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	6%	0%
MEDIUM	31%	13%	19%	25%	13%	38%
HIGH	6%	50%	19%	38%	19%	25%

2016-2017 Social-Awareness Scoring

As shown in Figure 15 and Table 15, social awareness low score proportions remain at zero for pre-test, mid-test, or post-test for either subgroup. Medium score proportions decrease from pre-test to mid-test to post-test for the F subgroup, while medium score proportions increase from pre-test to mid-test, then decrease below initial levels at post-test for the M subgroups. The high score proportion increases from pre-test to mid-test to post-test for the F subgroup, while medium score proportions decrease from pre-test to mid-test, then increase at post-test for the M subgroups. The post-test scoring shows no low scores, decreased proportions in the medium range, and increased proportions in the high range for both subgroups; this results in the majority of scores in the high-range at post-test for both subgroups.

Figure 15

16-17 Social Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

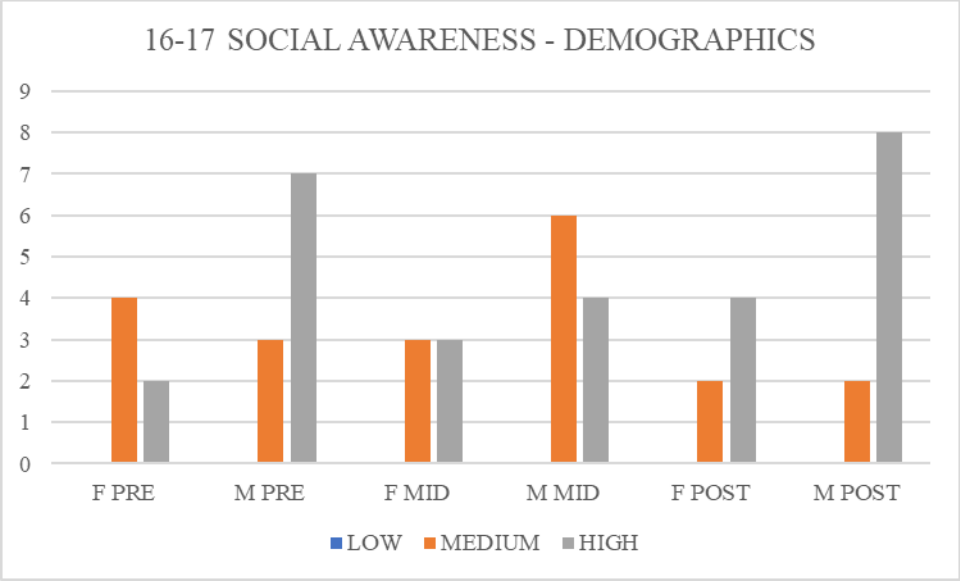


Table 15.

16-17 Social Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

16-17 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
SC	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	0	0
MEDIUM	4	3	3	6	2	2
HIGH	2	7	3	4	4	8

16-17 DOMAIN DEMOGRAPHIC % BY L/M/H						
SC	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	0%	0%
MEDIUM	25%	19%	19%	38%	13%	13%
HIGH	13%	44%	19%	25%	25%	50%

2016-2017 Relationship Management Scoring

As shown in Figure 16 and Table 16, relationship management low score proportions remain at zero from pre-test to mid-test for both subgroups; however, the F subgroup low score proportion increases at the post-test, while the M subgroup stays at zero. There is a change in medium score proportions for the F subgroup, decreasing from pre-test to mid-test, then remaining at the same level at post-test. The medium score proportions for the M subgroup decrease from pre-test to mid-test but rise to pre-test levels at post-test. The high score proportion increases between the pre-test and mid-test for both subgroups but decreases at the post-test. The post-test scoring shows the F subgroup increasing in proportion in the low range, decreasing in the medium range, and no overall change in the high range. Post-test scoring for the M subgroup returns to pre-test proportions for no overall change; this results in the majority of scores in the medium range at post-test for both subgroups.

Figure 16

16-17 Relationship Management Demographic Characteristics of Low, Medium, and High EI subgroups.

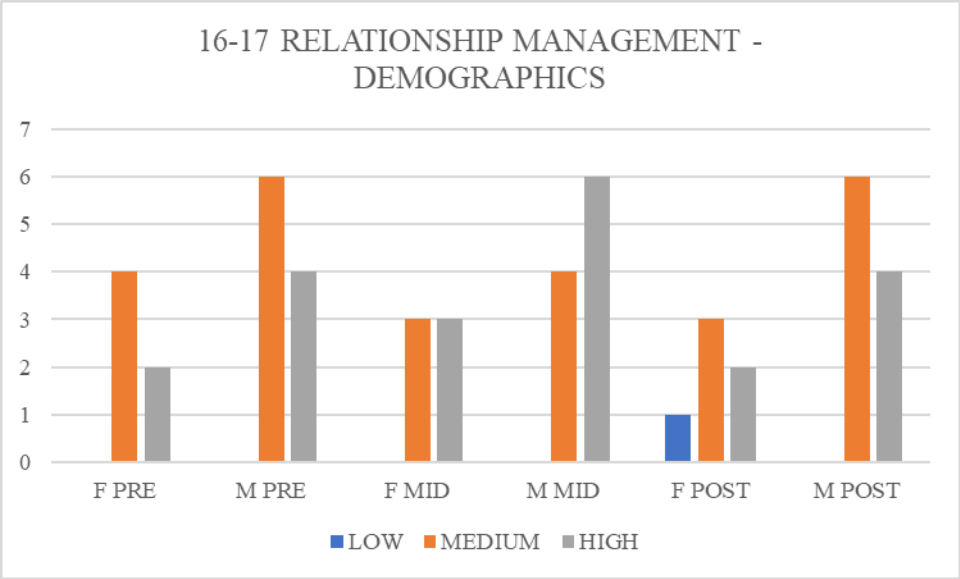


Table 16.

16-17 Relationship Management Demographic Characteristics of Low, Medium, and High EI subgroups.

16-17 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
RM	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	1	0
MEDIUM	4	6	3	4	3	6
HIGH	2	4	3	6	2	4

16-17 DOMAIN DEMOGRAPHIC % BY L/M/H						
RM	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	6%	0%
MEDIUM	25%	38%	19%	25%	19%	38%
HIGH	13%	25%	19%	38%	13%	25%

2017-2018 cohort

In the 2017-2018 cohort results (n = 30), delineation of demographic characteristics by F (female, n = 14) and M (male, n = 16) further describes the incidence of low, medium, and high EI subgroups. The proportions of low, medium, and high scores amongst subgroups

demonstrated dynamic changes across the EI dimensions (Figures 17-20 and Tables 17-20). For the 2017-2018 cohort, the most remarkable change was found in the social awareness high score proportion. For the F subgroup, social awareness high score proportions increased from pre-test (n = 2) to mid-test (n = 4) to post-test (n = 10). For the M subgroup, social awareness high score proportions decreased from pre-test (n = 4) to mid-test (n = 3), then increased at post-test (n = 13). At post-test the F subgroup (n = 10) and the M subgroup (n = 13) comprise the 77% high score proportion of the total 2017-2018 cohort population. The change in the relationship management high score proportion from pre-test to post-test was also notable. For the F subgroup, relationship management high score proportions increased from pre-test (n = 6) to post-test (n = 9), while the M subgroup relationship management high score proportions increased from pre-test (n = 6) to post-test (n = 7). At post-test the F subgroup (n = 9) and the M subgroup (n = 7) comprise the 53% high score proportion of the total 2017-2018 cohort population.

2017-2018 Self-Awareness Scoring

As shown in Figure 17 and Table 17, self-awareness low score proportions remain at the same level with no change from pre-test to mid-test but decrease to zero at the post-test for both subgroups. Medium score proportions decreased slightly in proportion from pre-test to mid-test and remained at the same level at post-test for the F subgroup. In contrast, the M subgroup medium score proportions increased from pre-test to mid-test and stayed at the same level at post-test. The F subgroup high score proportion increases from pre-test to mid-test to post-test, while the M subgroup score proportions decrease from pre-test to mid-test but increase at post-test remaining below pre-test levels. The F subgroup post-test scoring shows zero scores in the low range, increased proportions in the medium range, and increased high score proportions. The

M subgroup post-test scoring shows zero scores in the low range, increased proportions in the medium range, and decreased high score proportions; this results in the majority of scores in the medium range at post-test for both subgroups.

Figure 17.

17-18 Self Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

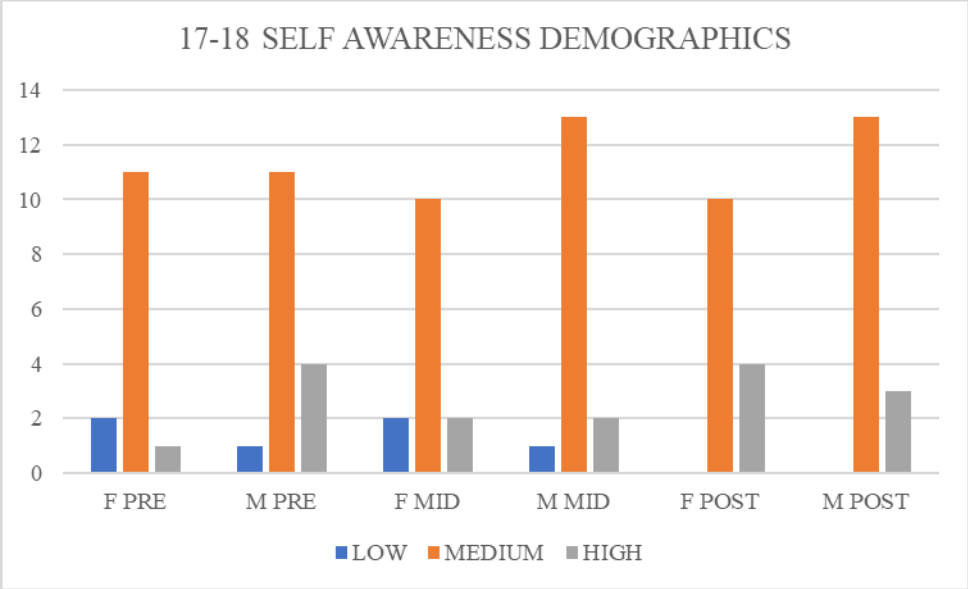


Table 17.

