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ESTABLISHING A RELATIONSHIP BETWEEN EMOTIONAL QUOTIENT AND
ACADEMIC PERFORMANCE WITHIN THIRD YEAR MEDICAL STUDENTS DURING
THEIR SURGICAL CLERKSHIP

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Abstract

Introduction: Professionalism competencies are essential in the medical field, yet these skills are often insufficiently covered and instructed in undergraduate medical education. This study explores the overlap between medical professionalism and emotional intelligence, proposing emotional intelligence training as a practical solution. However, its integration into medical education still needs more in-depth exploration.

Methodology: This study introduced Boost Incorporated's mental toughness and leadership training curriculum to third-year medical students during their Surgery Clerkship. All third-year students in the 2020-2021 academic year were invited to participate in this investigation. Student volunteers were randomly assigned to either a control or an intervention group. The intervention group was granted access to Boost Incorporated's twelve-hour online mental toughness and leadership training curriculum and had weekly faculty-led training sessions throughout their Surgical Clerkships. Both groups completed pre-course and post-course Mental Toughness and Leadership Assessments (MTLA) and National Board of Medical Examiners (NBME) Surgery Exams. The pre-course and post-course MTLA scores within each group were analyzed to assess the impact of the training intervention on the overall scores of the MTLA and its components in third-year medical student participants on their Surgery Clerkship. MTLA scores and NBME Surgery Shelf Exam scores were also analyzed to assess their relationship. In addition, student experiences were utilized to examine faculty-facilitated small-group learning as a delivery method for interventional training.

Results: The intervention group receiving Boost's training showed significant improvements in MTLA scores and related assessment components, while the control group did not. However,

both groups exhibited a small to medium, statistically insignificant correlation between MTLA scores and NBME Surgery Shelf scores. Faculty-led small group learning emerged as an adaptable and engaging delivery method for Boost's intervention training among clinical-phase Surgery Clerkship participants during their third year of medical school. They reported substantial benefits, including improved stress management, wellness promotion, practical guidance, and enhanced workload balance.

Conclusion: This research underscores the potential of emotional intelligence training to enhance professionalism in medical education. The results indicate significant improvements in MTLA scores for students who received interventional training. However, further investigation is needed to explore the broader implications of these findings.

Keywords: professionalism, medical education, emotional intelligence, emotional quotient, mental toughness, leadership training, Surgery Clerkship, student experiences, small-group learning, academic performance, Boost Incorporated, Mental Toughness and Leadership Assessment (MTLA), National Board of Medical Examiners (NBME) Surgery Shelf Exam, emotional intelligence training.

Chapter 1: Introduction

The Underappreciation of Medical Professionalism

Aristotle defined education as the training process to fulfill an aim by exercising all faculties to the fullest extent as a member of society (Roberson & Mire, 2010). These words continuously echoed throughout my life as a student, and a central theme in my education became apparent. From my early education, spanning from elementary school to graduate studies in a medical college, I consistently emphasized self-motivation and a commitment to lifelong learning. This dedication to acquiring knowledge and its practical application became deeply ingrained during my initial years in medical practice, ultimately driving my specialization in the field of emergency medicine. After accumulating five years of rigorous experience in emergency medicine, I found myself in a unique position. Despite lacking formal teaching credentials, I was entrusted with the responsibility of providing clinical training to newly graduated physician assistants during their internship in emergency medicine. Over the following five years, I embarked on this endeavor with a sense of optimism, aiming to guide and nurture these emerging healthcare professionals within the dynamic environment of the emergency department. Over the course of the next decade, I intermittently seized the opportunity to serve as an instructor for selected physician assistant students and medical students during their clinical rotations in emergency medicine. A recurring observation began to emerge throughout this period, and it became apparent to me that there was a consistent deficiency in the overall level of medical professionalism among the students and newly graduated physician assistants under my mentorship.

After a decade of practicing emergency medicine and mentoring new graduate physician assistants and undergraduate medical learners, I was afforded a life-changing opportunity that enabled me to address this deficiency. I was asked to serve as director for clinical education in a major college of medicine physician assistant program. Initially, I was tasked with maintaining three existing student cohorts. I was also entrusted with restructuring the entire clinical curriculum to optimize and formalize the clinical learning environments. However, as I embarked on this journey, it became apparent that my primary challenge for the next three years would be to increase and enhance the following attributes in clinical phase learners: communication, creativity, awareness, reflection, receptiveness, accountability, trust, honesty, decision-making, confidence, and focus. My transformation from a rigid, self-driven student to an adaptive, altruistic teacher had officially begun.

Legendary philosophical thinker and educational reformer Paulo Freire once said, “There is no neutral education process. Education either functions as an instrument that is used to facilitate the integration of generations into the logic of the present system and bring about conformity to it, or it becomes the practice of freedom, how men and women deal critically with reality and discover how to participate in the transformation of their world” (1996). Conformity has become ingrained in the culture of medical education due to academic leaders' historical emphasis on conventionality, resulting in the domination of specific domains and underscoring the advantages of more adaptable approaches (Woodruff, 2023). Undergraduate medical education continues to educate using a banking model where professors impart one-directional knowledge to their students. They are expected to listen dutifully, memorize pertinent information flawlessly, and reproduce knowledge accurately to perform well on assessments and exams (Torre et al., 2017). This traditional approach to education is the predominant way

medical colleges instruct students, especially in their basic science-heavy preclinical curricula. This traditional education model, primarily focused on memorization-based learning and passive absorption of information, neglects the development of critical thinking, problem-solving, and emotional skills. Such oversight hinders students' ability to adapt effectively to the practical, patient-centered challenges they encounter in the clinical phases of their training, as they have had limited opportunities to cultivate these fundamental professional skills (Kirch & Sadofsky 2021).

Reflecting on my experiences in medical education, it has become evident that the instruction of professionalism requires greater emphasis, presenting a significant opportunity for reform. Recent research underscores the vital role of faculty in demonstrating professionalism, alongside the shared responsibility of learners, educators, and institutions in fostering environments conducive to the development of medical professionalism (Bashir & McTaggart, 2021). In addition, curricula that actively engage faculty in teaching professional conduct have proven effective in deepening the understanding of medical professionalism across all educational levels, thus reinforcing the need for such comprehensive and integrated approaches (Goldstein et al., 2006).

Stagnation Enabled by Long-Standing Tradition

Tradition has become one of the most tenacious problems in education today. Overly traditional academic cultures tend to become polarized by either conservatism or resistance to innovation and change (Gay, 2017). Tradition poses a persistent challenge in modern education, often leading to conservatism or resistance to innovation and change within academic cultures (Gay, 2017). Despite national accrediting agencies emphasizing self-directed learning,

professionalism, and interpersonal skills, many undergraduate medical curricula continue not to prioritize formal instruction and the evaluation of non-cognitive performance and non-clinical skills (Goldstein, et al., 2006). This propagation of an overly traditional approach hinders the development of more effective and responsive medical education programs (Lupton & O'Sullivan, 2020).

The predominant focus on medicinal knowledge in the classroom and procedural skills in the clinical setting has become a significant obstacle, preventing the innovative progression of undergraduate medical education toward more dynamic and inclusive teaching methods. This is a phenomenon that has troubled educational institutions for a long time. According to Lupton & O'Sullivan (2020), the reliance on traditional methods in undergraduate medical education has been a significant barrier to adopting progressive educational changes needed to evolve and enhance curricular approaches. This adherence to long-standing educational practices has also impeded the achievement of sufficient diversity levels, preventing these academic institutions from being recognized as truly multicultural. By allowing unidimensional models to remain dominant, antiquated and rigid approaches to education are established and allowed to persist (McCarthy & Dimitriadis, 2004). While research on emotionally, socially, and culturally related training within medical institutions of learning remains scarce, this repetitive cycle has led to many unfortunate consequences regarding medical education, including overall curricular imbalance. (Ambrose, et al., 2014).

An Unbalanced Curricular State

The most significant consequence of an overly traditional approach is establishing an unbalanced curriculum. When considering balance within the undergraduate medical curriculum,

educational theorist Michael Schiro's (2013) modern approach to prospectus classification is most relevant and helpful. He argued that any educational approach to the curriculum could be derived from four major ideological types: the Scholar Academic ideology, the Learning-Centered ideology, the Social Reconstructionism ideology, and the Social Efficiency ideology. Further, within each specific ideology, he described unique curricular components and argued that there is an ongoing competition for ideological control of the curriculum within the current educational culture (Schiro, 2013). Proponents of each ideology attempt to convert others to their viewpoint and assert that their academic perspective is the only acceptable one. Peña-Sandoval and Jiménez (2020) later concurred with Schiro's perspectives as they found gradual connections between similar ideologies and conceptions of diverse curricula that varied from a marked coherence to the total absence of a relationship. Without relationships, they found individual ideologies competing against one another for domination rather than cooperating to integrate them equally within educational systems.

The most dominant and problematic ideological classification within undergraduate medical education is the Scholarly Academic ideology, which sees academic institutions as communities that aim to impart to their learners accumulated knowledge of a culture. Educators are seen as experts in this ideology, transmitting educational information to novices. Scholarly Academic instructing ensues when the teacher effectively presents students with the knowledge they are expected to acquire and understand. These scholar academics value structure most and envision knowledge as cultural reasoning achieved over time. For the Scholarly Academic ideology, the primary intent of evaluation is to determine objectively the amount of knowledge students have gained. It allows students to be ranked from those with the most significant intellectual gain to those with the least (Schiro, 2013).

In medical education within the United States, a conventional curriculum structure is utilized, and it comprises two distinct phases: the pre-clinical and clinical, with historical roots traced to early 20th-century principles articulated by Abraham Flexner and William Osler (Buja, 2019). The initial phase, typically spanning one to two years depending on institutional variations, is dedicated to establishing a solid foundation in fundamental scientific disciplines, which include but are not limited to pathology, physiology, pharmacology, biochemistry, nutrition, microbiology, immunology, gross anatomy, embryology, cell biology, histology, and genetics. Following the pre-clinical phase, the subsequent clinical training phase unfolds over the program's final two years. This phase adheres to the framework set by the two-pillar model of medical education proposed by Flexner and Osler (Buja, 2019). It is characterized by rotations, lasting four to eight weeks each, within core medical disciplines such as emergency medicine, internal medicine, family medicine, psychiatry, general surgery, obstetrics and gynecology, and pediatrics. During this stage, students actively engage in clinical experiences under the mentorship of practicing clinicians, thereby gaining practical insights within a healthcare environment (Buja, 2019).

In both pre-clinical and clinical phases, medical education has traditionally emphasized the importance of a student's cognitive ability. This is done by administering final grades based on students' performance on high-stakes, multiple-choice exams throughout pre-clinical courses and at the end of clinical courses/ rotations. These exams take on a medical knowledge-heavy approach and remain the most influential determinant of students' performance throughout their college of medicine programs. It's important to note that clinical instructors place a significant emphasis on evaluating medical students' clinical skills and procedures during the clinical phase of their medical education. These assessments play a significant role in determining students'

final grades for this training phase. This ideological approach is centered around Social Efficiency, an educational theory characterized by prioritizing practical skills and equipping students with the competencies necessary for real-world applications (Schiro, 2015).

The widely recognized objectives in medical education for integrating professionalism into pre-clinical and clinical curricula include defining developmental needs, developing curricular materials, providing and utilizing opportunities for instruction, and identifying specific targeted behaviors expected of students (Doukas et al., 2013). These goals align with recommendations from the Association of American Medical Colleges (AAMC), the Liaison Committee on Medical Education (LCME), and the Accreditation Council for Graduate Medical Education (ACGME) (Doukas et al., 2013). However, the presence of an unbalanced undergraduate curriculum underscores the necessity for a constructivist approach in education, which is one that emphasizes active and experiential learning, is essential to enable students to effectively internalize and apply the principles of professionalism, rather than merely recognizing ethical dilemmas (Dimitriadis and Kamberelis, 2006). During their first and second years, medical students typically learn to identify issues of professionalism and ethics but often lack the opportunity to develop practical professionalism skills. According to Goldstein et al. (2006), most clinical curricula either lack formal professionalism instruction or are in the stages of inconsistent development. These programs usually depend on students learning through observation, by mirroring the behaviors of clinical instructors who serve as models of medical professionalism. Goldhamer et al. (2018) note that some more modern and progressive institutions have integrated objective structured clinical examination (OSCE) into their pre-clinical and clinical curricula, utilizing these assessments to gauge clinical skills and competencies through realistic and practical approaches. However, there is still a need for more

consistent application of OSCEs in evaluating and assessing professionalism within medical education.

Conclusion

Over the years, traditional educators have often underestimated the importance of incorporating medical professionalism into the curriculum, resulting in a significant divide in undergraduate medical education. Consequently, an imbalance in undergraduate medical curricula has materialized, highlighting the need for more formal professionalism instruction. The identified problem results from the increasing demand for a more substantial emphasis on teaching professionalism within existing medical curricula, leading to a noticeable gap in undergraduate medical education. The insufficiency of professionalism instruction within the current medical curricula calls for implementing structured and consistent instructional methods to address this deficiency.

While emotional intelligence has been shown to enhance academic achievement in broader educational contexts, its specific impact on medical education has not been thoroughly explored (Parker et al., 2004; Parker et al., 2004). Emotional intelligence presents a viable solution, given its alignment with essential components of medical professionalism, including empathy, effective communication, self-regulation, and ethical decision-making (Grewal & Davidson, 2008; Birks & Watt, 2007). Consequently, the primary goal of this study application is to address this recognized problem by establishing a consistent method and an objective approach for training, assessing, and evaluating professionalism within the undergraduate medical education setting.