17-18 Self Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

17-18 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
SA	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	2	1	2	1	0	0
MEDIUM	11	11	10	13	10	13
HIGH	1	4	2	2	4	3

17-18 DOMAIN DEMOGRAPHIC % BY L/M/H						
SA	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	7%	3%	7%	3%	0%	0%
MEDIUM	37%	37%	33%	43%	33%	43%
HIGH	3%	13%	7%	7%	13%	10%

2017-2018 Self-Regulation Scoring

As shown in Figure 18 and Table 18, self-regulation low score proportions increase from pre-test to mid-test for both subgroups, remaining the same at post-test for the F subgroup, but the M subgroup returns to zero at post-test. There is a change in medium score proportions, where the F subgroup decreases pre-test to mid-test to post-test, while the M subgroup increases from pre-test to mid-test, then remains at the same level at post-test. The high score proportion increases from pre-test to mid-test to post-test for the F subgroup, while the M subgroup decreases from pre-test to mid-test, then increases at post-test, remaining below previous proportions. The post-test scoring shows varying proportions for both subgroups, resulting in the majority of scores in the medium range for the F subgroup at post-test and a split between the medium and high ranges for the M subgroup.

Figure 18.

17-18 Self-Regulation Demographic Characteristics of Low, Medium, and High EI subgroups.

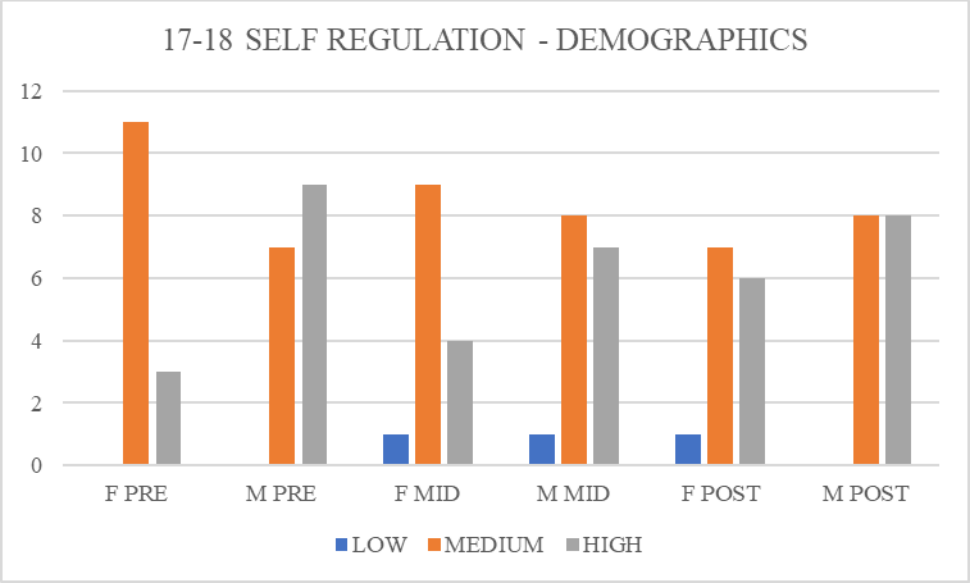


Table 18.

17-18 Self-Regulation Demographic Characteristics of Low, Medium, and High EI subgroups.

17-18 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
SR	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	1	1	1	0
MEDIUM	11	7	9	8	7	8
HIGH	3	9	4	7	6	8

17-18 DOMAIN DEMOGRAPHIC % BY L/M/H						
SR	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	3%	3%	3%	0%
MEDIUM	37%	23%	30%	27%	23%	27%
HIGH	10%	30%	13%	23%	20%	27%

2017-2018 Social Awareness Scoring

As shown in Figure 19 and Table 19, social awareness low score proportions remain at zero for pre-test, mid-test, or post-test for both subgroups. Medium score proportions decrease from pre-test to mid-test to post-test for the F subgroup, while medium score proportions for the M subgroup increase between pre-test and mid-test but decrease sharply at post-test. The high score proportion increases between pre-test and mid-test for the F subgroup, while the opposite occurs for the M subgroup, but post-test high score proportions increase sharply for both subgroups. The post-test scoring shows no scores in the low range and increased proportions in the high range for both subgroups; this results in the majority of scores in the high range at post-test for both subgroups.

Figure 19.

17-18 Social Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

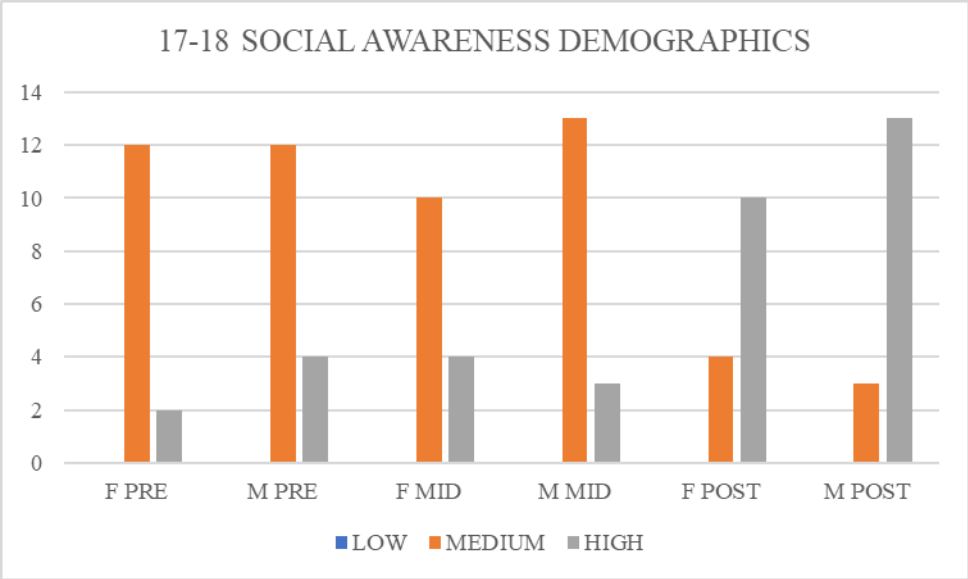


Table 19.

17-18 Social Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

17-18 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
SC	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	0	0
MEDIUM	12	12	10	13	4	3
HIGH	2	4	4	3	10	13

17-18 DOMAIN DEMOGRAPHIC % BY L/M/H						
SC	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	0%	0%
MEDIUM	40%	40%	33%	43%	13%	10%
HIGH	7%	13%	13%	10%	33%	43%

2017-2018 Relationship Management Scoring

As shown in Figure 20 and Table 20, relationship management low score proportions for the F subgroup remain the same from pre-test to mid-test but reduce to zero at post-test. In contrast, the M subgroup low score proportions increase from pre-test to mid-test but return to zero at post-test. Medium score proportions for the F subgroup remain at the same level from pre-test to mid-test but decrease at post-test. The M subgroup medium score proportions increase

from pre-test to mid-test then drop below initial levels at post-test. The F subgroup's high score proportions remain at the same level from pre-test to mid-test but increase at post-test. The M subgroup high score proportions decrease from pre-test to mid-test then rise above initial levels at post-test. For both subgroups, the post-test scoring shows no scores in the low range, decreased proportions in the medium range, and increased proportions in the high range; this results in the majority of scores in the high range at post-test for both subgroups.

Figure 20.

17-18 Relationship Management Demographic Characteristics of Low, Medium, and High EI subgroups.

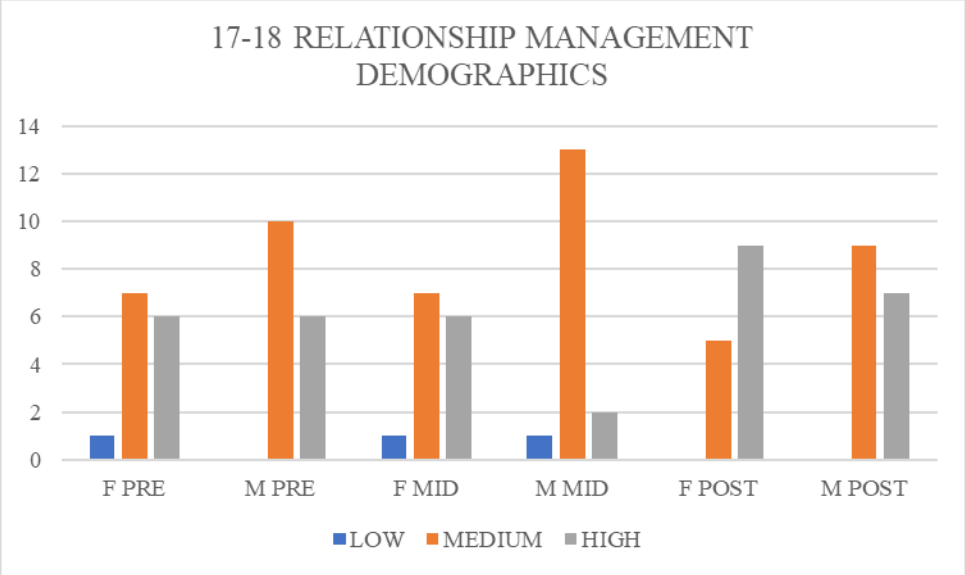


Table 20.