Chapter 2: Review of Literature

Introduction

Philosopher, psychologist, and legendary educator John Dewey once said, "Growth is the characteristic of life; education is all one with growing; it has no end beyond itself" (1961). The primary accrediting body for United States medical schools asserts that colleges of medicine must establish and maintain an educational environment that promotes continuous professional growth and development among undergraduate medical students during their academic journey (LCME, 2023). Achieving a professional identity within the undergraduate medical setting is a complex developmental process, as there is not a single fixed perspective of what medical professionalism comprises (Monrouxe et al., 2011). Recent research conducted by Liu and others (2023) indicates a notable shift in the understanding of professionalism among students from the pre-clinical to clinical phases of their education, revealing that most medical students reported a transformed perception of medical professionalism after early clinical exposure. Additionally, the inconsistency in how professionalism is taught further complicates matters, and it has been observed that students who are introduced to patient interactions early and participate in discussions about medical professionalism in small, faculty-led groups tend to acquire a deeper understanding of it. At the same time, students who are instructed in professionalism via lecture-based approaches within the classroom have demonstrated a narrower understanding of the topic, which tends to focus more on merely dressing or acting like a professional (Monrouxe et al., 2011). Thus, 'gray' areas of professionalism have been allowed to exist. Areas in which values are negotiated through interactions with patients and other health care professionals and ethical and moral codes are re-formatted as guidelines for which judgment is required to act in patients' best interests. This is compounded by the potential for conflict between self-seeking aspiration

and ethical belief during a critical time of educational and professional development (Monrouxe et al., 2011). Recent research findings suggest that in some cases, clinical instructors may emphasize the significance of formal appearance and a willingness to conform as markers of medical professionalism, potentially overshadowing attributes such as integrity, humanity, and accountability (Huber et al., 2020). This learner-centered perspective suggests that compliance with policy, recognition of tiered order, and acquiescence to authority are valued most within this realm (Shapiro et al., 2015). Another recent study found that medical learners viewed professionalism instruction as patronizing and demeaning. Similarly, learners perceived professionalism training as an imposed method for educators to externally discipline performance rather than a mechanism to enhance internal principles (Shapiro et al., 2015).

According to Altirkawi (2014), educators are changing their methods of teaching professionalism to undergraduate medical students, especially during their shift from classroom-based learning to clinical training, driven by the persistent need for more organized and consistent approaches to instructing it. This phase is fundamental as it represents a transition point where students begin to apply basic scientific knowledge within practical, clinically based settings, facing real-world ethical, interpersonal, and professional challenges. To address this challenge, educators must prioritize developing coherent curriculum that fosters, assesses, and evaluates students' professionalism (Monrouxe et al., 2011). DeLoughery (2018) notes that medical educators have traditionally defined professionalism as a competency measured through observable behaviors. However, it's worth noting that many objective-based approaches have not yielded significant success in teaching professionalism, as suggested by Shapiro (2015). In contrast, recent research indicates that small group reflection-based learning initiatives are promising in effectively teaching professionalism in clinical settings (Branch & George, 2017).

Professionalism is considered a more profound and expressive character encompassing humanitarian mindsets, actions, and reasoning (Shapiro et al., 2015). Integration of medicinal knowledge, clinical skill, and medical professionalism are required components of capable medical providers; however, professionalism within medical scope is more complex than knowledge or skill as it entails the continual absence of unprofessional behavior and the consistent preservation of a moral oath. In recent years, the medical field has witnessed substantial changes in the knowledge base and skill sets required to become a physician; however, the core expectations of professional conduct within it have remained constant in content and significance (Unger et al., 2020). With a focus on therapeutic wisdom and medicinal skillfulness traditionally used within colleges of medicine over the centuries, there has regrettably not been a single reliable and valid method available to predict the behaviors of our medical graduates in medical professionalism (Stern et al., 2005). But this lack of evaluation is not due to a lack of professionalism in consensus. In reality, every central accrediting body in this country has materialized a similar list of traits describing the professional identity of future medical providers. However, undergraduate medical learners acquire variable levels of professionalism through teachings heavily influenced by their instruction. (Stern et al., 2005).

As current discussions over this topic persist, accrediting bodies and academic institutions in the United States have established criteria for professionalism and professional instruction within colleges of medicine (LCME, 2023). Varied academic researchers have explored conceptual and methodological approaches for professionalism instruction within undergraduate medical education; unfortunately, these efforts, despite numerous attempts, have failed to produce fruitful, reproducible, or substantiated methods for uniform teaching of medical professionalism (Briden et al. 2013). As a result, there has yet to be a conjugation of theory and

practicality to develop an inclusive framework that could be used harmoniously across the board of medical education for teaching professionalism. Thus, research methodology and instructional curricula within this scope have yet to become widely accepted. Within undergraduate medical education, there is a notable diversity in the framing of professionalism, challenging the traditionalist viewpoint that constructing a unified prospectus for professionalism may be unattainable (DeLoughery, 2018). Unfortunately, this narrow and antiquated perspective scrutinizes any effort to instruct medical professionalism not grounded in and biased by the educational institution from which it was created. Consequently, there remains a significant gap between objective capacities and hypothetical possibilities regarding non-conventional methods to teach professionalism at the undergraduate medical level consistently. (Briden et al., 2013). Recognizing the existing gaps in most undergraduate medical curricula, where regular instruction and consistent evaluation of professionalism are often lacking, it becomes imperative to consider a viable solution (Azmand et al., 2018). In this context, coaching for emotional intelligence emerges as a promising approach, as it encompasses several key elements that align with the core tenets of medical professionalism. This alignment is particularly evident in the domains of emotional awareness, empathy, and effective communication, which are central to both emotional intelligence and medical professionalism (Roth et al., 2018). Additionally, it is notable that enhancing emotional intelligence has been associated with improvements in more general areas of academic achievement (Grewal & Davidson, 2008). In conclusion, the subsequent section will address the identified challenges in teaching medical professionalism by exploring well-known educational theories and practical applications, as it aims to construct a framework that integrates these aspects in a cohesive, reflective, communicative, attentive, and inclusive approach.

Theoretical Constructs

Schiro's Four Educational Visions

Michael Schiro (2013) once stated, “Because the curriculum ideologies represent ideal types abstracted from reality, and not reality itself, even though educators will be spoken of as believing or behaving by certain beliefs, it is difficult to find educators who exactly fit the characterizations; and even though the expressed thoughts and observable behavior of most educators approximate the characteristics of only one of the ideal types, many educators exist whose behavior is a combination of the characteristics of more than one ideal type” (p. 13). Regarding the proceeding research effort, Michael Schiro’s theoretical basis for his vision of the educational process is of fundamental significance. Within this construct, he identified four general approaches to instruction, and a diverse set of ideological, theoretical, and practical assumptions supports each process. His framework is highly relevant in higher education, predominantly undergraduate medical education (UME). He envisioned educational theory to exist within the following four unique ideologies: the Scholar Academic (SA) ideology, the Learner Centered (LC) ideology, the Social Efficient (SE) ideology, and the Social Reconstruction (SR) ideology. Within each ideology, he described key distinctive components of each curriculum, which include the following: purpose, teaching, learning, knowledge, and evaluation (Schiro, 2013).

The Scholar Academic Ideology

This ideology sees academic institutions as communities that aim to transmit to their learners accumulated knowledge of a culture. Educators within this ideology are seen as experts, sharing educational information with the novices. Within Scholar Academic educational settings,

instruction ensues when the teacher effectively presents students with the knowledge they are expected to acquire and understand. Scholar academics value structure most and envision knowledge as cultural reasoning achieved over time. The primary intent of evaluation, within this ideology, is to determine objectively the amount of knowledge students have gained. It allows students to be ranked from those with the most significant intellectual gain to those with the least (Schiro, 2013).

The Social Efficiency Ideology

This ideology aims to fulfill societal needs by training learners efficiently to function as constructive members of society. In this ideology, teachers are seen as supervisors of learning who utilize vocational strategies to optimize education. Learning proceeds when students are presented with appropriate materials, given set professional expectations that focus on positive reinforcement, and demonstrate occupational proficiencies effectively. Within the Social Efficiency ideology, knowledge is perceived as acquiring specialized skills that enable learners to contribute to society. Within this ideology, evaluation indicates to teachers objectively whether students can perform specific skills and are competent to perform expected professional tasks (Schiro, 2013).

The Learner-Centered Ideology

This ideology foresees educational institutions as enjoyable, stimulating, student-centered environments organized around their students' developmental needs and interests. Learner-Centered teachers help students learn by presenting them with experiences they can create meaning with and connect personally. Learners strive to engage actively in experiences that allow them to develop approaches to obtain knowledge and understand their educational domain.

Learner-Centered educators view knowledge as the personal meaning of oneself and one's world, derived from subjective experiences and responses to such incidents. This ideology uses evaluation to diagnose students' needs and promote learner growth by appropriately adjusting their learning environments rather than measuring them against predetermined standards (Schiro, 2013).

The Social Reconstruction Ideology

The primary aim of academic institutions within this ideology is to provide students with the ability to perceive structural (or institutional) problems in society, envision a better community, and act altruistically to improve society. Social Reconstructionist educators are seen as companions to students. They use learners' academic and social environments to facilitate knowledge acquisition. Within the Social Reconstruction ideology, learning occurs effectively when students experience actual social problems and participate in finding collective solutions to those problems. Social Reconstructionism defines knowledge as a set of social ideals, a commitment to those ideals, and an understanding of how to implement those ideals. The Social Reconstruction ideology views evaluation as a measure of student progress concerning the student's ability rather than in comparison with other students (Schiro, 2013).

In conclusion, Schiro's work demonstrates an ongoing competition for ideological control of the curriculum in the current educational culture. Proponents of each ideology attempt to convert others to their viewpoint and assert that their academic perspective is the only acceptable one. These attempts constantly stress didactic administrators, educators, and students to accept one ideology and reject the others. Certain cultures have allowed one or two ideologies to completely dominate the others instead of using cooperation to integrate them within

educational systems equally. This is an ongoing problem seen in the curriculum within undergraduate colleges of medicine (Schiro, 2013). His envision of a balanced academic future aided me in identifying the unbalanced and overly traditional curricular challenges facing medical educators today. In addition, his educational theory helps demonstrate the importance of appreciating and dedicating the appropriate curricular space for learner wellness and student professionalism within UME, as instructional efforts towards medical knowledge and clinical skill have become traditionally dominant. In closing, his work explained the need for more learner-centered and socially reconstructed methodologies to correct the imbalance created by overly scholarly academic and socially efficient instructional approaches that have become the established tradition in medical education today.

In conclusion, his work sheds light on the ongoing competition for ideological control of the curriculum within the current educational culture (Schiro, 2013). Proponents of each ideology strive to convert others to their viewpoint and assert that their academic perspective is the only acceptable one. These attempts continually stress didactic administrators, educators, and students to adopt one ideology while rejecting others. Consequently, in more established academic cultures, one or two ideologies have often been allowed to dominate others inappropriately rather than promoting cooperation to integrate them equally within educational systems, and this issue similarly persists in the curriculum of undergraduate medical colleges (Schiro, 2013). His vision of a balanced academic future aids in identifying the unbalanced and overly traditional curricular challenges faced by medical educators today. Furthermore, his educational theory underscores the significance of appreciating and allocating appropriate curricular space for learner wellness and student professionalism within undergraduate medical education (Schiro, 2013). This is crucial as instructional efforts in medical education have

traditionally prioritized medical knowledge and clinical skills over other aspects. In conclusion, his work emphasizes the need for more learner-centered and socially reconstructed methodologies to rectify the imbalance caused by overly scholarly academic and socially efficient instructional approaches that have become the established tradition in medical education today (Schiro, 2013).

Dewey's Reflective Thinking and Experiential Learning

John Dewey once wrote, "Experience includes the reflection that sets us free from the limiting influence of sense, appetite, and tradition" (Dewey, 1910). To reflect means to look back at something and consider it. Reflection can potentially result in insight and learning, leading to higher levels of critical inquiry and in-depth understanding of knowledge if utilized appropriately as an adaptive learning strategy (Aronson, 2011). Inside academia, reflection is most strongly linked to adaptation through assessment. Retrospection gives educators an adaptive approach to enhance scholarly examination by identifying divergences between teacher expectations and student outcomes (Loughland & Alonzo, 2019). This enables instructors to use reflection to evaluate their educational practices. Moreover, this strategy encourages using these insightful results to refashion components of instructional activities, revisit teaching methods, and revise educator expectations to appropriately accommodate student needs (Loughland & Alonzo, 2019).

Throughout the 1930s and 1940s, educational theory regarding reflection was principally influenced by Dewey. He was the first to rationalize reflection as a logical thought process and also the first to explain it as an educational concept (Rodgers, 2002). Dewey developed four criteria to classify reflection better, which are still relevant today. He consistently stated: (1) "reflection is a meaning-making process that moves a learner from one experience into the next with deeper understanding of its relationships with and connections to other experiences and

ideas,” (2) “reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry,” (3) “reflection needs to happen in community, in interaction with others,” and (4) “reflection requires attitudes that value the personal and intellectual growth of oneself and others” (Rogers, 2002).

Experience is simply the action of obtaining information by monitoring or taking part in an event. It refers to an occasion that is lived through in reality, as opposed to one that is imagined or thought about. It is viewed as the cognizant incidents that make up an individual life and the process of clearly recognizing this in the present. (Merriam-Webster, n.d.). According to Podolsky et al. (2019), experience traditionally yields investigational or objective knowledge, providing educators with a potentially adaptive approach to enhance academic learning. Teaching experience is positively associated with student achievement gains throughout a teacher’s career, and as teachers gain experience, their students are more likely to do better on measures of success beyond test scores. Teachers make more significant gains in their effectiveness when they teach in supportive, collegial environments or accumulate inconsistent settings. Experienced educators also confer similar benefits to their colleagues as they do to their students.

In John Dewey’s experiential learning theory, everything occurs within a social environment, as knowledge is socially constructed and based on experiences. This knowledge should be organized in real-life experiences that provide a context for the information. The teacher’s role is to manage this content and to facilitate the actual experiences based on the capabilities and readiness of the learners, with the quality of the experience as the primary component of the theory. Upon completing the experience, learners have the knowledge and ability to apply it to differing situations. Thus, they have created new knowledge and are at a

different level of readiness for continued acquisition and construction of new knowledge (Dewey, 1938).

A retrospective approach utilizing experience within education has been officially termed reflective learning. Reflective learning, as a whole, has been defined as a social and experiential process in which both learners and educators are active, engaged, open-minded, and involved in transformative and comprehensive beneficial educational outcomes (Brockbank & McGill, 2006). As for many other learning strategies, the theoretical background for reflective learning began with the work of the American educational theorist John Dewey. Dewey believed humans did not learn from their experiences alone, as he understood they gained knowledge from reflecting upon their experiences (Lagueux, 2021). While traditional approaches remain a cornerstone of educational culture, more innovative and adaptive strategies, which involve reflection on the part of both teacher and student, offer distinct advantages to learning environments. Reflective learning has creative potential that remains untapped, especially within higher education, where these adaptive learning processes still need to be explored and utilized.