17-18 Relationship Management Demographic Characteristics of Low, Medium, and High EI subgroups.

17-18 DOMAIN DISTRIBUTION DEMOGRAPHICS BY L/M/H						
RM	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	1	0	1	1	0	0
MEDIUM	7	10	7	13	5	9
HIGH	6	6	6	2	9	7

17-18 DOMAIN DEMOGRAPHIC % BY L/M/H						
RM	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	3%	0%	3%	3%	0%	0%
MEDIUM	23%	33%	23%	43%	17%	30%
HIGH	20%	20%	20%	7%	30%	23%

2018-2019 cohort

In the 2018-2019 cohort results (n = 20), delineation of demographic characteristics by F (female, n = 7) and M (male, n = 13) further describes the incidence of low, medium, and high EI subgroups. The proportions of low, medium, and high scores amongst subgroups demonstrated dynamic changes across the EI dimensions (Figures 21-24 and Tables 21-24). For the 2018-2019 cohort, the most remarkable change was found in the high score proportions of social awareness and relationship management. Social awareness high score proportions for the F subgroup increased from pre-test (n = 4) to post-test (n = 7) and the M subgroup social awareness high score proportions increased from pre-test (n = 4) to post-test (n = 9). The social awareness high score proportions of the F subgroup (n = 7) and the M subgroup (n = 9) at post-test comprise the 80% high score proportion of the total 2017-2018 cohort population. The change in the relationship management high score proportion from pre-test to post-test was also notable. For the F subgroup, relationship management high score proportions increased from pre-test (n = 4) to post-test (n = 6), while the M subgroup relationship management high score proportions

increased from pre-test (n = 5) to post-test (n = 8). The F subgroup (n = 6) and the M subgroup (n = 8) comprise the 70% high score proportion of the total 2017-2018 cohort population.

2018-2019 Self-Awareness Scoring

As shown in Figure 21 and Table 21, self-awareness low score proportions for the F subgroup decrease to zero from pre-test to mid-test and remain at zero at the pre-test, while the M subgroup scores are zero at both pre-test and mid-test, only to increase at post-test. Both subgroup's medium score proportions decreased from pre-test to mid-test but increased from mid-test to post-test. The high score proportion increases between the pre-test and mid-test, but the post-test scores decrease for both subgroups. The post-test scoring shows varied proportions across all stages for both subgroups; this results in the majority of scores in the medium range at post-test for both subgroups.

Figure 21.

18-19 Self Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

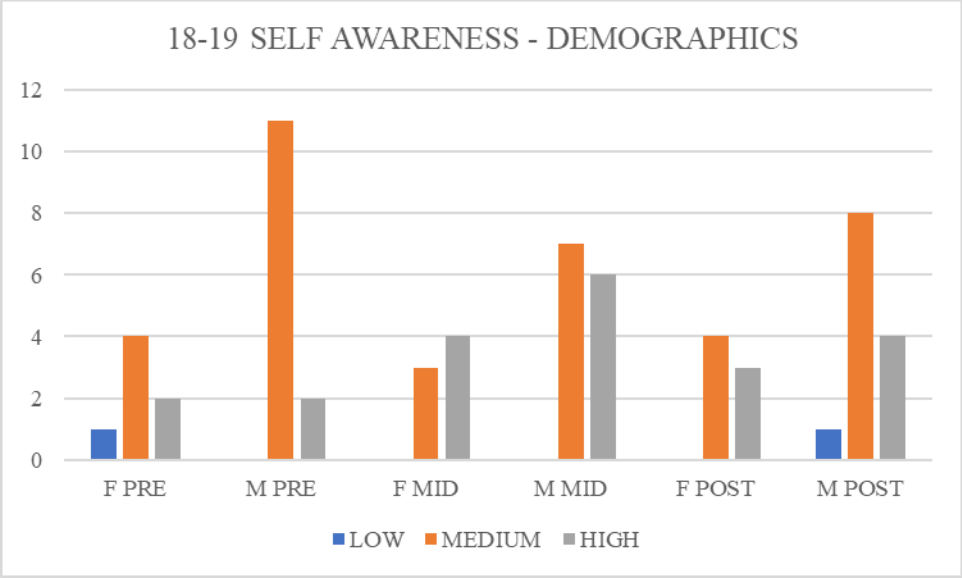


Table 21.

18-19 Self Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

18-19 DOMAIN DIST. DEMOGRAPHICS BY L/M/H						
SA	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	1	0	0	0	0	1
MEDIUM	4	11	3	7	4	8
HIGH	2	2	4	6	3	4

18-19 DOMAIN DEMOGRAPHIC % BY L/M/H						
SA	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	5%	0%	0%	0%	0%	5%
MEDIUM	20%	55%	15%	35%	20%	40%
HIGH	10%	10%	20%	30%	15%	20%

2018-2019 Self-Regulation Scoring

As shown in Figure 22 and Table 22, self-regulation low score proportions remain at zero from pre-test to mid-test to post-test for both subgroups. The F subgroup's medium score proportions decreased from pre-test to mid-test but increased above pre-test levels at post-test. Medium score proportions for the M subgroup decreased from pre-test to mid-test and did not change at post-test. The high score proportion for the F subgroup increased between the pre-test and mid-test and decreased at post-test, while the M subgroup high score proportions increased from pre-test to mid-test and remain unchanged at post-test. The post-test scoring shows no scores in the low range, with varied proportions in the medium and high ranges for both subgroups; this results in the majority of scores in the medium range at post-test for both subgroups.

Figure 22.

18-19 Self Regulation Demographic Characteristics of Low, Medium, and High EI subgroups.

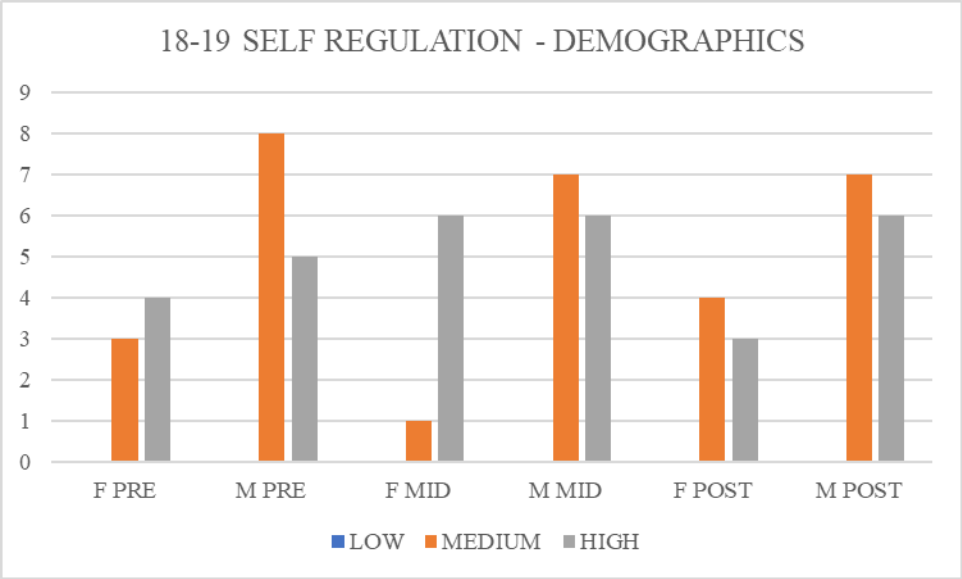


Table 22.

18-19 Self Regulation Demographic Characteristics of Low, Medium, and High EI subgroups.

18-19 DOMAIN DIST. DEMOGRAPHICS BY L/M/H						
SR	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	0	0
MEDIUM	3	8	1	7	4	7
HIGH	4	5	6	6	3	6

18-19 DOMAIN DEMOGRAPHIC % BY L/M/H						
SR	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	0%	0%
MEDIUM	15%	40%	5%	35%	20%	35%
HIGH	20%	25%	30%	30%	15%	30%

2018-2019 Social Awareness Scoring

As shown in Figure 23 and Table 23, social-awareness low score proportions for the F subgroup decrease from pre-test to zero scores at mid-test and remain at zero scores at post-test, while the M subgroup has zero scores across all three stages. Medium score proportions for the F subgroup increase from pre-test to mid-test but reduce to zero at post-test. There is no change in medium score proportion from pre-test to mid-test for the M subgroup, with a sharp decline at

post-test. The high score proportion remains unchanged between the pre-test and mid-test for both subgroups, but the post-test high score proportions increase sharply. The post-test scoring shows zero scores in the low range, varied proportions in the medium range, and increased proportions in the high range for both subgroups; this results in the majority of scores in the high range at post-test for both subgroups.

Figure 23.