Freire's Critical Consciousness

Revolutionary educational theorist Paulo Freire (1996) once wrote, "Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and with each other (p. 244). Freire critiqued all forms of established higher education. He believed this type of education had an ingrained culture that saw the students' mission as not to find a voice but to listen. Freire argued that learners should not be seen as educational objects but as academic subjects. He believed that awareness and active participation of students were vital for liberating education. He believed dominant higher educational systems passively suppressed learners through the suppressive

established curricula. Freire envisioned educators as counterparts to learners, guiding them through collaborative processes in which both could begin visualizing and understanding the educational world freely for themselves. Within this type of professional instruction, the learner can emerge a more consciously aware educational product of an inclusive system, becoming a complete human and professional. Freire believes learners cannot be educationally free without the freedom to perceive and choose for themselves. And if they are not educationally free, they cannot fully understand or experience being truly human (Torre et al., 2017).

Central to Freire's reconstructionist approach was his explanation of critical thought and critical consciousness regarding professional education. He argued that education should strive for the emergence of consciousness and necessary intervention in the lives of learners (Freire, 2008). He believed that the more the students experience realistic learning situations, the more they feel challenged and compelled to establish professional responses. They would do this by way of reflective learning not only in their educational but personal world as well. Furthermore, Freire encouraged students and educators to be self-reflective and to seek the simultaneous transformation of their roles. To achieve this process, both positions must be provided with life-like instructional opportunities inside and outside of the classroom, enabling them to consider alternative conceptions of not only themselves but of humanity as well (Freire, 2008). He argued that the ability of both learners and educators to reflect, evaluate, program, research, and transform within the education realm was unique to their humanity, and it was essential to becoming compressively professional (Freire, 2007).

A reconstructionist approach provides learners with a more balanced and holistic educational process. With appropriate amounts of this type of instruction within a curriculum, professionalism can be communicated, and learners can be instructed and trained effectively.

Paulo Freire's theoretical contributions have demonstrated how defaulting to an established curriculum causes challenging educational imbalance, resulting in oppressive power disparities, instructional conformity, and dehumanization (Freire, 1996).

Nodding's Relational Ethics

Feminist educator and philosopher Nel Noddings (1984) once said, "The student is infinitely more important than the subject matter" (p. 176). She emphasized kindness within her approach to both education and life. She believed thoughtfulness enabled educators to expect, connect, and continuously support learners within the educational space. The process of caring within education is the cornerstone of her approach. She believed caring educators could engage and challenge their students more to enhance their learning experience. Thus, setting higher expectations for them inside and outside of the classroom. She believed that by genuinely caring, these teachers have the potential ability to identify and uphold the true identities of learners within the educational space.

Noddings (2013) argued that caring should be a foundational component of a diverse, inclusive, ethical, and moral approach to education. She believed caring was essential to human goodness and played a vital role in developing a relationship between two human beings. Her concept of relational ethics originated with the principles of femininity, which she conscientiously linked to the overall education practice. Using a maternal perspective, she described an ethical approach to learning relationships in which reflection of human conscience took place in the present time within each diverse connection. She believed a genuine emphasis on inclusivity was fundamental to relations and understood them to be essential to the human experience (Noddings, 2013). These human-to-human connections make up the foundation of her educational theory. Within Nodding's construct of relational ethics, she proposes that the

caring encounter comprises two components: the one caring and the being cared for. In turn, this encounter is composed of three major factors: (1) the one-caring cares for the cared-for, (2) the one-caring performs some act by caring, and (3) the cared-for recognizes that the one-caring cares for the cared-for (Noddings, 2013). She insisted that both participants in this caring relationship have moral obligations that must be reciprocated with one another. In the same way, she viewed caring within this relationship as selfless by nature, where the one-caring accepts the cared-for on their conditions and avoids imposing egotistic agenda care to look after the cared-for (Noddings, 2013). Digging deeper within this theory, Noddings also identified two stages of caring, which included caring for and caring about. She describes the caring-for stage as the actual firsthand application of concerning assistance. She referred to the cared-about location as a state of being whereby one nurtures caring ideas or intentions. In developing this concept, she located the origin of ethical action in two motives. First was the belief that human affective response was a natural caring sentiment. Second was the belief that the memory of being cared for gives rise to an ideal self (Noddings, 2013). She recognized the cared-about stage as vitally inspirational for all forms of fairness. Still, she admitted that it is impossible to care for all beings, particularly those who remain detached and incapable of mutuality. Within the educational environment, her theory of relational ethics has inspired the development of educational settings in which outdated and judgmental ideologies are excluded (Noddings, 2013). She is solidified in her position that educators must be truthful with their learners and genuinely care for them as humans, scholars, and peers.

Gay's Culturally Responsive Pedagogy

“You can't teach what and who you don't know,” and “personal narratives and cultural stories are vital teaching content and methodology,” once stated Geneva Gay (2017, p.1). She

emphasized personal recognition and connection between educators and learners. She began her argument with the vital need for teachers to understand better who their learners are, on both personal and academic levels, so that they can be appropriately and effectively incorporated into instructional approaches. She explained that ethnicity, race, culture, language, gender, and thought process are familiar sources of our diversity. She expounded that these differences are fundamental to humankind, interconnecting diversities under a shared humanity. At the core of her educational philosophy, she believed that this connecting inclusion was essential to the learning process, as she has stated boldly, “personal narratives and cultural stories are vital teaching content and methodology” (Gay, 2017, p. 22). Gay believed the story to be the most effective method educators and learners can use to make personal connections. That storytelling and story-making were essential to allow educational transformation.

She believed that five significant obstructions in society caused educational achievement challenges affecting diverse student populations: (1) counting culture, (2) inadequate conventional reform, (3) insufficient intention without action, (4) recognizing strength and vitality within cultural diversity, and (5) understanding that test scores and course grades are indicators of the achievement problem but not the root cause (Gay, 2017). To combat this, Gay bid for and coined the term “culturally responsive teaching.” This pedagogy can be defined as an educational approach that emphasizes using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them (Gay, 2017).

Her work in this area focused on the unification of differences, especially our cultural ones, under the umbrella of education. Her emphasis on humane inclusion within the educational process promoted refreshing harmony for all involved. Her theoretical approach to education has

helped identify overly oppressive and non-inclusive trends in extremely traditional curricula. And most importantly to this study, her philosophy of culturally responsive teaching demonstrated the vitality of instructional reform as a prevention of antiquated exclusive educational approaches.

The Origins of Emotional Intelligence

In 1990, American psychologists Peter Salovey and John Mayer developed and introduced the concept of emotional intelligence. They initially explained emotional intelligence as the capability of an individual to manage their own emotions and the emotions of other individuals to differentiate among them and utilize information to facilitate one's activities, reasoning, and thinking (Salovey & Mayer, 1990). Years later, they revised their original conceptualization of emotional intelligence, characterizing it as the inclusive capability to observe, coordinate, reflect upon, understand, and regulate emotions to stimulate self-improvement (Mayer & Salovey 1997).

In 1995, the development of the emotional intelligence construct originated primarily due to the work of American psychologist Daniel Goleman. Within it, he characterizes emotional intelligence as a compilation of means which collectively have the potential to "boost" an individual's ability to persevere despite obstacles, to manage pressure, to avoid frustration, to manage their mentality, to prevent stressors from hurting reasoning, to be supportive, and to be positive (Goleman, 1995). Goleman is thought to have used a mixed methodological approach, depicting emotional intelligence as a series of abilities and competencies comprising five key areas: self-awareness, self-regulation, motivation, empathy, and social skill (1997). He defined self-awareness as recognizing and understanding your moods, emotions, and drives and their effect on others. Hallmarks of self-awareness include self-confidence, realistic self-assessment,

and a self-deprecating sense of humor (Goleman, 1999). Next, Goleman defined self-regulation as the ability to control or redirect disruptive impulses and moods. In addition, he added that self-regulation is the propensity to suspend judgment and to think before acting. This component's hallmarks include trustworthiness, integrity, comfort with ambiguity, and openness to change (1999). Along this same line, motivation was defined as a passion to work for reasons beyond money or status. Goleman saw this as a propensity to pursue goals with energy and persistence. Hallmarks of this component include a strong drive to achieve, optimism (even in the face of failure), and organizational commitment (1999). Empathy was later defined as the ability to understand the emotional makeup of other people and seen as a skill in treating people according to their emotional reactions. Hallmark features of this emotional intelligence component include expertise in building and retaining talent, cross-cultural sensitivity, and relating to others (Goleman, 1999). Lastly, Goleman (1999) defined social skills as proficiency in managing relationships and building networks with an ability to find common ground and build rapport. Hallmark features of this emotional intelligence component include effectiveness in leading change, persuasiveness, and expertise in building and leading teams.

In 1997, another significant contribution was made to the paradigm of emotional intelligence by Israeli clinical and research psychologist Reuven Bar-On. Viewed as one of the leading pioneers, theorists, and researchers in emotional intelligence, Bar-On was the first to introduce the concept of emotional quotient to describe his approach to assessing emotional intelligence. He created the Bar-On Emotional Quotient Inventory, the first peer-reviewed emotional intelligence test published by a psychological researcher (Bar-On, 1997). This assessment was designed to study and assess the emotional and social competencies he identified as significant components of emotional intelligence. The assessment process involved the

development of a self-reported measuring instrument comprising 133 items, clustered into fifteen scales and inserted into five composites assessing his five major components of emotional intelligence.

Bar-On described emotional intelligence as an array of interrelated emotional and social competencies that determine how effective individuals are at understanding and expressing themselves, understanding others, interacting with them, and coping with daily demands and challenges. He classified these competencies into five major elements: (1) the ability to be aware of emotions as well as to understand and express feelings; (2) the ability to understand how others feel and interact with them; (3) the ability to manage and control emotions; (4) the ability to manage change, adapt and solve problems of a personal and interpersonal nature; and (5) the ability to generate positive affect to enhance self-motivation, to facilitate emotionally and socially intelligent behavior (Bar-On, 1997). Overall, he understood emotional intelligence as a variety of non-intellectual competencies, capabilities, and skills that impact one's ability to succeed in taking precedence over environmental pressures and demands (Hussain et al., 2009).

Overall, emotional intelligence theory can be classified into three theoretical models, all vital in understanding its framework. Salovey and Mayer were first credited with developing an ability model of emotional intelligence. This model focuses on conceptions that fuel astuteness through enhanced comprehension of an individual's emotional state. In this model, emotional intelligence establishes the capability for proficiency in specific skills within its framework (Mayer & Salovey, 1997). Goleman was next credited with developing a competency model of emotional intelligence. This model focuses on the proficiencies of emotional intelligence that enable an individual to perform successfully within their scope (Goleman, 1995). Emotional intelligence about one's scope of practice has been thought to motivate problem-solving

approaches through collaboration and cooperation in uncovering open-minded explanations (Goleman et al., 2002). Goleman's model determined five components of emotional intelligence: identifying one's emotions, managing one's feelings, inspiring oneself, identifying emotions in others, and managing interactions (Goleman, 1998). Lastly, Bar-On was credited with developing a trait model of emotional intelligence. This model assesses emotional intelligence through five factors: intrapersonal skills, interpersonal skills, stress management, adaptability, and general mood. Within this model, emotionally intelligent people commonly share elevated levels of the following traits: positivity, adaptability, sensibility, tenacity, resiliency, and regulatability (Bar-On, 2000). Since its inception, these proposed paradigms have built a solid foundation for future theoretical development of emotional intelligence, providing ample explanation of its capabilities, competencies, and characteristics (Hussain et al., 2019).

Boost Incorporated's Understanding of Emotional Intelligence

Boost Incorporated, a private entity, specializes in wellness and mindfulness training courses on emotional intelligence. Their modern and applicable approach (Boost Mental Toughness & Leadership, 2020) reflects the unique nature of their offerings. Boost actively acknowledges emotional intelligence as the effective management and regulation of emotions, emphasizing its importance for being responsive, rather than reactive, in stressful situations to enhance the likelihood of achieving desired outcomes. As per Boost, emotional intelligence involves recognizing and utilizing one's and others' emotional states for problem-solving and behavior regulation (Ginter & Hickerson, 2020).

Boost's conceptualization of emotional intelligence is heavily influenced by Daniel Goleman's competency model, prioritizing emotive skills proficiency (Mayer & Salovey, 1997). This distinctive interpretation defines emotional intelligence through four key components: self-

awareness, self-regulation, situational awareness, and situational regulation (Ginter & Hickerson, 2020). Developed by experts from diverse fields such as the US armed forces, sports coaching, psychology, kinesiology, and education, Boost's approach is a unique blend of varied backgrounds and expertise (Ginter & Hickerson, 2020).

In closing, according to Ginter and Hickerson, Boost's understanding of emotional intelligence is rooted in a strong foundation in neuropsychology, particularly cognitive neuropsychology, which explores how brain function affects our thinking and behavior. Boost integrates mindfulness, resiliency, and wellness into its emotional intelligence framework. These elements cover the awareness of internal states and surroundings, adaptability to life challenges, and overall well-being (VadenBos, 2015).

Boost Incorporated's Sense of Emotional Intelligence vs. Trait and Ability-Based Emotional Intelligence Models

Boost Incorporated's sense of emotional intelligence emphasizes practical application in real-world scenarios, focusing on self-awareness, self-regulation, and effective emotional management (Boost Mental Toughness & Leadership, 2020). This approach complements other established perspectives in the field. The Trait-Based Approach, such as the Workplace Emotional Literacy Indicator (WLEIS), focuses on individual self-perceptions and self-assessments of emotional abilities, including aspects like emotional awareness and regulation (Brannick et al., 2009). Conversely, the Ability-Based Approach, exemplified by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), objectively evaluates an individual's capacity to perceive, utilize, understand, and manage emotions (Brannick et al., 2009).

The similarity of Boost's approach to these well-established models in emotional intelligence, which include both trait-based and ability-based models, underscores its

commitment to a comprehensive understanding of emotional intelligence. By aligning with these models, Boost initiates the process of supporting its approach and establishing its relevance and applicability in diverse personal and professional contexts. This alignment allows Boost to incorporate a broad spectrum of emotional intelligence aspects into its programs, crucial for improving interpersonal communication, decision-making, and fostering emotional well-being. By resonating with these established models, Boost is strengthening its position in the field of emotional intelligence, thereby enhancing the credibility of its training program and assessment. In summary, the below figure illustrates the similarities between these three different models of Emotional Intelligence.