18-19 Social Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

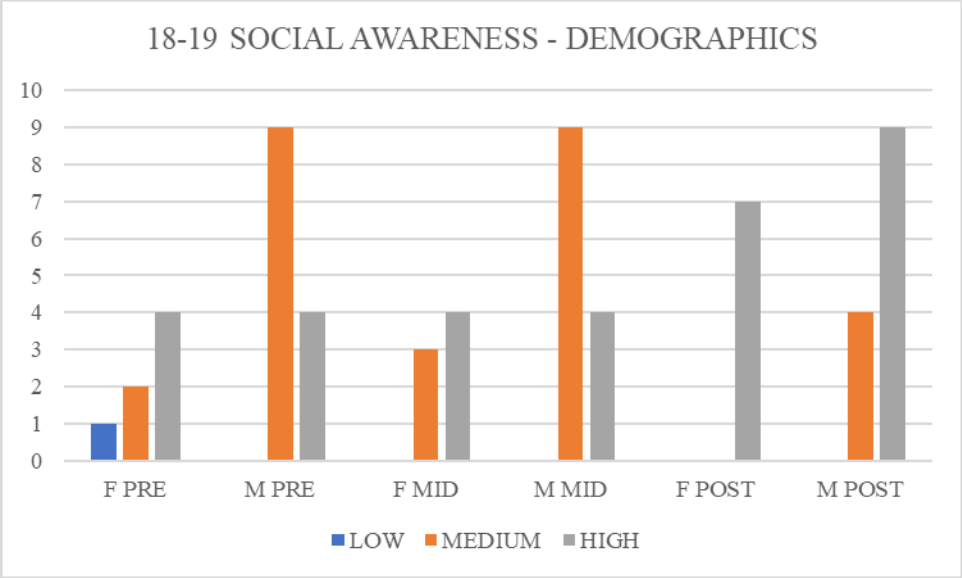


Table 23.

18-19 Social Awareness Demographic Characteristics of Low, Medium, and High EI subgroups.

18-19 DOMAIN DIST. DEMOGRAPHICS BY L/M/H						
SC	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	1	0	0	0	0	0
MEDIUM	2	9	3	9	0	4
HIGH	4	4	4	4	7	9

18-19 DOMAIN DEMOGRAPHIC % BY L/M/H						
SC	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	5%	0%	0%	0%	0%	0%
MEDIUM	10%	45%	15%	45%	0%	20%
HIGH	20%	20%	20%	20%	35%	45%

2018-2019 Relationship Management Scoring

As shown in Figure 24 and Table 24, relationship management low score proportions show zero scores from pre-test to mid-test for both subgroups, but while the F subgroup remains at zero at post-test, the M subgroup low score proportions increase slightly. Medium score proportions decreasing for the F subgroup decrease from pre-test to mid-test and remain at that level at post-test, while the M subgroup's medium score proportions increase from pre-test to mid-test but decrease at post-test. The high score proportion of the F subgroup increases between the pre-test and mid-test remains at that level at post-test, while the M subgroup's high score proportions decrease from pre-test to mid-test but increase at post-test. The post-test scoring shows slightly increasing proportions in the low range for the F subgroup, decreased proportions in the medium range for both subgroups, and increased proportions in the high range for both subgroups; this results in the majority of scores in the high range at post-test for both subgroups.

Figure 24.

18-19 Relationship Management Demographic Characteristics of Low, Medium, and High EI subgroups.

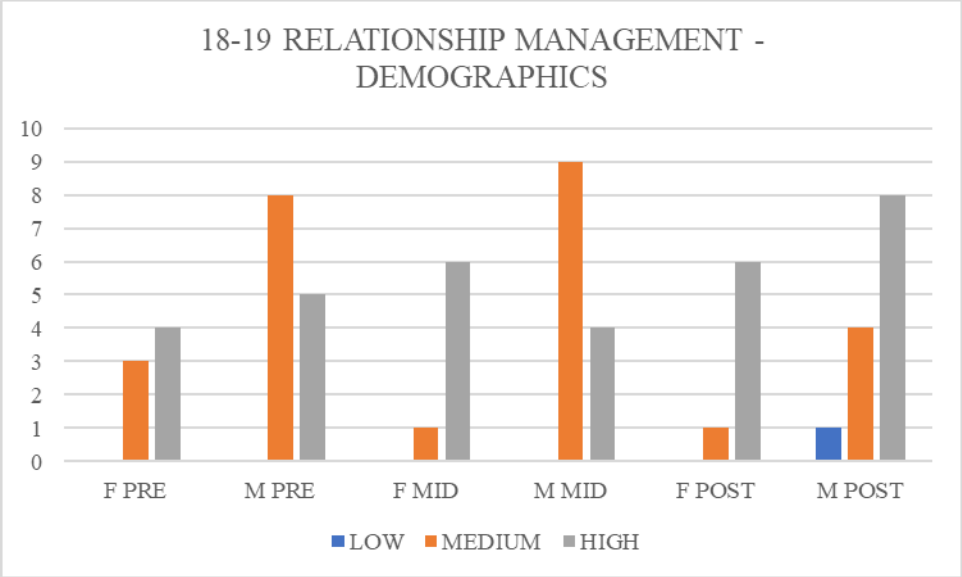


Table 24.

18-19 Relationship Management Demographic Characteristics of Low, Medium, and High EI subgroups.

18-19 DOMAIN DIST. DEMOGRAPHICS BY L/M/H						
RM	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0	0	0	0	0	1
MEDIUM	3	8	1	9	1	4
HIGH	4	5	6	4	6	8

18-19 DOMAIN DEMOGRAPHIC % BY L/M/H						
RM	PRE-TEST		MID-TEST		POST-TEST	
	F	M	F	M	F	M
LOW	0%	0%	0%	0%	0%	5%
MEDIUM	15%	40%	5%	45%	5%	20%
HIGH	20%	25%	30%	20%	30%	40%

In summary, the findings for research question 2 demonstrate that the low score proportions remain at low to no scores for both subgroups across EI competencies and all three cohorts. The post-test medium score proportions are at the greatest levels for self-awareness for

both subgroups. Although post-test medium score proportions are predominant with the EI competency of self-regulation across all three cohorts, the 2016-2017 cohort and 2017-2018 cohort findings presented challenges. In the 2016-2017 cohort, 51% of the total cohort population ranked in the medium score proportion, despite the 2016-2017 F subgroup demonstrating predominantly high score proportions in self-regulation at post-test. In the 2017-2018 cohort self-regulation scoring, the F subgroup was predominantly in the medium score proportions, while the M subgroup was evenly split between medium and high score proportions. The post-test high score proportions are most substantial in the EI competency of social awareness for both subgroups across all three cohorts. Regarding the EI competency of relationship management, medium score proportions were predominant for both subgroups in the 2016-2017 cohort, but high score proportions were predominant for subgroups in the 2017-2018 cohort and the 2018-2019 cohort. These findings for research question 2 undergird the findings of research question 1, where the EI competencies of social awareness and, for the most part, relationship management result in the greatest proportion of high emotional intelligence scores at post-test.

These findings are synopsized in Table 25, where the demographic characteristics are summarized as aggregates in the form of means for continuous variables and proportions for categorical variables. For the EI competencies of self-awareness and self-regulation, all F subgroup and M subgroup aggregates, across all three cohorts, fall in the medium emotional intelligence score range on the post-test. For the EI competency of social awareness, all F subgroup and M subgroup aggregates, across all three cohorts, fall in the high emotional intelligence score range on the post-test. For the EI competency of relationship management, the 2016-2017 F subgroup and M subgroup aggregates and the 2017-2018 M subgroup aggregate

fall in the medium emotional intelligence score range on the post-test. For the EI competency of relationship management, the 2017-2018 F subgroup and the 2018-2019 F subgroup and M subgroup aggregates fall in the high emotional intelligence score range on the post-test. Although scores improved in some constructs, there must be a further analysis for statistical significance of the overall mean scores on each construct between stages; research question 3 addresses this analysis.

Table 25.

Demographic Characteristics Across Domains by Year and Stage.

Domain	Year	F			M		
		PRE	MID	POST	PRE	MID	POST
SA	16-17	38.3	40.7	38.7	39.6	39.5	40.0
SA	17-18	35.6	36.6	38.7	38.5	36.9	38.1
SA	18-19	37.3	41.3	40.4	37.0	41.2	38.8
SR	16-17	37.3	41.8	38.8	41.1	40.7	39.6
SR	17-18	37.8	39.4	38.4	40.6	39.1	40.6
SR	18-19	40.0	42.6	39.9	39.9	41.9	40.6
SC	16-17	40.0	42.2	**43.3**	40.9	39.9	**43.5**
SC	17-18	37.2	38.6	**44.1**	38.8	38.4	**42.6**
SC	18-19	41.6	42.9	**45.6**	38.5	40.4	**43.0**
RM	16-17	38.5	42.0	40.0	41.2	39.8	40.2
RM	17-18	38.3	39.5	**41.8**	40.3	37.8	40.3
RM	18-19	40.0	42.0	**44.6**	38.5	40.4	**41.2**

Research Question 3

What is the impact of the 10-exercise series on the EI competencies of self-awareness, self-regulation, social awareness, and relationship management among low, medium, and high EQ third-year medical students? For research question 3, the researcher tested the difference between overall mean scores on each construct at baseline and follow-up with a paired sample t-

test to determine if a construct has significantly improved (Table 26). For the EI competencies of self-awareness and self-regulation, all three cohorts fall in the medium emotional intelligence score range on the post-test. For the EI competency of social awareness, all three cohorts fall in the high emotional intelligence score range on the post-test. For the EI competency of relationship management, the 2016-2017 cohort falls in the medium emotional intelligence score range on the post-test. The 2017-2018 and 2018-2019 cohorts fall in the high emotional intelligence score range on the post-test for relationship management. These findings build upon and confirm the findings of research questions 1 and 2 and are visualized in Figure 25.