Figure 1

Comparison of Emotional Intelligence Approaches: Boost's MTLA, WLEIS, and MSCEIT

Criteria	Boost's MTLA (Hickerson & Ginter, 2020)	WLEIS (Brannick et al., 2009)	MSCEIT (Brannick et al., 2009)
Approach	Self-report method assessing practical skills in managing and regulating emotions.	Trait-based self-report model measuring perceptions of emotional abilities.	Ability-based model objectively assessing emotional intelligence through tasks.
Core Components	Resilience, presence, focus, confidence, gratitude, and emotional management.	Self and others' emotional appraisal, emotion use, and regulation.	Ability to perceive, use, understand, and manage emotions.
Accessibility	Proprietary	Public	Proprietary
Validation Status	Not validated	Validated	Validated
Comparative Similarities	Emphasis on core emotional intelligence components like self-awareness and emotion regulation.	Focus on emotional intelligence development.	Applicability of emotional intelligence across diverse contexts.

Boost's Emotional Intelligence Assessment and Training

In developing its Emotional Intelligence Assessment, Boost Incorporated's MTLA draws insights from Bar-On's trait model and incorporates elements from other well-recognized assessments in the field (Bar-On, 2006; Hay Group, 2006; Smith et al., 1995). These sources provide foundational concepts and validated methodologies, guiding the structure and focus of the MTLA. The assessment uses a self-reporting system with a 5-point Likert Scale featuring thirty-six questions to measure key domains or components, including resilience, presence, focus, confidence, gratitude, and overall emotional intelligence.

The design of Boost's training curriculum is inspired by the Mindfulness-Based Stress Reduction Program (MBSR) and the Master Resilience Training (MRT). MBSR, developed by Dr. Jon Kabat-Zinn in the 1970s at the University of Massachusetts Medical School, is an eight-week program that combines mindfulness meditation and yoga with Western medicine and psychology. It is traditionally used in clinical settings to manage stress and improve mental and physical health outcomes (Kabat-Zinn, 2013). MRT, part of the US Army's Comprehensive Soldier Fitness program and developed by the Positive Psychology Center at the University of Pennsylvania, teaches resilience skills to enhance coping, adaptation, and recovery abilities (Seligman et al., 2009; Reivich et al., 2011). It has been used in military, corporate, and educational settings for building resilience and mental toughness. These programs, known for their effectiveness in mental wellness and resilience building, significantly influence the structure and content of Boost's training. The training curriculum, as outlined by Ginter and Hickerson (2020), focuses on developing emotional expression, recognition, affect regulation, and motivational behaviors. It emphasizes the development of specific traits like resilience, presence, focus, confidence, and gratitude. Central to this approach are ten pillars that form the core of Boost's curriculum, aimed at enhancing mental toughness and leadership skills, which

include 1) Self-Talk and Thought-Stopping, 2) Examining Strengths and Weaknesses, 3) Mapping Goals to Success, 4) Looking Inside Yourself, 5) Handling Pressure and Stress, 6) Inspiring Motivation, 7) Learning to Focus for Crucial and Critical Times, 8) Programming Your Mind for Success, 9) Learning to Control Emotions, and 10) Directing Motivational Intensity.

These pillars collectively support their training program's comprehensive personal and professional development framework. In summary, The figure below provides an adequate comparison of the foundational elements of the MBSR, MRT), and Boost Mental Toughness and Leadership Training programs, visually overviewing of their unique and shared characteristics.

Figure 2

Comparative Overview of Emotional Intelligence and Resilience Training Programs: MBSR, MRT, and Boost Mental Toughness and Leadership Training

Characteristics	Mindfulness-Based Stress Reduction (MBSR) Kabat-Zinn, 1970s	Master Resilience Training (MRT) Seligman & Reivich, 2009	Boost Mental Toughness and Leadership Training Ginter & Hickerson, 2020
Origin	<ul style="list-style-type: none"> 1970s, UMass Medical School 	<ul style="list-style-type: none"> 2009, U.S. Army CSF Program 	<ul style="list-style-type: none"> 2017, Boost Incorporated
Core Components	<ul style="list-style-type: none"> Mindfulness meditation, yoga, body awareness, stress response education 	<ul style="list-style-type: none"> Resilience skills, emotional awareness/regulation, optimism, strengths identification, connection building 	<ul style="list-style-type: none"> EI training, mental toughness, leadership skills, ten pillars of curriculum, inspiration from MBSR/MRT
Duration	<ul style="list-style-type: none"> 8 weeks 	<ul style="list-style-type: none"> Variable, typically several weeks 	<ul style="list-style-type: none"> 6 weeks
Purpose	<ul style="list-style-type: none"> Manage stress, anxiety, pain, and illness; enhance aspects of emotional intelligence 	<ul style="list-style-type: none"> Enhance resilience and well-being; adapt to adversity 	<ul style="list-style-type: none"> Develop emotional intelligence, mental toughness, and leadership skills; personal/professional growth
Application	<ul style="list-style-type: none"> Clinical, educational, and corporate settings 	<ul style="list-style-type: none"> Military, educational, and corporate settings 	<ul style="list-style-type: none"> Military, competitive sporting, and corporate settings, educational
Status	<ul style="list-style-type: none"> Public 	<ul style="list-style-type: none"> Semi-Public/Semi-Proprietary 	<ul style="list-style-type: none"> Proprietary

The Impact of Emotional Intelligence on Education

In discussing the effect of emotional intelligence on education and subsequent academic performance, it is first necessary to look at two of its compositional factors: interpersonal and

intrapersonal intelligence. Interpersonal intelligence is more externalized and used to understand and better sustain personal relationships appropriately. It is crucial in boosting characteristics like consideration, compassion, and collaboration (Wijekoon et al., 2017). Alternatively, intrapersonal intelligence is internalized and used to realize better, motivate, and balance oneself. It is essential for success both inside and outside the academic environment (Jahan et al., 2022). That being said, those with elevated levels of emotional intelligence, which by default also have excellent interpersonal and intrapersonal skill sets, are more inclined to have enhanced self-awareness and self-regulation. Thus, they are more disposed to having a heightened understanding of relationships and are more capable of situational management (Wijekoon et al., 2017).

An additional significant factor in the discussion regarding the impact of emotional intelligence on academic performance is its effect on the health of an individual's mentation. In many instances, it has been shown to affect mental health and wellness positively (Schutte et al., 2007). Emotional intelligent individuals have been shown to better cope with stress and have appropriate levels of self-worth (Austin et al., 2010). Recent studies on the connection between overall stress and emotional intelligence have found that highly emotionally intelligent individuals are less adversely affected by abnormal, harmful stress levels. A study by Schneider, Lyons, and Khazon (2013) demonstrated that heightened emotional intelligence enabled more efficient recovery from stressful events. Additional investigation in this arena has proposed a connection between higher emotional intelligence, resilience, depression, and the tendency for emotional exhaustion due to continually elevated stress levels. Similarly, a study by Olson et al. (2015) examined the strength and emotional intelligence within medical providers, a scope of professional practice with significant rates of emotional exhaustion due to persistent exposure to

highly stressful individuals, situations, and environments, termed burnout. This research study established a positive correlation between emotional intelligence and resilience. Additionally, as levels of emotional intelligence increased with resiliency, researchers found these individuals less likely to suffer from depressive behaviors or depressive disorders. The study concluded the existence of a negative correlation between emotional intelligence and burnout rates within their clinician cohort. Further research conducted by Lin et al. in this realm confirmed the vivacious nature of emotional intelligence as some studies have begun to emphasize the ability of interventional emotional intelligence training in battling depression and burnout within one's scope of practice. Finally, a comprehensive study by Luthans et al. (2010) concluded that resilience and other related non-cognitive traits have also been shown to be a facilitator between emotional intelligence and attaining academic success. Throughout one's educational journey, many factors leading to academic success are linked to resiliency, a qualification of emotional intelligence.

That being said, emotional intelligence does have the potential to bridge the gap between the strive to learn and academic accomplishment. Academic success is the positive extent to which a student, educator, and institution have attained their educational aims as a product of the educational process. It is defined as the degree to which students gain the information, proficiencies, aptitudes, and skills the teacher will teach or assign (Salvia, 2000). More recently, a study that comprehensively defined academics revised its definition to include academic achievement, attainment of learning objectives, acquisition of desired skills and competencies, satisfaction, persistence, and post-graduate performance (York et al., 2015). It is seen as one of the more widely accepted methods to measure the overall achievement of learners and the efficiency of instructional institutes within education today (Jamali & Tahmasebi, 2013).

The creators of emotional intelligence have proposed that this skill improves not only with age but also with life experience (Mayer et al., 2004). Additionally, these founding psychological researchers reported that as levels of academic achievement improved among learners, corresponding improvements in collaborative, communicative, motive, and contributive behaviors were noted within the educational space; communicating inspirational thoughts was also stimulated (Mayer et al., 2004). Emotionally intelligent individuals were also noted to have an increased capacity to manage personal mindsets and better navigate others' emotive states within demanding situations. On the other hand, they reported that as unwanted professional behavior amplified, emotional intelligence faded. (Mayer et al., 2004). Other major theoretical contributors support that enhanced emotional intelligence coincides with one's ability to self-reflect and regulate emotional state within social situations, both vital to academic achievement. Thus, the founding fathers argued that emotional intelligence is a forecaster of educational attainment (Bar-On, 2000). Since its inception, a study by Suleman et al. (2019) has demonstrated a positive relationship between emotional intelligence and academic performance in learning institutions ranging from early childhood development programs to undergraduate universities. Educational research suggests that a firm grasp of emotional knowledge can enhance the learning process by fostering learners' and educators' academic and professional development (Suleman et al., 2019). In conclusion, although these studies offer valuable perspectives, more comprehensive research is needed to establish the link more formally between emotional intelligence and academic success in the conventionally structured field of medical education.

Relating Emotional Intelligence to Professionalism

The relationship between emotional intelligence and professionalism, particularly in medical education, is intricate and interdependent. Professionalism in medicine involves the conduct, aims, or qualities that characterize a medical practitioner. This includes upholding the highest ethical standards and displaying empathy, moral character, integrity, and emotional maturity, which are fundamentally aligned with the core tenets of emotional intelligence (Syed, 2011; Monrouxe et al., 2011).

Emotional intelligence, conceptualized as a multifaceted construct, embodies individuals' ability to effectively understand, use, and manage emotions in themselves and others. This encompasses a range of capabilities like self-regulation, empathy, stress management, and effective communication, closely mirroring the attributes essential for medical professionalism (Goleman, 1998). Notably, Goleman (1998) identified that a significant proportion of abilities associated with professional success are grounded in emotional intelligence, underscoring its relevance in professional contexts.

Medical education institutions increasingly recognize the importance of integrating emotional intelligence and professionalism into their curricula. These institutions understand that professionalism is not just about clinical competence but also encompasses effective communication, ethical reasoning, and the ability to address legal issues, all of which are enhanced by emotional intelligence competencies (Byyny et al., 2017; Macneill et al., 2020).

Emotional intelligence does not equate to professional development in its entirety; however, it forms a vital foundation for many of the competencies and skills that define professional growth in medical education. Emotional intelligence reinforces essential aspects of professionalism, such as effective communication, empathy, ethical decision-making, and

adaptability, all of which are essential for a successful medical career. In this way, while they are not identical, emotional intelligence significantly contributes to and enhances professional development.

Theoretical frameworks provided by Mayer and Salovey (1997), combined with Goleman's (1995) hypothetical constructs, offer insights into how emotional intelligence contributes to professional development. Mayer and Salovey's (1997) ability-based model views emotional intelligence as a developable skill crucial for professional growth. Goleman's (1995) model further reinforces this by emphasizing emotive skills essential for professionalism. Additionally, studies examining the role of emotional intelligence in medical education solidify its significance. For example, Cherry et al. (2014) explore emotional intelligence as foundational for professionalism and communication skills in medicine. Similarly, Brannick et al. (2009) and Chew et al. (2013) explain how different dimensions of emotional intelligence relate to professional behavior and academic performance in medical students.

The challenges in medical education, including concerns about overall student wellness and technological integration, imply a growing need for a curriculum that balances technical knowledge with emotional intelligence skills imperative for patient care and professional adaptability (Elsevier, 2023; Brandenburg et al., 2011; Goroshit & Hen, 2012). Deficiencies in emotional intelligence and professionalism have been identified as leading challenges within pre-clinical training phases, with implications for clinical phase outcomes (Guerrasio et al., 2014; Macneill et al., 2020).

While emotional intelligence is not synonymous with professional development, it is an essential component of it. Emotional intelligence contributes significantly to the cultivation of

fundamental professional competencies in medical education, underlining its relevance and potential impact on the development of well-rounded medical professionals. This understanding provides a solid foundation for comparing the components of emotional intelligence and professionalism in medical education.

Identification of Research Questions

For quite some time, the relationship between emotional intelligence and academic success has been a topic of considerable interest, and recent research has demonstrated that higher levels of emotional intelligence have been associated with improved academic performance (Akpur, 2020). Additionally, current research suggests that incorporating intelligence-based methods into educational practices can enhance the teaching of professionalism and communication skills in the field of medicine (Suleman et al., 2019). Unfortunately, studies looking at the utilization of emotional intelligence within medical education have not been incorporated into their efforts, resulting in inconsistent conclusions. Thus, its impact on medical education is unexplored.

To provide further investigation, the ensuing study was developed to fulfill the following research aims. The primary aim of the proposed study was to demonstrate that medical students undergoing emotional intelligence training during their clinical year, specifically within their Surgical Clerkship, exhibited increased emotional quotient. A secondary aim was to examine the relationship between emotional quotient and academic performance among surgical clinical phase learners. A tertiary aim was to assess the effectiveness of instructor-led small group sessions as a delivery method for emotional intelligence training and its impact on learners' experiences during their third-year Surgery Clerkship.

In summary, the primary long-term objective of the resulting study application is to find a consistent method and objective approach to training, assessing, and evaluating professionalism in the undergraduate medical education (UME) setting. From the basis of the preceding investigative aims, the following three questions were developed: (1) Does mental toughness and leadership training provided by Boost Incorporated lead to an increase in the emotional quotient of medical students during their Surgical Clerkship in the clinical year, as measured by the Boost MTLA? (2) What is the nature of the relationship between emotional quotient, indicated by Boost's MTLA scores, and academic performance, specifically NBME Surgery Shelf Exam scores, among medical students in their Surgical Clerkship? (3) How do learners evaluate the impact of faculty-guided small group learning as a method for delivering Boost Incorporated's mental toughness and leadership training during their third-year Surgery Clerkship?

Conclusion

In conclusion, a default to a dominant established medical curriculum produces an unbalanced ideologic approach which leads to incomplete education for undergraduate medical learners and future clinical professionals. The undergraduate medical curriculum would benefit from an efficient, innovative, comprehensive, and consistent approach that would help its current learners and graduate professionals. For a theoretical solution to be applied successfully within undergraduate medical institutions, the neglected or absent ideologic methods must be assimilated into the structural forms of the dominant educational society and have equal representation weight as their predominant counterparts. Structured assessments and objective evaluations currently reign supreme within medical education. Educational severe efforts focused on undergraduate medical learners' developmental and personal needs must be considered a compromise and part of the educational solution to encourage imaginative,

conscious, and reflective learning. In addition, a well-thought-out curriculum capable of appropriately instructing medical professionalism should also be considered part of the answer. Organized training, assessment, and evaluation of non-cognitive skills like emotional intelligence have yet to be appropriately utilized within undergraduate medical education (Ginter & Hickerson, 2020).

Instead of looking to a non-diverse ideology when constructing an undergraduate medical curriculum, utilizing a multifaceted approach offers the most hope. Educational theorists have already introduced a comprehensive theoretical curriculum that equally incorporates the strengths of all four ideologies, offering an inclusive, integrated, and palatable solution for undergraduate medical institutions today. Some traditional portions of the curriculum will always need to be present in arenas of medical knowledge and clinical skill; however, additions of professionalism and learner-directed components will enable students and society to play a more significant role in the educational experience. As the intricate domain of medical education transforms, it is essential to consider a more balanced approach that produces comprehensively educated and professional clinicians. To ensure progress, while I can take into account past methods and processes of the medical curriculum, it's important not to let them unduly control or limit our approach to future education.

In conducting this study, I aimed to explore the impact of emotional intelligence training on the emotional quotient of third-year medical students and its connection to their academic performance and learning experiences within their Surgical Clerkship. I proposed that the mental toughness and leadership training provided by Boost Incorporated would increase emotional quotient levels, as measured by the Boost MTLA. I also postulated the existence of an academically relevant relationship between these levels of emotional quotient and academic

performance, reflected by the NBME Surgery Shelf Exam scores within this population of students. In addition, I anticipated that faculty-led small group learning sessions would be an influential delivery method for this type of training for third-year medical students during their Surgical Clerkship. It is anticipated that these findings will effectively highlight the crucial role of non-cognitive skills in medical professionalism and suggest that higher emotional intelligence may serve as an indicator of greater professional success for future clinicians.

Chapter 3: Methods

Participants and Settings

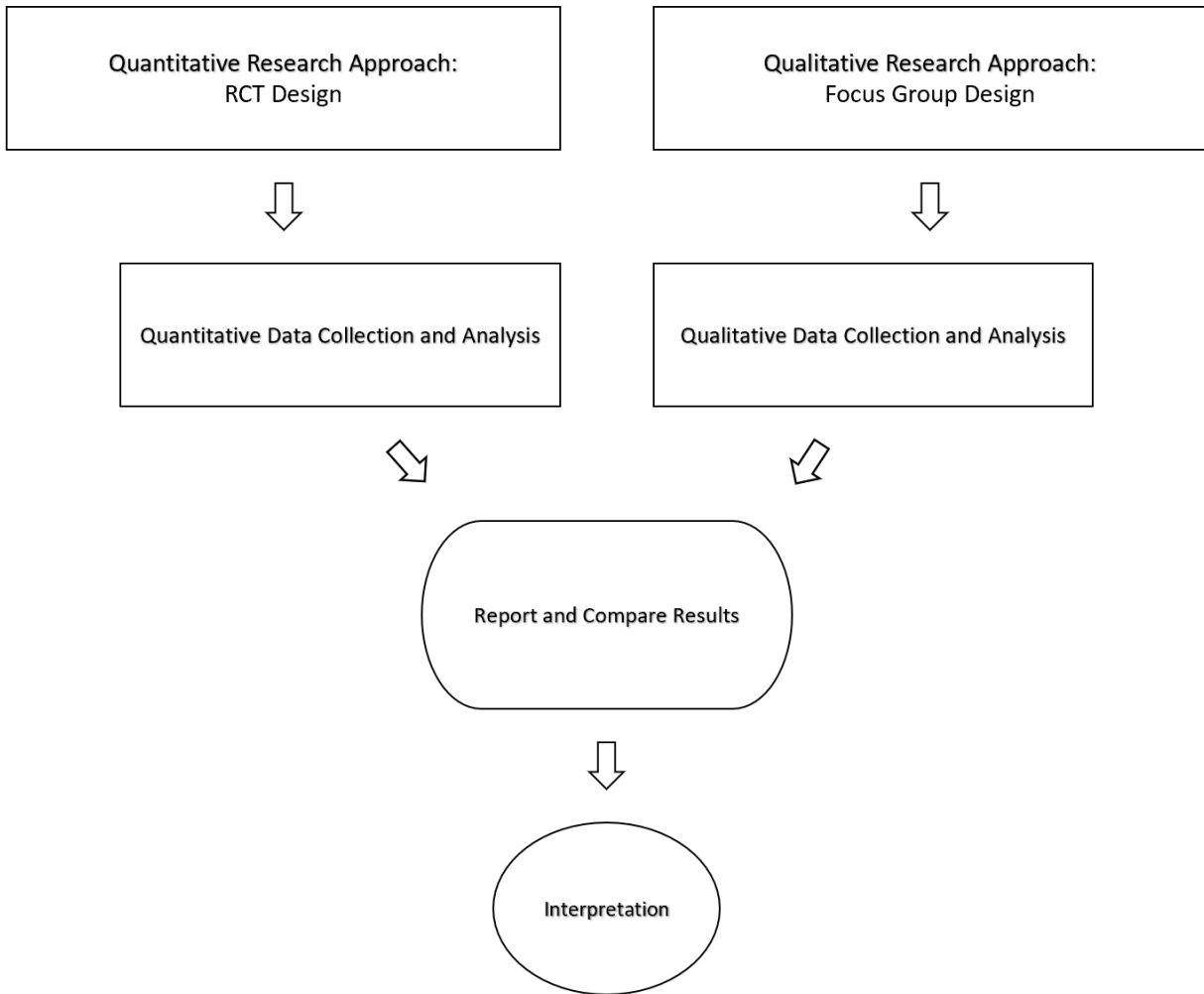
The study occurred during the third-year Surgery Clerkship at the University of Oklahoma (OU) College of Medicine on the Oklahoma City Campus. It involved only third-year students in the clinical phase of training. One hundred forty third-year College of Medicine students will be asked to participate. The study length was 12 months in duration. It was offered consistently to the seven cohorts participating in the six-week Surgery Clerkship during the third year of medical school in the 2020-2021 academic year.

Study Framework and Research Designs

The study's overall framework follows a mixed-methods approach, primarily emphasizing a quantitative design, complemented by a secondary qualitative design. The study's quantitative and qualitative designs were executed and analyzed separately before interpretations were made, aligning with a mixed parallel convergent framework (Schoonenboom & Johnson, 2017). This framework integrates findings from both designs during the interpretation phase, rather than intertwining them throughout the research process (Demir & Pismek, 2018). A visual representation of this framework is provided below, illustrating the distinct yet complementary nature of the quantitative and qualitative designs.

Figure 3

Mixed Parallel Convergent Framework of the Study's Research Designs

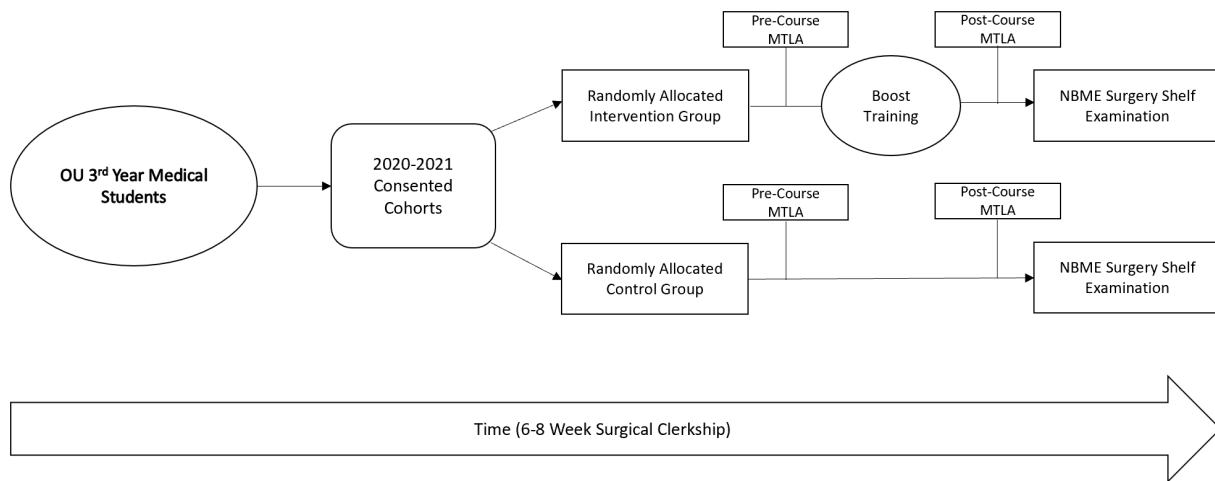


The study’s quantitative approach involved a randomized controlled trial (RCT) design to evaluate the efficacy of the interventional training. Key to this quantitative section was randomization, executed via a digital number generator, enhancing internal validity by mitigating selection bias (Hansen et al., 2021; Field & Hole, 2002). Outcomes were measured using post-clerkship scores from the MTLA, reflecting the deep-rooted tradition of RCT design in educational research since the 1920s (Slavin, 2020). This framework's objective was to describe the effects of interventional training, with randomization ensuring consistent baseline characteristics across groups (Sullivan, 2011). Blinding is not a mandatory criterion for defining

or conducting an RCT in educational research (Willems et al., 2021). The emphasis on randomization and control aligns with the standard criteria for RCTs in educational settings. While RCTs reduce bias and clarify outcome attributions, challenges such as small sample sizes and participant interaction were noted (Sullivan, 2011). However, the RCT component of the study was adequately designed and executed with adherence to established ethical protocols, ensuring the minimization of participant risk, as outlined in the figure below.

Figure 4

RCT Portion of Study Design



The study’s qualitative approach utilized the focus group design, specifically longitudinal focus groups. Although focus groups have been a staple in qualitative research for decades, longitudinal focus groups are a more recent development (Auduly et al., 2022). These groups met at the end of each eight-week clerkship block during the 2020 to 2021 academic year, involving distinct subgroups of third-year medical students. The use of consistently applied

interview prompts, which were composed before the study commenced, coupled with moderation by the same individual, ensured the comparability and integrity of the focus group data collected. This approach provided insights into dynamic changes within the cohort, enriching our understanding of their experiences through the Surgical Clerkship (Audulv et al., 2022).

In closing, the study's mixed parallel convergent framework combined an RCT for objective assessment and focus groups for experiential exploration (Schoonenboom & Johnson, 2017). The quantitative data offered precise measurements, while the qualitative insights added depth, ensuring a thorough examination of the training's impact in the educational setting (Schoonenboom & Johnson, 2017). This combined approach leveraged the strengths of both quantitative and qualitative research for a comprehensive analysis.

Procedural Flow

Third-year COM students were asked in a survey to volunteer for a study about emotional quotient assessment and emotional intelligence training before beginning their Surgery Clerkship during the 2020-21 academic year. Third-year COM students who did not voluntarily agree to participate in the study were no longer contacted. Student volunteers then had their involvement in the study formerly consented to. Next, this pool of subjects was randomized into two groups: (1) a control group that did not receive emotional intelligence training and (2) an intervention group that did receive emotional intelligence training. The control group, composed of students who opted into the study but were randomized not to receive formal emotional intelligence training, only participated in the emotional quotient assessment. The intervention group was composed of students who opted into the study and were randomized into the pool that received

formal emotional intelligence training. The intervention group participated in the following: (1) six weeks of online emotional intelligence training, (2) weekly in-person clerkship faculty-guided small group learning sessions, and (3) an in-person EI training seminar at the midterm of the clerkship. The weekly in-person small group sessions were facilitated by the director of the Surgical Clerkship, who also consistently served as an administrator of the clinical rotation for all medical school students throughout the 2020-2021 academic year but was not involved in any direct student grading. Before the end of the clerkship, both the control and intervention groups retook the MTLA. Additionally, they took the NBME Surgery Shelf Examination at the end of the clerkship. Immediately following their last in-person EI training gathering, the intervention group alone participated in an in-person focus group moderated by the same study investigator and sought personal and professional feedback regarding participation in the study and clerkship. In addition, after completion of the clerkship, participants were asked to complete a short biographical survey freely. However, due to a clerical error in the Department of Surgery, the survey was never administered or sent to the participants.

Measures

Recruitment Survey

Before the official start of their Surgery Clerkship, all third-year medical students were asked, via email, to voluntarily complete a two-question electronic survey composed of the following questions: (1) Would you like to participate in a study involving pre-clerkship and post-clerkship emotional quotient assessment in the Surgery Clerkship? And (2) If answered “Yes” to Question 1, would you agree to participate in emotional intelligence training and analysis by Boost Incorporated if you were randomized to the group receiving training? (Note

that a yes to this question does not guarantee participation in EI training by Boost Incorporated). This survey was not given by any faculty instructors or staff members officially involved in clerkship grading. It served to identify our official study sample. Students that did not voluntarily agree to participate in the study did not receive EQ assessment, did not receive EI training, and were contacted by investigators again. Those students that answered ‘yes’ to the above two questions were then emailed the formal study consent form. After signing consent, student subjects were randomized into pools receiving (intervention group) and not receiving (control group) formal EI training during their clerkship.

Emotional Quotient Assessment:

The MTLA used in the study was a 36-question assessment that utilized BOOST’s algorithm and 5-point Likert scale scoring to provide subjects with a personal profile describing their level of readiness in the following areas including leadership, positive mental attitude, anxiety, self-control, concentration, goal setting, and managing emotions; all of which Boost views as integral parts of emotional intelligence (Ginter & Hickerson, 2020). The MTLA scores were reported directly to Boost Incorporated after participants completed their pre- and post-assessments. These scores were then immediately made available to each student and subsequently provided to me at the end of the study for analysis. The structure of the MTLA, encompassing its components and survey questions, is visually represented in the figure below.