Table 26.

Overall Mean Scores on Each Construct

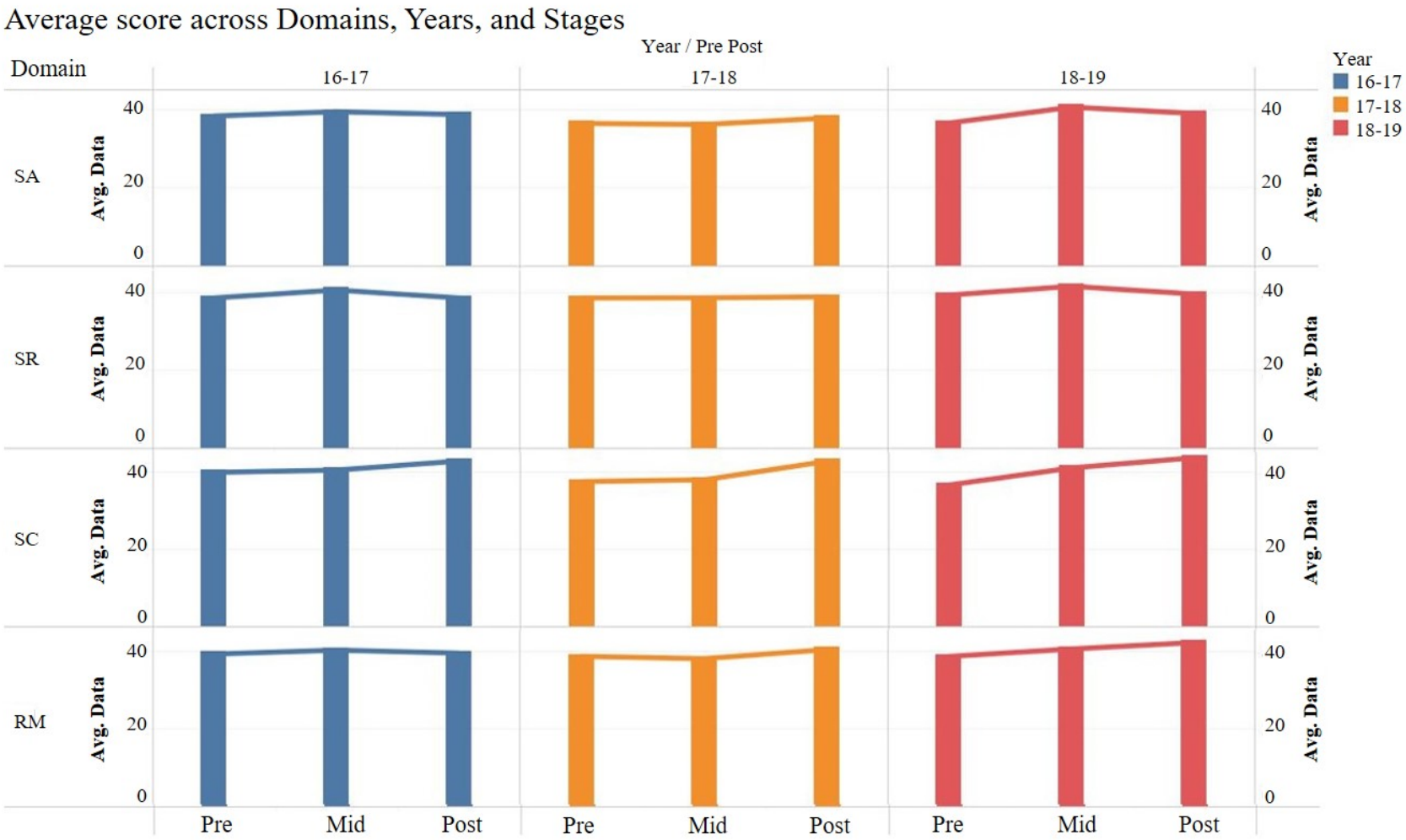
Domain	**Year**	**MEAN**		
		PRE	**MID**	**POST**
SA	16-17	39.1	39.9	39.5
SA	17-18	37.1	36.8	38.4
SA	18-19	37.1	41.3	39.4
SR	16-17	39.7	41.1	39.3
SR	17-18	39.3	39.2	39.6
SR	18-19	40.0	42.2	40.4
SC	16-17	40.6	40.8	**43.4**
SC	17-18	38.1	38.5	**43.3**
SC	18-19	39.6	41.3	**43.9**
RM	16-17	40.2	40.6	40.1
RM	17-18	39.3	38.6	**41.0**
RM	18-19	39.0	41.0	**42.4**

The differences of the average scores across the three stages for each domain were broken down by years and presented in Figure 25. This visual representation of average scores

provides context for each phase of the series and brings to light potential trends across all three years, whether increasing, decreasing, or remaining unchanged. With Figure 25 as a further indication of previously established trends, the researcher then performed statistical tests of significance for statistical evidence of differences in domain scores, which research question 4 addresses.

Figure 25.

Average Score Across Domains, Years, and Stages.



Research Question 4

Which EI construct improves more successfully after implementing the 10-exercise series among low, medium, and high EQ third-year medical students? In research questions 1, 2, and 3, post-test emotional intelligence scores were in the high range for the EI competency of social awareness in every subgroup across all three cohorts. Post-test emotional intelligence scores were also in the high range for the EI competency of relationship management in the 2017-2018 and 2018-2019 cohorts. However, there is a need to determine if these scores increased by chance or if the EI intervention was successful; in essence evaluating the EI series' efficacy concerning the participants' EI competencies. For research question 4, due to the factors' multilevel nature (stages), a one-way analysis of variance (ANOVA) was used. ANOVA was run on all four domains for all three years separately (Table 27). The p-values that indicate the statistical evidence for the difference in average scores for the three stages are significant at 95% confidence level, with p-values less than 0.05 (Creswell, 2012). The researcher found that the 2018-2019 cohort's self-awareness scores across stages and all three cohorts' social awareness scores across stages were statistically significant. Although the 2018-2019 cohort's self-awareness scores were in the medium emotional intelligence score range, the researcher will elaborate on the potential reasons for statistical significance in chapter 5. Although post-test emotional intelligence scores were in the high range for the EI competency of relationship management across the 2017-2018 and 2018-2019 cohorts, these findings were not statistically significant. The statistical significance of social awareness across all three cohorts confirms findings from research questions 1, 2, and 3, demonstrating that the EI construct of social awareness improves more successfully after implementing the 10-exercise series among low, medium, and high EQ third-year medical students.

Table 27

ANOVA – Domains Across Years.

Domain	Year	F			M			ALL			
		PRE	MID	POST	PRE	MID	POST	PRE	MID	POST	P-VALUE
SA	16-17	38.3	40.7	38.7	39.6	39.5	40.0	39.1	39.9	39.5	0.83
SA	17-18	35.6	36.6	38.7	38.5	36.9	38.1	37.1	36.8	38.4	0.29
SA	18-19	37.3	41.3	40.4	37.0	41.2	38.8	37.1	41.3	39.4	**0.03**
SR	16-17	37.3	41.8	38.8	41.1	40.7	39.6	39.7	41.1	39.3	0.51
SR	17-18	37.8	39.4	38.4	40.6	39.1	40.6	39.3	39.2	39.6	0.96
SR	18-19	40.0	42.6	39.9	39.9	41.9	40.6	40.0	42.2	40.4	0.36
SC	16-17	40.0	42.2	43.3	40.9	39.9	43.5	40.6	40.8	43.4	**0.02**
SC	17-18	37.2	38.6	44.1	38.8	38.4	42.6	38.1	38.5	43.3	**<0.0001**
SC	18-19	41.6	42.9	45.6	38.5	40.4	43.0	39.6	41.3	43.9	**0.03**
RM	16-17	38.5	42.0	40.0	41.2	39.8	40.2	40.2	40.6	40.1	0.92
RM	17-18	38.3	39.5	41.8	40.3	37.8	40.3	39.3	38.6	41.0	0.09
RM	18-19	40.0	42.0	44.6	38.5	40.4	41.2	39.0	41.0	42.4	0.11

Summary of Findings

Chapter 4 presented the results of the data analysis to answer these four research questions:

1. What is the proportion of low, medium, and high emotional intelligence in all four EI constructs (self-awareness, self-regulation, social awareness, relationship management) among third-year medical students?
2. What are the demographic characteristics of the low, medium, and high EI subgroups?
3. What is the impact of the 10-exercise series on the EI competencies of self-awareness, self-regulation, social awareness, and relationship management among low, medium, and high EQ third-year medical students?
4. Which EI construct improves more successfully after implementing the 10-exercise series among low, medium, and high EQ third-year medical students?

For research question 1, all three cohorts exhibited the greatest proportion of medium emotional intelligence scores in the EI constructs of self-awareness and self-regulation. All three cohorts exhibited the greatest proportion of high emotional intelligence in the EI construct of social awareness. Regarding the EI construct of relationship management, the 2016-2017 cohort exhibited the greatest proportion of medium emotional intelligence scores, while the 2017-2018 and 2018-2019 cohorts exhibited the greatest proportion of high emotional intelligence scores.

For research question 2, the demographic characteristics confirmed and elaborated upon research question 1 proportional findings. Both demographic subgroups across all three cohorts exhibited the greatest proportion of medium emotional intelligence at post-test in the EI competencies of self-awareness and self-regulation. The post-test high score proportions are most substantial in the EI competency of social awareness for both demographic subgroups

across all three cohorts. In the EI competency of relationship management, both demographic subgroups in the 2016-2017 cohort exhibited predominantly medium score proportions, but both demographic subgroups in the 2017-2018 and the 2018-2019 cohorts exhibited predominantly high score proportions.

For research question 3, the researcher tested the difference between overall mean scores on each construct to determine significant improvement. All three cohorts fall in the medium emotional intelligence score range on the post-test for the EI competencies of self-awareness and self-regulation and in the high emotional intelligence score range on the post-test for the EI competency of social awareness. For the EI competency of relationship management, the 2016-2017 cohort falls into the post-test medium emotional intelligence score range. The 2017-2018 and 2018-2019 cohorts fall in the high emotional intelligence score range on the post-test.

Finally, for research question 4, ANOVA was run on all four domains for all three years separately, with p-values less than 0.05 (Creswell, 2012). The researcher found that the 2018-2019 cohort's self-awareness scores across stages and all three cohorts' social awareness scores across stages were statistically significant. The statistical significance of social awareness across all three cohorts confirms findings from research questions 1, 2, and 3, demonstrating that the EI construct of social awareness improves more successfully after implementing the 10-exercise series among low, medium, and high EQ third-year medical students.

Chapter 4 reviewed the research methodology and statistical analysis, presented the findings of the data analysis, and a discussion of these findings. Chapter 5 concludes with a summary of the study and recommendations for future studies. The bibliography and appendices conclude this study.

CHAPTER 5

DISCUSSION

The introduction of business logic and the corporatization of healthcare has taken a toll on healthcare providers attempting to navigate challenging patient demands (Kim, Liang, Walton, & Jung, 2018; Vinson & Underman, 2020). Patients actively participate with a vested interest in their healthcare, making the patient and their family members a part of the healthcare team (Wu, Rubenstein, & Yoon, 2018). Clinical empathy is of primary importance within this new healthcare team (Vinson & Underman, 2020). Clinical empathy requires an awareness of what the other team members are thinking and feeling and the ability to interpret how these team members are displaying these thoughts and feelings; this is known as social awareness - a primary competency of Emotional Intelligence (Goleman, 1998; Vinson & Underman, 2020). In order to address this change, the researcher has deployed EI exercises to equip providers to utilize EI skills to increase healthcare teams' psychological safety and facilitate high functioning healthcare teams. In a systematic review of emotional intelligence skills training for medical students, the authors showed positive outcomes (Mintle, Greer, & Russo, 2019). However, today's medical education curricula are still heavily reliant on the cognitive models that give little importance to assessing and improving the medical students' or physicians' interpersonal skills (Mintle, Greer, & Russo, 2019). The researcher has conducted interventions designed around developing the EI competencies that involve enhancing interpersonal skills and narrative skills and often engaging in small group discussions (Hojat et al., 2020). Although an increase in EI skill levels is the aim of an intervention, it is unknown if the key skill sets of Emotional Intelligence in third-year medical students will improve through education. The purpose of this quasi-experimental study was to conduct a comprehensive evaluation of the 10-exercise

emotional intelligence series in third-year medical students to assess the education's efficacy as evidenced by the change in the overall emotional intelligence score.

The research questions for this study are as follow:

1. What are the proportion of low, medium, and high emotional intelligence in all four EI constructs (self-awareness, self-regulation, social awareness, relationship management) among third-year medical students?
2. What are the demographic characteristics of the low, medium, and high EI subgroups?
3. What is the impact of the 10-exercise series on the EI competencies of self-awareness, self-regulation, social awareness, and relationship management among low, medium, and high EQ third-year medical students?
4. Which EI construct improves more successfully after implementing the 10-exercise series among low, medium, and high EQ third-year medical students?

Interpretation of Findings

Although qualities such as empathy, compassion, and maturity form the core skills of emotional intelligence, little evidence exists regarding curriculum amount, frequency, timing, and content for effective emotional intelligence teaching (Mintle, Greer, & Russo, 2019). The Lynn Leadership Group (2002) published a series of recommended exercises, where participants capitalized on their strengths to assist in working on weaknesses through reflective writing and critical thinking. The analysis which follows elaborates on the results presented in chapter 4.

Research Question 1. The first research question sought to delineate the proportion of low, medium, and high emotional intelligence in all four EI constructs among each cohort. Using the Management Performance Solutions (n.d.) EI assessment survey participants initially rated themselves predominantly in the medium category, with varied post-test results across cohorts

and EI competencies. Self-awareness was the most consistent EI competency, where the rankings of medium emotional intelligence remained across each stage (pre, mid, and post) and all three cohorts. The researcher observed fluctuation in self-regulation levels across stages and cohorts. The 2016-2017 cohort started high and decreased to medium at post-test, while the 2017-2018 cohort remained at medium, and the 2018-2019 cohort ranked high at the mid-test only to return to medium at the post-test. This consistency in self-awareness scores is not surprising. The fluctuations in self-regulation levels are interesting but do not indicate a substantial change; the researcher will elaborate upon these results in light of the demographic characteristics. Although self-awareness and self-regulation may play a role in interpersonal interactions and communication, the overarching aim of this 10-exercise EI series was to offset the decline in medical student empathy during the clinical years; empathy undergirds social awareness (Goleman, 1998; Vinson & Underman, 2020).

Regarding social awareness and relationship management scores, the 2016-2017 cohort presents a different pattern than the 2017-2018 and 2018-2019 cohorts. The 2016-2017 cohort self-rated high levels of social awareness at pre-test, dropping to medium at mid-test and returning to a predominantly high level at post-test; the opposite pattern of medium/high/medium presented in this cohort's relationship management scores. The 2017-2018 and 2018-2019 cohorts showed a similar pattern of proportions for social awareness and relationship management; the self-rating was medium at pre-test, medium at mid-test, and high at post-test. The same 10-exercise EI series was deployed across all three cohorts, so this difference in patterns can be attributed to the EI coach's experience level; social awareness is measured at a high level in proportion at post-test across all three cohorts. These findings for research question 1 support the overarching aim of this 10-exercise EI series to create a net positive impact on

medical students' empathy and professionalism by improving interpersonal and communication skills.

Research Question 2. The second research question examines the demographic characteristics of low, medium, and high EI subgroups. Using the Management Performance Solutions (n.d.) EI assessment survey participants initially rated themselves predominantly in the medium and high categories, with varied results across cohorts, EI competencies, and demographic characteristics. In the EI competency of self-awareness, both female and male subgroups presented predominantly medium emotional intelligence levels at pre-test, only for most subgroups to increase in the proportion of medium EI levels at post-test. This increase in the proportion of medium EI levels in self-awareness is indicative of an increased understanding of self-awareness on the part of the participants. The researcher theorizes that participants may have initially self-rated at a higher level, only to become more self-aware of their limitations, causing their self-awareness scores to skew towards the medium level.

Self-regulation scores showed tremendous fluctuations that further delineate the findings of research question 1. There was little consistency across demographic subgroups or cohorts in the proportion of medium or high EI levels of self-regulation. Females and males across all three cohorts increased in the proportion of high EI levels of self-regulation at post-test to an almost equal proportion of medium EI levels; proportions of medium and high EI levels varied by cohort and demographic subgroup. Self-regulation scores demonstrated a familiar pattern of skewing towards the medium EI level, where participants became more self-aware of their limitations over this 10-exercise EI series. However, a difference in self-regulation scoring was that the proportion of high EI levels at post-test were almost equal to medium EI levels. This

finding indicates that there may be a potential significance in the equilibration of self-regulation scores; the researcher will evaluate this further in the discussion of research questions 3 and 4.

The social awareness scores increased in proportion from either medium or high EI levels at pre-test to high EI levels at post-test across all three cohorts and demographic subgroups. This finding supports the findings of research question 1, indicating that there may be a potential significance in this increase in social awareness scores; the researcher will evaluate this further in the discussion of research questions 3 and 4.

The relationship management scores were predominantly at medium EI levels in proportion at pre-test for all but the 2018-2019 female subgroup. The relationship management post-test levels varied across cohorts and subgroups. The 2016-2017 female and male subgroups and the 2017-2018 male subgroup remained predominantly at the medium EI level in proportion. The 2017-2018 female subgroup and the 2018-2019 male subgroup increased in proportion in the high EI level, while the 2018-2019 female subgroup started at a high EI level at pre-test and only increased in proportion. The researcher again attributes these different results to the EI coach's experience level, where all subgroups across all three cohorts participated in the same 10-exercise EI series. Although there were differences in the relationship management scores amongst subgroups of the 2017-2018 and 2018-2019 cohorts, there were still overall increases in proportions of high EI levels. This finding supports the findings of research question 1, indicating that there may be a potential significance in the rise in relationship management scores; the researcher will evaluate this further in the discussion of research questions 3 and 4.

Research Question 3. The third research question seeks to determine the impact of the 10-exercise EI series on the EI competencies among low, medium, and high EQ participants, utilizing the overall mean scores on each construct across stages. For self-awareness and self-

regulation, post-test means were in the medium EI level, while social awareness means at post-test were in the high EI level; this was consistent across all three cohorts. For relationship management post-test means, the 2016-2017 cohort is at the medium EI level, just shy of the high EI level, while the 2017-2018 and 2018-2019 cohorts are at the high EI level. The findings of research question 3 further support the impact of the 10-exercise EI series on social awareness and potentially relationship management. Again, this particular intervention aims to offset the decline in medical student empathy during the clinical years; empathy undergirds social awareness (Goleman, 1998; Vinson & Underman, 2020).