Figure 5

Components and Survey Questions of the Boost MTLA

Component	Survey Question
Leadership	1. I can work hard and effectively when left on my own.
	2. When given the opportunity, I can make a decision.
	3. I follow instructions.
	4. I set the standard for others.
	5. I would rather follow than lead.
	6. I take responsibility for my thoughts and actions.
Concentration	7. I can make up new plans/strategies in my head when necessary.
	8. I can recognize when I do not have control of my emotions.
	9. External factors such as gossip, or people slacking off distract me from focusing on the goal.
	10. I lose focus or have mental lapses.
	11. I get distracted by things that are going on around me.
	12. When I need to, I can focus.
Positive Mental Attitude	13. Seeing or imagining positive events is easy for me.
	14. I continue to give 100% effort when things are not going well.
	15. I can stay positive after a setback.
	16. I doubt my skills and abilities.
	17. My anger or frustration gets in the way of performing at my best.
	18. I often talk negatively to myself.
Anxiety/Self-Control	19. When I feel myself getting too tense, I know how to calm down.
	20. I am able to cope with unexpected situations as they come up.
	21. I worry about letting others down and that I will not meet their expectations.
	22. I am able to receive constructive feedback without getting upset.
	23. I worry, feel nervous, or get tight before, during, or after doing things.
	24. The bigger the moment, the calmer I am.
Goals	25. I want to get better and improve my skills.
	26. I focus on the process rather than the end goal.
	27. I have specific goals I want to achieve.
	28. I focus on the outcome of what I am doing.
	29. I like learning new skills even if it takes a lot of work on my part.
	30. When I am told how to correct a mistake I've made, I respect it and don't question it.
Managing Emotions	31. I feel like I am burning out.
	32. I find it difficult to stay positive when things are going badly.
	33. I feel comfortable sharing my thoughts and feelings with others around me.
	34. I get easily frustrated when there are high expectations.
	35. I have confidence in my ability to succeed.
	36. I do not love what I am doing as much as I used to love it.

Emotional Intelligence Training Intervention

Boost's training curriculum was specifically designed to develop emotional expression, emotional recognition, affect regulation, motivational behavior, and adaptational behaviors (Ginter & Hickerson, 2020). It consisted of access to six weeks of the online curriculum in mental toughness, leadership skills, and overall emotional intelligence provided by Boost

Incorporated. Trainees also participated in 60-minute, weekly in-person clerkship faculty-directed small group learning sessions. These sessions covered the topics of the corresponding online EI curricular content. Trainees also participated in an in-house leadership, mental toughness, and EI seminar session given by a leading expert in the field at the midterm of the clerkship. Focus topics included time management, emotional control, focusing under pressure, positive mental attitude, concentration, goal setting, anxiety and self-control, and leadership (Ginter & Hickerson, 2020).

Academic Performance Evaluation

Per the NBME (2023), shelf examinations are subject-based, standardized exams designed to evaluate knowledge acquisition in foundational medical clerkships. These exams, including those in internal medicine, family medicine, surgery, pediatrics, obstetrics and gynecology, psychiatry, and neurology, provide undergraduate medical education institutions with a tool for measuring learner understanding of clinical sciences.

The NBME's testing committees crafted and reviewed each exam item, ensuring relevance and rigor. Before publication, these examinations undergo evaluation by panels of clerkship directors, each expert in their respective disciplines (National Board of Medical Examiners, 2023). According to the NBME (2023), the Surgery Shelf Exam, a critical component of this assessment suite, is a 110-question examination administered over a 2-hour and 45-minute period. This case-based exam evaluates students' competencies in diagnosing and managing surgical patients, including decision-making for surgical interventions. The exam's scope extends to surgical cases relevant to Obstetrics and Gynecology, Medicine, and Pediatrics.

In this study, no equivalent pre-clerkship measure was employed to establish a baseline for academic performance before the NBME Surgery Shelf Exam. The decision to forgo a baseline assessment was based on the comprehensive and standardized nature of the NBME examinations, designed to objectively measure students' accumulated knowledge and clinical reasoning skills after preclinical and clinical courses in undergraduate medical curricula. These examinations serve as standalone assessments, providing a snapshot of student competencies aligned with the educational objectives of their respective clerkships (National Board of Medical Examiners, 2023). While including a baseline measure can offer additional insights into academic progress, the NBME Shelf exams' standardized and cumulative design inherently captures the progression of student learning. Although lacking a direct pre-clerkship comparison, this approach is believed to sufficiently reflect the student's academic standing and learning trajectory, effectively measuring their current capabilities about the national standards set by the NBME, specifically within the medical specialty of surgery.

Focus Groups

Seven focus groups, in a longitudinal fashion, were conducted throughout the 2020-2021 academic year to interview all consented intervention group subjects after their Surgical Clerkship, totaling 44 participants. They occurred directly after completing their final in-person faculty-guided small group EI training session. All focus groups, each lasting up to 60 minutes, were designed to gather in-depth feedback on learners' experiences with faculty-guided small group learning, specifically focusing on the delivery of Boost Incorporated's mental toughness and leadership training during their third-year Surgery Clerkship. A single investigator conducted and moderated the focus groups, which were audio-recorded and transcribed into text

documents for analysis. The focus group discussions were centered around the following three questions: (1) Describe how you felt about the training and explain what you learned about yourself throughout the clerkship?, (2) How did this experience help you to become more aware of your strengths and identify your areas for growth as a medical learner and future clinician?, and (3) After participating in this clerkship, how are you better prepared to be a more successful medical student and future physician? In addition, they are summarized in the below figure.

Figure 6

Focus Group Discussion Questions on Clerkship Experiences

Question Number	Focus Group Question
One	1) Describe how you felt about the training and explain what you learned about yourself throughout the clerkship.
Two	2) How did this experience help you to become more aware of your strengths and identify your areas for growth as a medical learner and future clinician?
Three	3) After participating in this clerkship, how are you better prepared to be a more successful medical student and future physician?

Bio-Data Survey

After officially completing their Surgery Clerkship, study participants were invited to complete a six-question electronic survey voluntarily. The survey was designed to gather biographical data, which included: (1) age, (2) gender identification, (3) marital status, (4) parenthood status and number of children, (5) professional work experience before medical school, and (6) participation details in emotional intelligence training provided by Boost, specifically the hours per week dedicated to it. This survey was conducted independently of faculty instructors or staff members who graded the Surgery Clerkship. However, due to a

clerical error within the Department of Surgery, this survey was unfortunately never distributed to the consented study participants. As a result, no data from this survey was collected, leaving it unavailable for analysis in the study. This information was included in the interest of full transparency, as the survey was an intended component of the study's proposed research methodology.

Plan for Data Analysis

Assessment Strategy for Research Question One

Regarding research question one, linear regression was employed to analyze the pre-clerkship and post-clerkship MTLA scores in control and intervention groups. This analysis aimed to determine the trainability of emotional intelligence among third-year medical students in their Surgical Clerkship. In line with the requirements of these statistical methods, the scores were treated as continuous variables, making them suitable for analysis using both linear regression and analysis of variance (ANOVA) methods (Hahs-Vaughn & Lomax, 2020). At the center of the linear regression method was a dependent variable that provided a focus for the proposed analysis in combination with one or more independent variables that were considered to influence or explain variations in the outcome variable (Hahs-Vaughn & Lomax, 2020). When analyzing the proposed RCT data, the main focus was the designation of post-clerkship MTLA scores as the dependent or outcome variables. Within the proposed analysis, the inclusion of baseline measures where individual subjects started before the introduction of the EI training intervention was imperative. The designation of pre-clerkship MTLA scores demonstrated it as an independent variable (Hahs-Vaughn & Lomax, 2020). Another essential piece of the proposed

analysis was the designation of independent variables, telling us whether each subject was a member of the intervention or control group (Hahs-Vaughn & Lomax, 2020).

Next, a paired t-test was used to analyze the effectiveness of the EI training curriculum developed and provided by Boost Incorporated. This statistical analysis was used, as there was interest in the difference between two variables for the same subject that are often separated by time (Skaik, 2015). Before-and-after observations on the same issues are often analyzed in this manner. As the proposed RCT was designed to investigate students' MTLA scores before and after EI training, the paired t-test was a highly relevant way to assess the efficacy of the Boost Incorporated curriculum on clinical phase medical students (Skaik, 2015).

In order to increase the rigor of the analysis, the study then utilized a Repeated Measures ANOVA test. This method is particularly suited for situations where the mean scores of subjects are measured at multiple time points, such as observing MTLA scores before and after the Boost training intervention. The Repeated Measures ANOVA was utilized to determine if significant differences in mean scores existed across these time points, a valuable approach when the same subjects are measured repeatedly (O'Connell et al., 2017).

Finally, the study implemented a One-Way Analysis of Covariance (ANCOVA) to assess differences in post-clerkship scores across different groups, adjusting for any variations in pre-test scores. This test, which combines elements of ANOVA and regression analysis, assesses the influence of an independent variable on a dependent variable, accounting for the effect of covariates. It is particularly pertinent when controlling for potential pre-existing group differences. Using pre-test scores as a covariate, a One-Way ANCOVA aimed to provide a

clearer picture of the intervention's impact on post-clerkship outcomes, thus enhancing the study's overall validity (Khammar et al., 2020).

Including both Repeated Measures ANOVA and One-Way ANCOVA in the study's data analysis plan enhanced the depth of assessment. This approach enabled an analysis of intra-group changes and inter-group differences in the rate of change. In closing, it offered a more thorough evaluation regarding the effectiveness of Boost Incorporated's training curriculum.

Assessment Strategy for Research Question Two

Regarding research question two, Pearson's rank correlation was used to determine if a relationship existed between post-clerkship MTLA scores and academic performance on the NBME Surgery Shelf in the experimental and control groups of the proposed study. This analytical method was a strength measurement of the linear relationship between two variables, ranging from minus one for a perfect negative relationship to plus one for a perfect positive relationship. A Pearson's rank correlation measuring zero indicated no linear relationship between the two analyzed variables (Foster et al., 2018).

Assessment Strategy for Research Question Three

Regarding research question three, an inductive thematic approach was utilized to analyze transcribed data from the focus group responses. This approach was utilized in alignment with research question three, which focused on capturing the experiences of study participants. Specifically, it examined the impact of faculty-guided small group learning in delivering Boost Incorporated's mental toughness and leadership training, as well as assessing the effectiveness of

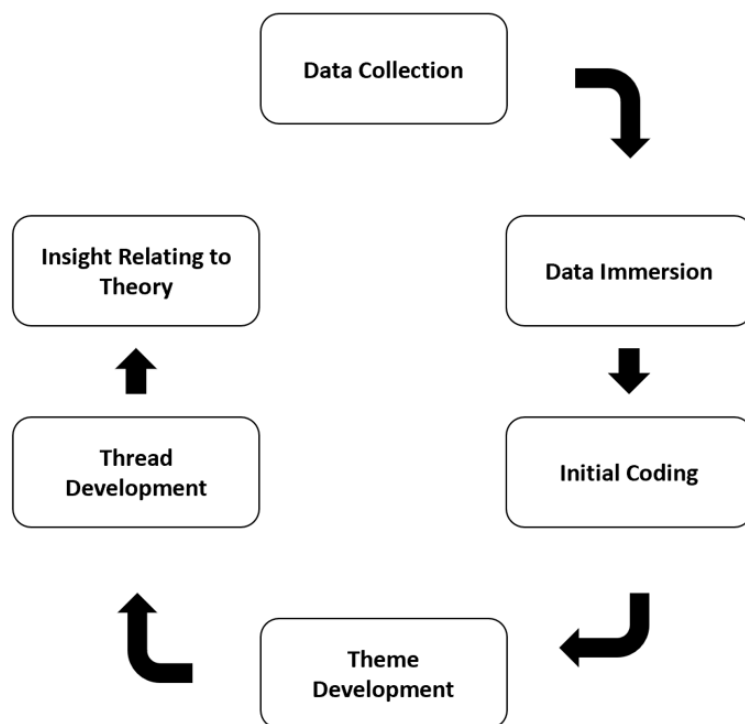
these sessions in enhancing emotional quotient through the MTLA during the third-year Surgery Clerkship. The thematic analysis enabled investigators to effectively analyze qualitative data sets, including focus group interviews, to search for repeated patterns (Saldana, 2009). This analytic method typically involved assigning labels to relevant data sections, further sorting coded data into categories, and finally synthesizing overarching themes throughout the entire data set.

Focus groups were utilized to collect raw qualitative data and occurred after the final faculty-led small group learning session at the end of each Surgical Clerkship throughout the 2020-2021 academic year. I conducted and recorded these group interviews and personally transcribed them into Microsoft Word, with the support of Max Bouvette, B.S., a graduate of the University of Oklahoma, undertaking research during a gap year while applying to medical school. The manual transcripts were read and reread three times to ensure deep familiarity with the content. Upon achieving data immersion, participant comments were organized into relevant groupings in preparation for the coding process. I employed an *in vivo* method during the initial open coding phase, where words or short phrases from participant quotations within the qualitative data were designated as initial codes (Saldana, 2009). Categorical themes were then derived by amalgamating three or more related initial *in vivo* codes that consistently appeared throughout the data set. These themes encapsulated features of participants' study accounts that characterized related perceptions and experiences, as discerned through the first and second coding cycles. The coding and resultant themes were corroborated through a review with my triangulation team, which included Max Bouvette, B.S., and Kathy Ginter, Ph.D., the Chief Research Officer of Boost Incorporated, to ensure the accuracy and consistency of the thematic analysis. Finally, through my own interpretation, I identified and named the central themes as

'threads,' each consisting of three or more related categorical themes that emerged consistently across all three focus group questions. This explanation of the threads led to a better understanding of the role of faculty-led small-group learning in teaching emotional intelligence within clinical education, thereby helping to integrate the educational theories relevant to my study. In closing, this inductive thematic analysis, from data collection to identifying central threads, is summarized in the following figure, providing a visual representation of its undertaking within the study.

Figure 7

Overview of the Inductive Thematic Analysis Process



Chapter 4: Results and Analysis

Introduction

After conducting an extensive analysis of the data gathered during the study, this section presents the results, highlighting the essential findings and addressing the research questions and objectives outlined in earlier sections. Overall, study sample demographics are described initially. Subsequently, the chapter is subdivided into several sections corresponding with the study's three research questions: (1) Does mental toughness and leadership training provided by Boost Incorporated lead to an increase in the emotional quotient of medical students during their surgical clerkship in the clinical year, as measured by the Boost MTLA? (2) What is the nature of the relationship between emotional quotient, indicated by Boost's MTLA scores, and academic performance, specifically NBME Surgery Shelf Exam scores, among medical students in their Surgical Clerkship? (3) How do learners evaluate the impact of faculty-guided small group learning as a method for delivering Boost Incorporated's mental toughness and leadership training during their third-year Surgery Clerkship? Because this study has adopted a predominantly quantitative approach, the first two chapter sections will be devoted to the analysis of the investigation's numerical assessments, which include Boost's MTLA and the NBME Surgery Subject Examination. The final section of this chapter will be dedicated to interpreting subject focus groups that occurred at the end of each clerkship within the study.

Demographics

This report's demographics section details the important characteristics of the project, including the sample size, age range, gender distribution, location, and setting. These details are necessary for understanding the specific context within which the study findings were obtained. The sample size indicates the number of participants directly involved in the study, offering

insights into the scope and scale of the research. Information on age range, gender distribution, and geographical location helps to paint a clearer picture of the participant group and the specific setting of the study. This information is crucial for understanding the context and relevance of the findings to the particular group studied. While these details do not necessarily indicate how representative the sample is of a larger population, they provide valuable information about the characteristics of the group that was studied, thus helping to frame the study's results within the specific context of the research (O'Leary, 2017).

Age range refers to the span of ages represented in a particular population. It is usually reported as the minimum and maximum periods and sometimes as the mean or median age. Gender distribution refers to the proportion of males and females in a population, expressed as a percentage or a ratio (Howell, 2012). Within this section, reporting these factors is also significant for various reasons. It demonstrates a characteristic understanding of the sample being studied and how representative it is of the target population. Furthermore, it helps identify potential confounding variables affecting the study results. Likewise, reporting age range and gender distribution is essential for transparency and reproducibility, as it enables other researchers to compare the results of their studies with those of the current research and to determine if the sample characteristics are comparable. It also allows for meta-analyses, providing more accurate treatment effect estimates (Tabachnick & Fidell, 2018).

The location and setting refer to the geographic location and physical environment in which the study is conducted. The site can be a specific region, city, state, or country, while the setting can be a laboratory, hospital, community, school, or workplace. Describing the location and setting is crucial for providing context to the study, understanding its demographics, and assessing how the results may apply to other settings or populations (Field, 2018). This

information enhances the transparency, replicability, and contextualization of the results and helps identify potential limitations or strengths of the project (Field, 2021).

Figure 8

Study Demographics

Study Demographics	
Demographic	Value
Age Range	23-37
Average Age	26.30
Gender Distribution	Female: 28 (56%), Male: 22 (44%)
University	Oklahoma Health Sciences Center
Location	Oklahoma City
College	Medicine
Program	Medical School
Academic Year	2021
Year of Study	3rd year
Phase	Clinical
Rotation	General Surgery
Class Size and Participant Pool	130
Participants Consented	91
Sample Size	50
Non-Adherent Participant Withdraws	41
Control Group	21
Intervention Group	29

This study was conducted with third-year medical students enrolled in the General Surgery Clerkship at the University of Oklahoma Health Sciences Center in Oklahoma City during the 2021 academic year. Initially, the participant pool consisted of 130 students. From this cohort, 91 students provided informed consent and were randomly assigned to either the control or intervention groups as part of the study design. The study's completion rate yielded a final effective sample size of 50 participants who completed all necessary assessments. These assessments were critical for the study's analysis and included the pre-clerkship and post-

clerkship Boost MTLA, the NBME Surgery Shelf Exam, and the Boost mental toughness and leadership training only for those designated in the intervention group.

Within this final sample, there were 21 participants in the control group and 29 participants in the intervention group. It is significant to highlight that 41 participants did not complete all requisite measures of the study and were thus considered non-adherent, thus voluntarily withdrawing from it. This occurrence is acknowledged as a potential source of selection bias, which may affect the generalizability of the study's findings. The demographic profile of the participants who completed the study presents an average age of 26.3 years, spanning 23 to 37 years, and a gender distribution of 56% female and 44% male. Ultimately, the demographic data and completion rates are crucial for assessing the applicability of the research and framing the study's results within the broader context of medical education research. In closing, it is essential to acknowledge participant attrition and the final sample composition as limitations; these aspects will be further discussed in the limitations section.

Reliability and Internal Consistency of Pre-Clerkship and Post-Clerkship Measures

Ensuring the reliability and internal consistency of the Boost MTLA as a measure across both pre-clerkship and post-clerkship stages in the study was essential for establishing an adequate foundation for the results within the investigation. Study reliability refers to the extent to which a research study produces consistent and stable results over time and across different settings or samples. It is achieved through methods that minimize measurement error, such as ensuring the validity of study measures, controlling for extraneous variables, and using appropriate statistical analyses (Quintão et al., 2020). Inaccurate results can arise if the measures are unreliable, thus compromising the study's validity. The importance of reliable measures in

various fields, including psychology, medicine, and education, has been emphasized in recent research to enhance the quality of findings (Quintão et al., 2020).

Internal consistency and reliability are foundational elements in ensuring the validity of results in a randomized controlled investigation. Internal consistency refers to the degree to which different items within a measured assessment are related, with a high degree indicating that the items measure the same construct (Middleton et al., 2021). The Cronbach's Alpha test is a commonly used method to assess this, with a score of 0.7 or higher indicating good internal consistency and a score of 0.8 or higher indicating excellent consistency (Middleton et al., 2023). The overall quality of a study is contingent upon several factors, with experimental design, sample size, and statistical analysis playing fundamental roles. However, the reliability and internal consistency of study measures are especially critical, as they directly affect the validity of the study's findings. Without reliable and consistent measures, even a well-designed study with an adequate sample size and sound statistical analysis may yield questionable results.

Figure 9

Internal Consistency and Reliability: Cronbach's Alpha Coefficient and Item Statistics

Reliability Statistics					
Phase	Cronbach's Alpha	Mean Scale	Variance	Standard Deviation	N of Items
Pre-Clerkship	0.890	21.3612	9.142	3.02350	7
Post-Clerkship	0.946	23.0552	15.057	3.88031	7

Item Statistics				
Phase	Item	Mean	Standard Deviation	N
Pre-Clerkship	Leadership	3.5100	0.50749	50
	Concentration	3.0818	0.54280	50
	Mental Attitude	3.0052	0.65723	50
	Anxiety	2.2966	0.66027	50
	Goals	3.2522	0.44081	50
	Emotions	3.1632	0.60483	50
	Overall MTLA	3.0522	0.43126	50
Post-Clerkship	Leadership	3.6804	0.60119	50
	Concentration	3.3492	0.64310	50
	Mental Attitude	3.2328	0.71509	50
	Anxiety	2.8430	0.69744	50
	Goals	3.3492	0.56183	50
	Emotions	3.3096	0.66609	50
	Overall MTLA	3.2910	0.56445	50

The reliability and internal consistency of Boost's MTLA, as assessed through a Cronbach's alpha coefficient, were first evaluated in the pre-clerkship phase of the study. With 50 valid cases, the alpha value obtained was 0.89, denoting solid internal consistency and suggesting that the assessment items are closely related in measuring the same underlying construct. The inter-item correlation coefficients for the pre-clerkship phase ranged from 0.205 to 0.827, indicating moderate to high correlations. All seven items demonstrated mean values above the scale's midpoint, corroborating their substantial role in the construct's assessment. The corrected item-total correlations were also strong, ranging between 0.399 and 1.000, reinforcing the instrument's reliability. The scale's mean for the pre-clerkship assessment was 21.3612, with a standard deviation of 3.02350, reflecting a generally positive response from participants toward the measured attributes related to the MTLA constructs before the clerkship (Dhira et al., 2021).

The reliability and internal consistency of Boost's MTLA were subsequently examined in the post-clerkship phase of the investigation. With the same cohort of 50 valid cases, the alpha value rose to 0.946. This increase in the post-clerkship alpha value suggests an enhanced level of internal consistency, potentially attributable to the effectiveness of the Boost training curriculum on students' performance on the MTLA and its components. The post-clerkship inter-item correlation coefficients, ranging from 0.480 to 0.937, demonstrated strong relationships between items. The corrected item-total correlations remained high, with values from 0.748 to 1.000, attesting to the consistent reliability of each item. The mean of the scale increased to 23.0552 post-clerkship with a standard deviation of 3.88031, indicating a notable positive shift in the skills related to the MTLA constructs after the clerkship period (Dhira et al., 2021).

In summary, Boost's MTLA has demonstrated strong reliability and internal consistency across the pre- and post-clerkship phases of the study. The elevated corrected item-total

correlations for individual items, such as leadership, concentration, mental attitude, anxiety, goals, emotions, and overall MTLA scores, confirm the reliability of each assessment component. The observed increase in mean scores post-clerkship indicates a significant positive development in the specific emotional intelligence skills measured by the MTLA, affirming the instrument's efficacy in capturing these skills within the clerkship experience. Finally, these findings emphasize the utility of the MTLA as a solid measure of key emotional intelligence attributes, reinforcing its suitability for use in this study (Dhira et al., 2021).

Distribution of Pre-Clerkship Data

Pre-clerkship data refers to measurements or observations collected from study participants before they receive any experimental intervention. Pre-clerkship data is used in randomized controlled studies to establish the baseline level of the outcome variables before the intervention is applied. Pre-clerkship data is essential for assessing the effectiveness of the intervention and determining whether it has produced a statistically significant change in the resultant variables (Creswell & Creswell, 2017). Considering pre-clerkship data distribution in a randomized controlled study with a single intervention is necessary to ensure experimental results' accuracy and reliability. Researchers can use statistical methods such as histograms, the Shapiro-Wilk test, or the Kolmogorov-Smirnov test to assess the normality of the pre-clerkship data and to determine appropriate statistical tests for data analysis.

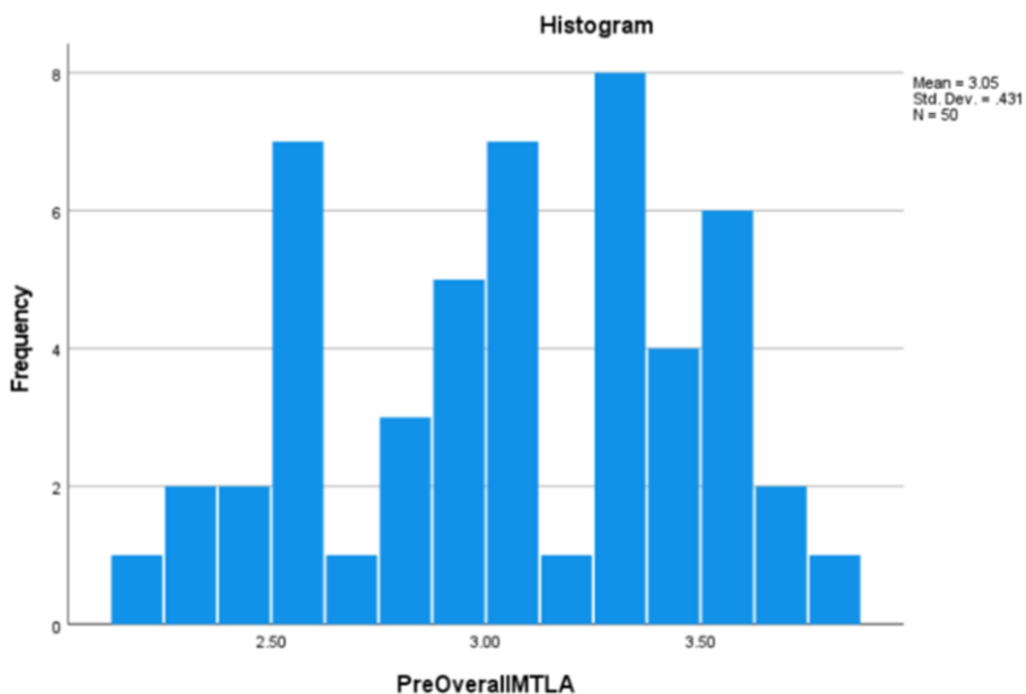
One common way to assess pre-clerkship data distribution is using a histogram that visually represents the data distribution. Researchers can use histograms to identify whether the data follows a normal distribution, essential for determining appropriate statistical tests for data analysis (O'Connor, 2021). Another traditionally used method for assessing pre-clerkship data distribution is the Shapiro-Wilk test. The Shapiro-Wilk test is a statistical test that can determine

whether a sample or population follows a normal distribution. Researchers can use the Shapiro-Wilk test to assess the normality of the pre-clerkship data and ensure that the statistical test assumptions are met (Jagtiani et al., 2021). In addition to the Shapiro-Wilk test, the Kolmogorov-Smirnov test is another statistical test that can assess pre-clerkship data distribution. This statistical test compares the cumulative distribution function of the data to a specified distribution. It can identify whether the data follow a particular distribution, such as a normal distribution (Ruxton, 2021).

Figure 10

Distribution of Pre-Clerkship MTLA Data - Kolmogorov-Sminov, Shapiro-Wilk, and Histogram

Distribution of Pre-Clerkship MTLA Data			
Test	Statistic	Degrees of Freedom	P-value
Kolmogorov-Smirnov (Overall)	0.10	28.00	0.20
Shapiro-Wilk (Overall)	0.97	28.00	0.19
Kolmogorov-Smirnov (Female)	0.14	28.00	0.18
Shapiro-Wilk (Female)	0.95	28.00	0.17
Kolmogorov-Smirnov (Male)	0.10	22.00	0.20
Shapiro-Wilk (Male)	0.97	22.00	0.65



The study examined the overall pre-clerkship MTLA scores to provide a comprehensive understanding of their distribution. The mean value for these results was 3.0522 with a standard error of 0.06099, and the 95% confidence interval for the mean ranged from 2.9296 to 3.1748. The median and the 5% trimmed mean were close to the norm at 3.0950 and 3.0572, respectively. The variance and standard deviation were 0.186 and 0.43126, respectively, with the minimum and maximum values of 2.14 and 3.83, indicating a range of 1.69. The interquartile range was 0.77, and the skewness and kurtosis were -0.210 and -0.956, respectively, with standard errors of 0.337 and 0.662.