Research Question 4. This final research question determined which EI construct improves more successfully after implementing the 10-exercise EI series with third-year medical students. In research questions 1, 2, and 3, post-test scores were in the high range for social awareness across all subgroups and cohorts, along with relationship management in the 2017-2018 and 2018-2019 cohorts. To determine if these increases in proportion occurred due to chance or if they were statistically significant, ANOVA was run on all four domains across all three years separately, with p-values less than 0.05 (Creswell, 2012). The researcher found that social awareness scoring was statistically significant across all three cohorts, which confirms findings from research questions 1, 2, and 3. This finding demonstrates that the EI construct of social awareness improves more successfully after implementing the 10-exercise series among low, medium, and high EQ third-year medical students.

The 2018-2019 cohort's self-awareness scores were also statistically significant, even though these post-test scores were predominantly in the medium EI range. This finding supports the researcher's theory that participants initially self-rated at a higher level, only to become more self-aware of their limitations, causing self-awareness scores to skew towards the medium level.

The increased understanding of self-awareness on the participants' part resulted in a statistically significant increase in the proportion of medium EI levels in self-awareness.

Implications

This 10-exercise EI series, taught over one year, increases social awareness and, to a lesser part, the understanding of self-awareness. The application of these learned EI skills can improve medical students' empathetic interpersonal interactions and professionalism in communication. The researcher implemented this EI intervention for use in the third year, where there are more opportunities for interpersonal interactions with healthcare teams and patients in the clinical environment; it is also during this time that empathy significantly declines (Hojat et al., 2020). The limiting factor is that this study only captured the replicated findings across the three yearlong cohorts of third-year medical students in this study, which may not adequately reflect a larger population. The research findings suggest that as third-year medical students step into the clinical environment, they benefit from overt EI interventions targeted to increase navigating emotions, remain empathetic, reflect on potential consequences, and apply that thinking (Mintle, Greer, & Russo, 2019). It is advisable that medical education administrators identify opportunities to incorporate overt EI interventions during medical students' third-year.

Recommendation for Action

"Emotional Intelligence is fundamental to getting along in the healthcare environment" (Freshman & Rubino, 2002, p. 4). The application of EI interventions extends beyond the cohorts described in this study. The display of cognitive empathy by any individual in a provider's role may strengthen the patient-provider relationship (Larson & Yao, 2005). With patients as consumers, the corporatization of healthcare has placed an added burden for more clinical empathy from providers, yet there are fewer resources to meet these demands (Bodenheimer &

Sinsky, 2014; Kim, Liang, Walton, & Jung, 2018). Targeted interventions may also equip providers to intentionally impact every interaction to achieve optimal interpersonal interaction and communication through intentional clinical empathy (Ortega et al., 2014). In turn, these interventions will combat the effects of unbalanced provider workload and increase overall wellbeing (Friedberg et al., 2014; Weng et al., 2011; West et al., 2018).

EI interventions seek to develop, and iteratively build upon, intentional usage of the EI competencies (Goleman, 2006). EI interventions for improving the doctor's skill and precision in delivering empathy in the patient-provider relationship can either make or break the high functioning patient-centered team (Ortega et al., 2014; Weng et al., 2011). In a profession that hinges on high interpersonal skills and ability, high EI manifests in traits such as compassion and caring, overall performance, and perceived competency (Snowden et al., 2015). Healthcare professionals with high EI can display higher levels of skills necessary for optimal team function, despite the stressors and fluctuations inherent in the clinical environment (Ruiz-Aranda, Extremera, & Pineda-Galan, 2014). Therefore, it stands to reason that increasing EI should be a goal for all healthcare professionals across all specialties.

Recommendations for Further Study

In addition to replicating this study with other healthcare professionals cohorts, there may be value in determining how participants utilize these learned EI skills and the potential impact on healthcare teams. Currently, there is little known about the rate of deterioration for teamwork skills and what is required to produce a behavioral change in participants of EI interventions (Salas et al., 2018). Therefore, the researcher suggests a qualitative study that analyzes the perceived impact of using these EI skills, specifically on team function. In this qualitative study, the researcher would explore EI intervention participants' lived experience through how the

intentional application of learned EI concepts impacts team function in healthcare and any potential benefits to team members. The researcher would conduct this study with purposely selected prior participants in this 10-exercise EI series, composed of focused EI exercises from the Lynn Leadership group (Lynn, 2002), applied in the health care setting with peers, providers, and patients. An EI self-assessment would be deployed before, in the middle of, and post-intervention for quantitative comparison purposes. The researcher will audio record interviews with participants to transcribe and develop codes using the EI competencies.

Conclusion

Today's medical educators face significant challenges in equipping medical students to demonstrate cognitive empathy in their interactions and communicate professionally. Dealing with suffering patients and families' intense emotions in the clinical training phase presents an additional set of interpersonal challenges (Helmich et al., 2018). Targeted EI interventions can positively impact medical students in that the skills of empathy, compassion, and maturity form the basis for these skills (Mintle, Greer, & Russo, 2019). In this 10-exercise EI series, three cohorts of third-year medical students demonstrated statistically significant social awareness improvement undergirded by cognitive empathy (Goleman, 2006; Larson & Yao, 2005). The implications of these findings are such that this targeted EI intervention may be used with other healthcare professionals to replicate or improve upon this study's findings, at the very least to increase social awareness in participants.

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(Appendix A)

EMOTIONAL INTELLIGENCE: INCREASING EMPATHY

Welcome!

Welcome to the Lynn Leadership Group Emotional Intelligence (EQ) series. This year, we will work together to hone your interpersonal skills and develop ways to increase empathy throughout your third year. Empathy has traditionally shown a decline in the third year of Medical School, which can lead to a loss of resilience and eventual burnout. Throughout this year we will seek to employ reflective writing and communication to further utilize the EQ indices. Interpersonal skills are that by which you will be judged -- rightly or wrongly -- throughout your life, whether by employers, coworkers, or peers. Through effective interpersonal skills, you will be able to get your message across and improve the way in which others perceive you. What you learn this year in our EQ course, then, will serve you well in the future. I look forward to working with you!

Course Description

EQ: Increasing Empathy emphasizes the EQ indices of self-awareness, self-regulation, others awareness, and relationship management through reflective work in order to help candidates think logically and communicate clearly. In addition, candidates will be assigned outside exercises to cement the lessons learned in the modules. A certificate of completion will be issued to all participants upon completion of the 15 modules, as we strive to meet the AAMC Personal and Professional Development.

Course Outcomes

(1) Develop the ability to use self-awareness of knowledge, skills, and emotional limitations to engage in appropriate help-seeking behaviors
(2) Demonstrate healthy coping mechanisms to respond to stress
(3) Manage conflict between personal and professional responsibilities
(4) Practice flexibility and maturity in adjusting to change with the capacity to alter behavior
(5) Demonstrate trustworthiness that makes colleagues feel secure when one is responsible for the care of patients
(6) Provide leadership skills that enhance team functioning, the learning environment, and/or the health care delivery system
(7) Demonstrate self-confidence that puts patients, families, and members of the health care team at ease
(8) Recognize that ambiguity is part of clinical health care and respond by using appropriate resources in dealing with uncertainty

The EQ Process: Expectations

Before attending the first EQ session, candidates must complete an EQ self-assessment. This self-assessment assists the instructor in developing and implementing the EQ indices through targeted instruction that is directed towards each and every candidate. These exercises are hand-picked from the Lynn Leadership Group, based on best fit and appropriateness – the series has been specially designed to increase others awareness. These tools are designed to help you, as a leader, reflect on your leadership methods, practices, and philosophies, and then, to use these reflections to guide your leadership behaviors.

In order to help you take your EQ abilities to the next level, we will have High, Medium, and Low risk activities, where not all leaders are not at the same level of readiness to reflect and develop their selves. This is why it is vital for all candidates to participate openly in the debriefing exercises within each module, where the goal is to reflect and enhance your learnings. Sometimes peers think it is impolite to suggest how peers can improve their skills -- instead, think of it as an open atmosphere to help your peers achieve a higher level of EQ.

Typically, there will be a full month between modules. It is the expectation that you will complete assigned exercises that are specifically geared towards putting your internalized skills to work, so as to provide opportunity through specific interpersonal interactions to broaden or change your leadership philosophies. This will not occur overnight, but through intentional effort upon your behalf, therefore, we do expect progress.

There will be EQ self-assessments at the midpoint of the year and at the culmination of these modules, so as to reflect on where we have been, where we are currently at, and which direction to head in for further development. These EQ self-assessments will be sent out electronically, with an expected date of return; they will then be viewed and scored only by the instructor, so as to assist in the series development and coordination.

Studies show that candidates learn a lot more from the process if they take a step back after it is done and reflect on the experience. Some of you are introverted and will find reflection easy. Others are extroverted and will prefer to process the information by talking it through. To achieve this, there will be reflection opportunities provided that meet the needs of introverts and extroverts, along with challenging each of you to build upon your areas that require growth through private reflection *and* group debriefing.

Interacting with ideas is an important skill throughout these modules. As such, there will be periodic reflection responses due for the next module based on short articles or videos. There will be a reflective prompt, along with an opportunity to draft questions that you have generated for discussion to bring to the following EQ module. Here, the emphasis will be on understanding and creating honest reaction more than on meeting a goal.

Course Policies

Attendance at each module is vital, therefore it is mandatory. If you are unable to attend due to a community health rotation or rotation at an ancillary site, then you will be assigned the module catch up assignment. The instructor will send out the catch up assignment, via e-mail, the day after the module has been held with instructions for completion and a potential follow up meeting. This assignment is given to ensure that all candidates have all of the information available throughout every single module, however, replicating a group exercise is not an easy task, yet the assignments are specifically designed to do so. Note that the rare instances in which an absence can be legitimately excused require documented evidence.

Assignments should always be prepared for review at the next EQ module. If you have a catch up assignment to complete, please ensure that it is submitted electronically to the instructor for review – the reflections and assignments will only be seen by the EQ instructor. This will allow the instructor to make thoughtful commentary for you to review and reflect further – there may be a follow up debrief required when applicable. If there is a follow up debrief required by the EQ instructor, it will be scheduled by the EQ instructor directly for a time that is mutually conductive to scheduling.

The **due date** for each assignment includes a specific time by which an assignment must be prepared. Any assignments not ready by that time shall have a negative impact upon your ability to fully participate in the upcoming modules and glean to the fullest extent possible. Note that, like an excused absence, the rare instances where an extension would be appropriate for an assignment are nearly always accompanied by documentation. Extensions will not be granted after the due date for an assignment has passed. In order to receive a certificate of completion, all assignments must be completed.

To prevent distraction, **electronic devices** are off limits in class except during instructor-mandated work sessions.

All students encounter difficulty at one time or another. An excellent resource for these occasions is the **Student Academic Success Center**. This is a valuable service which you have already paid for with your tuition money! If you feel you could benefit from some additional assistance, visit [redacted].

We provide reasonable **accommodations** for students with documented disabilities in accordance with Section 504 of the Rehabilitation Act of 1973. If you need accommodations due to a disability, please contact the Student Access Center, at [redacted] or by phone at [redacted]; their office is located at [redacted].

Course Outline

Session 1 -- Good Attending vs Bad Attending and How to approach your preceptor

Objective: To help participants become familiar with the past feelings that certain leaders fostered and exactly what those leaders did to foster certain feelings.

Session 2 -- How are you coming through?

Objectives: To help participants acknowledge their emotions in the workplace; To heighten awareness of the emotions during the course of the workday + their impact on others in the workplace; To help participants recognize the appropriate time to express emotions in the workplace and the need for self-control regarding negative emotions.

Session 3 -- Six negative listening habits

Objectives: To help participants develop self-awareness related to their ability to listen; To assist participants in the self-assessment of their listening skills; To identify negative or disruptive listening patterns that interfere with building good bonds with employees.

Session 4 -- Genuine listening

Objectives: To help participants develop empathy through improving listening skills; To improve relationships and bonds with employees by improving listening skills; To practice genuine listening skills under stressful conditions.

Session 5 -- Tuning into others

Objectives: To help participants develop empathy through improving listening skills; To improve relationships and bonds with employees by improving their listening skills; To practice genuine listening skills.

Session 6 -- Gratitude: A note of thanks

Objectives: To help participants develop a habit of expressing heartfelt thanks in the workplace; To help participants distinguish between well-placed genuine expressions of gratitude and using gratitude for influence's sake; To heighten participants' awareness of their motivation for expressing gratitude.

Session 7 -- Contribution spirit killers and Spirit killers that stunt your growth

Objectives: To help participants identify the known "spirit killers" and how they can create negative workplace cultures; To help participants discuss and consider the most common spirit killers that stunt a leader's growth and strategize ways to stop the spirit killers from robbing their development as leaders.

Session 8 -- Mastery of Vision - Part 1: Your most inspired self and Vision killers

Objectives: To deepen participants' self-confidence and self-awareness and appreciate their best leadership qualities - to feel grateful for these qualities; To help participants assess their personal strengths/weaknesses related to vision and determine actions to change related to vision

Session 9 -- Mastery of Vision – Part 2: Changes and Your leadership coat of arms

Objectives: To deepen participants' self-awareness and leadership philosophy; To help participants gain identity as a leader; To help participants determine what actions could best further their vision.

Session 10 -- Further Reflections

Objectives: To deepen participants' self-confidence and self-awareness; To help participants establish a pattern for assessing their personal learning as it relates to leadership; To help participants realize that the principles of lifelong learning apply to leadership.

(Appendix B)

Emotional Quotient Self-Score Questionnaire

Introduction

- This questionnaire is designed to help you evaluate aspects of your Emotional Intelligence (EI).
- It determines you Emotional Quotient or EQ, a competence based measure relating to Emotional Intelligence.
- Emotional Intelligence is a term used to describe the way in which we handle both our own emotions and those of others and the impact they have on both ourselves and others.
- In this questionnaire the following factors will be explored:
  - Self-Awareness
  - Self-Management
  - Social Awareness
  - Social Skills
- In the questionnaire you will be asked to rate yourself with regard to certain observable behaviours; as this is self-assessment you should clearly respond as honestly as possible.
- The object is to help you identify areas of relative strength and those areas with the potential for development.
- It is unlikely anyone will be strong in everything so try to be discerning in your use of the scale.
- At the end of the question section you will find instructions for marking your responses.

Section One

For each statement below, decide which of the answers on the following scale best describes you and enter the rating against the question number on the answer sheet:

5	Very Good	2	Could be better / Inconsistent
4	Good	1	Not very good / Often neglect this
3	Acceptable / OK		

1. Acting confidently when I have some relevant expertise or experience
2. Taking decisions without approval or support
3. Evaluating when I am close to the limit of my capabilities
4. Sharing with others when I am uneasy about taking on task
5. Managing how much pressure I put myself under
6. Identifying when I am starting to feel under pressure
7. Being open about the emotional impact events may have had on me
8. Recognising when my feelings may be impacting on my judgement
9. Anticipating accurately my reaction to events
10. Admitting when my behaviour may have been unreasonable

Section Two

For each statement below, decide which of the answers on the following scale best describes you and enter the rating against the question number on the answer sheet:

5	Very Good	2	Could be better / Inconsistent
4	Good	1	Not very good / Often neglect this
3	Acceptable / OK		

11. Maintaining a calm appearance when my situation becomes uncomfortable
12. Making my actions match my words
13. Controlling any potentially emotional outbursts
14. Staying openly committed on tasks I do not consider worthwhile
15. Holding back from expressing criticism of others
16. Adjusting rapidly when the situation changes
17. Tackling obstacles and problems rather than simply complaining about them
18. Initiating action on tasks without needing to be asked
19. Taking advantage of new opportunities in the workplace
20. Considering all criticism non-defensively

Section Three

For each statement below, decide which of the answers on the following scale best describes you and enter the rating against the question number on the answer sheet:

5	Very Good	2	Could be better / Inconsistent
4	Good	1	Not very good / Often neglect this
3	Acceptable / OK		

21. Sensing when others are feeling down or upset
22. Addressing the needs and concerns of others
23. Alerting others when the harmony within the group is under strain
24. Taking account of others' agendas and priorities when making presentations
25. Being sensitive to the political undertones in the organisation
26. Spotting where personality clashes may impact on work performance
27. Identifying where alliances could be built with other areas
28. Appreciating the pressures under which others are operating
29. Anticipating customer needs
30. Generating ideas that others find attractive

Section Four

For each statement below, decide which of the answers on the following scale best describes you and enter the rating against the question number on the answer sheet:

5	Very Good	2	Could be better / Inconsistent
4	Good	1	Not very good / Often neglect this
3	Acceptable / OK		

31. Taking the lead whenever there is an opportunity to do so
32. Working through informal networks to get things done
33. Influencing the thinking of others
34. Presenting ideas in a way that engages others and inspires them to achieve more
35. Providing feedback which others act on
36. Supporting others in their learning and development
37. Communicating clearly and effectively
38. Listening attentively
39. Cooperating fully with others to achieve goals
40. Handling disagreements and confrontations positively

Emotional Quotient Answer Sheet

Enter your response to each question in the relevant box:

SECTION ONE		SECTION TWO		SECTION THREE		SECTION FOUR	
1	☐	11	☐	21	☐	31	☐
2	☐	12	☐	22	☐	32	☐
3	☐	13	☐	23	☐	33	☐
4	☐	**14**	☐	24	☐	34	☐
5	☐	15	☐	25	☐	35	☐
6	☐	16	☐	26	☐	36	☐
7	☐	17	☐	27	☐	37	☐
8	☐	18	☐	28	☐	38	☐
9	☐	19	☐	29	☐	39	☐
10	☐	20	☐	30	☐	40	☐
S1 =		S2 =		S3 =		S4 =_	

EMOTIONAL QUOTIENT QUESTIONNAIRE MARKING GUIDE

INSTRUCTIONS

The Answer Sheet is arranged so that scores are entered in to the boxes provided in FOUR columns one for each Section.

Add up the scores for EACH column.

The Total of the scores in column S1 gives the total for Self-Awareness; S2 for Self Management; S3 for Social Awareness; S4 for Social Skills

To enter the scores on the grid provided you must first convert the total scores for each column to a 1-10 score. This can be found in the table below. Convert each column total and then plot on the grid provided.

TOTAL SCORE for Column	1 – 10 ON GRID
47-50	10
44-46	9
41-43	8
39-40	7
37-38	6
34-36	5
31-33	4
26-30	3
21-25	2
10-20	1

EMOTIONAL QUOTIENT INTERPRETATION GRID

1. Now plot the converted totals on the grid below by placing 'X' in to the relevant box
2. You can now see your relative scores on the four key factors of EQ

High 10				
9				
8				
7				
6				
5				
4				
3				
2				
Low 1				
	S1 TOTAL *Self-Awareness*	S2 TOTAL *Self-Management*	S3 TOTAL *Social Awareness*	S4 TOTAL *Social Skills*