The mean pre-clerkship MTLA score for the female participants was 3.0100 with a standard error of .07736. The 95% confidence interval for the mean ranged from 2.8513 to 3.1687. The 5% trimmed mean was calculated to be 3.0111, and the median was 3.0250. The variance was 0.168, and the standard deviation was 0.40935. The minimum and maximum scores for the female participants were 2.33 and 3.69, respectively, with a range of 1.36. The interquartile range was 0.80, and the skewness of the data was -0.169, with a standard error of 0.441. The kurtosis of the data was found to be -1.163 with a standard error of 0.858.

The mean pre-clerkship MTLA score for the male participants was 3.1059, with a standard error of 0.09843. The 95% confidence interval for the mean ranged from 2.9012 to 3.3106. The 5% trimmed mean was calculated to be 3.1183, and the median was 3.1650. The variance was 0.213, and the standard deviation was 0.46166. The minimum and maximum scores for the male participants were 2.14 and 3.83, respectively, with a range of 1.69. The interquartile range was 0.80, and the skewness of the data was -0.346, with a standard error of 0.491. The kurtosis of the data was found to be -0.715 with a standard error of 0.953.

Two tests, the Kolmogorov-Smirnov and Shapiro-Wilk tests, were performed to assess the normality of the pre-clerkship multifactorial MTLA data. The results indicated that the data distribution was not significantly different from a normal distribution with p-values greater than 0.05. The Kolmogorov-Smirnov statistic with a degree of freedom of 28 was 0.103 with a p-value equal to 0.200, and the Shapiro-Wilk statistic with a degree of freedom of 28 was 0.968 with a p-value equal to 0.186. Specifically, the female participants' pre-clerkship MTLA scores were not significantly different from a normal distribution as their Kolmogorov-Smirnov statistic with degrees of freedom of 28 measured 0.139 with a p-value of 0.177, and their Shapiro-Wilk statistic with degrees of freedom of 28 measured 0.948 with a p-value of 0.173. Similarly, the results for male participants did not differ from a normal distribution as their Kolmogorov-Smirnov statistic with degrees of freedom of 22 measured 0.098 with a p-value of 0.200, and their Shapiro-Wilk statistic with degrees of freedom of 22 measured 0.967 with a p-value of 0.648.

While the significance value provides a lower bound of the true significance, the results of this study suggest that the assumption of normality can be reasonably made for the MTLA data obtained from pre-clerkship subjects. These findings support using parametric statistical tests for further analyses that assume population parameters and distributions. The comprehensive description of the pre-clerkship MTLA data distribution and the normality tests' results indicate that the data is not significantly different from a normal distribution. These results provide a foundation for future research to build upon and deepen our understanding of subjects' performance in MTLA pre-clerkship situations.

In conclusion, the descriptive statistics provide insight into the central tendency, variability, and distribution of male and female participants' overall pre-clerkship MTLA scores.

The results show no significant differences in the distribution of scores between the two groups, with both being normally distributed. These findings have important implications for the field and highlight the potential use of parametric statistical tests in future research.

Descriptive Analysis of Key Study Variables

All Study Subjects

The dataset reports descriptive statistics for 14 variables measured in 50 participants. The variables include scores on the MTLA measure and its components before and after an intervention and scores on a standardized NBME Surgery Shelf Examination. The mean and standard deviation are reported for each variable.

Figure 11

Descriptive Statistics of Key Study Variables (All Groups)

Descriptive Statistics (All Groups)					
Variable	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Leadership	50	2.17	4.50	3.51	0.51
Pre-Concentration	50	2.00	4.00	3.08	0.54
Pre-Mental Attitude	50	1.50	4.17	3.01	0.66
Pre-Anxiety	50	1.00	3.67	2.30	0.66
Pre-Goals	50	2.16	4.00	3.25	0.44
Pre-Emotions	50	1.33	4.33	3.16	0.60
Pre-Overall MTLA	50	2.14	3.83	3.05	0.43
Post-Leadership	50	2.33	5.00	3.68	0.60
Post-Concentration	50	1.83	4.50	3.35	0.64
Post-Mental Attitude	50	1.33	4.50	3.23	0.72
Post-Anxiety	50	1.00	4.00	2.84	0.70
Post-Goals	50	1.33	4.50	3.35	0.56
Post-Emotions	50	1.67	4.67	3.31	0.67
Post-Overall MTLA	50	1.75	4.20	3.29	0.56
NBME Surgery Shelf	50	60.00	101.00	80.58	9.25

For the pre-intervention MTLA measure, the mean scores ranged from 2.17 to 3.51, with standard deviations ranging from 0.44 to 0.66. For the post-intervention MTLA measure, the mean scores ranged from 2.33 to 3.68, with standard deviations ranging from 0.56 to 0.72. The leadership component of the MTLA measure assesses the extent to which an individual

demonstrates leadership qualities, such as the ability to communicate effectively, make decisions, and manage tasks. The mean score for this component in the pre-intervention phase was 3.51, with a standard deviation of 0.51, and in the post-intervention phase, it was 3.68, with a standard deviation of 0.60. The concentration component of the MTLA measure assesses the extent to which an individual can focus and sustain attention on a given task. The mean score for this component in the pre-intervention phase was 3.08, with a standard deviation of 0.54, and in the post-intervention phase, it was 3.35, with a standard deviation of 0.64. The mental attitude component of the MTLA measure assesses an individual's overall mental outlook and mindset, including motivation, confidence, and resilience. The mean score for this component in the pre-intervention phase was 3.01, with a standard deviation of 0.66, and 3.23, with a standard deviation of 0.72 in the post-intervention phase. The anxiety component of the MTLA measure assesses an individual's level of anxiety and nervousness in challenging situations. The mean score for this component in the pre-intervention phase was 2.30 with a standard deviation of 0.66, and in the post-intervention phase, it was 2.84 with a standard deviation of 0.70. The goals component of the MTLA measure assesses an individual's ability to set and achieve goals and their level of commitment to personal and professional development. The mean score for this component in the pre-intervention phase was 3.25 with a standard deviation of 0.44, and in the post-intervention phase, it was 3.35 with a standard deviation of 0.56. The emotions component of the MTLA measure assesses an individual's emotional state and ability to regulate their emotions in challenging situations. The mean score for this component in the pre-intervention phase was 3.16, with a standard deviation of 0.60, and 3.31, with a standard deviation of 0.67, in the post-intervention phase.

The NBME Surgery Shelf Examination is a standardized test that assesses medical students' knowledge of surgical principles, diagnosis, and management of surgical diseases. It is designed to evaluate a student's understanding of the surgical specialties and is used to assess their readiness to progress to clinical practice. The exam covers anatomy, trauma, critical care, and surgical oncology (NBME, 2023). This variable had a mean score of 80.58 and a standard deviation of 9.25, with scores ranging from 60 to 101.

Control Group Subjects

The dataset reports descriptive statistics for 14 variables measured in a control group of 21 participants. The variables include scores on the MTLA measure and its components before and after intervention and scores on the standardized NBME Surgery Shelf Exam. The mean and standard deviation are reported for each variable.

Figure 12

Descriptive Statistics of Key Variables in the Control Group

Descriptive Statistics (Control Group)					
Variable	N	Minimum	Maximum	Mean	Std. Deviation
Control Pre-Leadership	21	2.50	4.17	3.46	0.50
Control Pre-Concentration	21	2.00	4.00	3.05	0.56
Control Pre-Mental Attitude	21	1.50	4.17	2.98	0.73
Control Pre-Anxiety	21	1.33	3.50	2.25	0.57
Control Pre-Goals	21	2.33	4.00	3.29	0.43
Control Pre-Emotions	21	1.33	4.00	3.02	0.64
Control Pre-Overall MTLA	21	2.33	3.61	3.01	0.42
Control Post-Leadership	21	2.33	4.50	3.53	0.62
Control Post-Concentration	21	1.83	4.00	3.11	0.61
Control Post-Mental Attitude	21	1.33	4.33	2.99	0.82
Control Post-Anxiety	21	0.00	4.00	2.52	0.95
Control Post-Goals	21	1.33	4.17	3.27	0.61
Control Post-Emotions	21	1.67	4.17	3.06	0.70
Control Post-Overall MTLA	21	1.75	3.94	3.08	0.64
Control NBME Surgery Shelf	21	70.00	101.00	83.29	8.57

For the pre-intervention MTLA measure, the mean scores ranged from 2.25 to 3.46, with standard deviations ranging from 0.42 to 0.73. For the post-intervention MTLA measure, the

mean scores ranged from 2.51 to 3.53, with standard deviations ranging from 0.61 to 0.95. The mean score for the leadership component in the pre-intervention phase was 3.46, with a standard deviation of 0.50, and in the post-intervention phase, it was 3.53, with a standard deviation of 0.62. The mean score for the concentration component in the pre-intervention phase was 3.05, with a standard deviation of 0.56. In the post-intervention phase, it was 3.11, with a standard deviation of 0.61. The mean score for the mental attitude component in the pre-intervention phase was 2.98, with a standard deviation of 0.73. In the post-intervention phase, it was 2.99 with a standard deviation of 0.82. The mean score for the anxiety component in the pre-intervention phase was 2.25, with a standard deviation of 0.57. In the post-intervention phase, it was 2.52, with a standard deviation of 0.95. The mean score for the goals component in the pre-intervention phase was 3.29, with a standard deviation of 0.43, and in the post-intervention phase, it was 3.27, with a standard deviation of 0.61. The mean score for the emotions component in the pre-intervention phase was 3.02 with a standard deviation of 0.64, and in the post-intervention phase, it was 3.06 with a standard deviation of 0.70. In conclusion, the NBME Surgery Shelf Examination variable in control group subjects had a mean score of 83.29 and a standard deviation of 8.57, with scores ranging from 70 to 101.

Intervention Group Subjects

This dataset reports descriptive statistics for 14 variables measured in an intervention group of 29 participants. The variables include scores on the MTLA measure and its components before and after intervention and scores on the standardized NBME Surgery Shelf Exam. The mean and standard deviation are reported for each variable.

Figure 13

Descriptive Statistics of Key Variables in the Intervention Group

Descriptive Statistics (Intervention Group)					
Variable	N	Minimum	Maximum	Mean	Std. Deviation
Intervention Pre-Leadership	29	2.17	4.50	3.55	0.52
Intervention Pre-Concentration	29	2.16	4.00	3.10	0.54
Intervention Pre-Mental Attitude	29	2.16	4.00	3.03	0.61
Intervention Pre-Anxiety	29	1.00	3.67	2.33	0.73
Intervention Pre-Goals	29	2.16	4.00	3.23	0.46
Intervention Pre-Emotions	29	2.33	4.33	3.27	0.56
Intervention Pre-Overall MTLA	29	2.14	3.83	3.08	0.44
Intervention Post-Leadership	29	2.83	5.00	3.79	0.57
Intervention Post-Concentration	29	2.50	4.50	3.52	0.62
Intervention Post-Mental Attitude	29	2.33	4.50	3.41	0.59
Intervention Post-Anxiety	29	1.67	3.83	3.03	0.54
Intervention Post-Goals	29	2.17	4.50	3.41	0.53
Intervention Post-Emotions	29	2.33	4.67	3.49	0.59
Intervention Post-Overall MTLA	29	2.47	4.20	3.44	0.45
Intervention NBME Surgery Shelf	29	60.00	95.00	78.62	9.37

For the pre-intervention MTLA measure, the mean scores ranged from 2.17 to 3.55, with standard deviations ranging from 0.44 to 0.73. For the post-intervention MTLA measure, the mean scores ranged from 2.83 to 3.79, with standard deviations ranging from 0.53 to 0.62. The mean score for the leadership component in the pre-intervention phase was 3.55, with a standard deviation of 0.52, and in the post-intervention phase, it was 3.79, with a standard deviation of 0.57. The mean score for the concentration component in the pre-intervention phase was 3.10, with a standard deviation of 0.54. In the post-intervention phase, it was 3.52, with a standard deviation of 0.62. The mean score for the mental attitude component in the pre-intervention phase was 3.03, with a standard deviation of 0.61. In the post-intervention phase, it was 3.41, with a standard deviation of 0.59. The mean score for the anxiety component in the pre-intervention phase was 2.33, with a standard deviation of 0.73. In the post-intervention phase, it was 3.03, with a standard deviation of 0.54. The mean score for the goals component in the pre-intervention phase was 3.23 with a standard deviation of 0.46, and in the post-intervention phase, it was 3.41 with a standard deviation of 0.53. The mean score for the emotions component in the pre-intervention phase was 3.27, with a standard deviation of 0.56, and in the post-intervention

phase, it was 3.49, with a standard deviation of 0.59. In conclusion, the NBME Surgery Shelf Examination variable in intervention group subjects had a mean score of 78.62 and a standard deviation of 9.37, with scores ranging from 60 to 95.

Overall, the means of the pre-test and post-clerkship scores for the intervention group are generally higher than those of the control group, suggesting that the intervention positively impacted the variables of interest. The standard deviations for the variables in both groups were relatively small, indicating that the data points are clustered around the mean. However, further statistical analysis using inferential tests should be performed to confirm the significance of the differences observed between the two groups, which will be reported in the proceeding sections of this chapter.

Assessing Pre-Existing and Post-Intervention Differences Between Study Groups

Examining differences between control and intervention groups before and after an intervention is crucial in analyzing randomized controlled trial results. Pre-existing differences can introduce bias, whereas post-intervention changes may signal the intervention's efficacy. An independent samples t-test, a statistical method for comparing the means of a continuous variable between two distinct groups, determines if a statistically significant difference exists (Kim, 2019).

Pre-Clerkship MTLA Scores for Control and Intervention Groups

The independent samples t-test evaluated pre-existing differences in overall MTLA scores between the control group, with 21 participants, and the intervention group, with 29 participants. The control group's mean MTLA score was 3.0081 with a standard deviation equal to 0.42091, compared to the intervention group's mean score of 3.0841 with a standard deviation equal to 0.44319. The t-test results indicated no significant difference between the groups' mean

scores before the intervention resulting in a t-value of -0.611 with degrees of freedom equal to 48, a p-value equal to 0.544, and a Cohen's d value of -0.175 that suggested only a small effect size.

Post-Clerkship MTLA Scores for Control and Intervention Groups

Following the intervention, a second independent samples t-test was conducted. The control group's mean MTLA score was 3.0800, with a standard deviation equal to 0.64278, while the intervention group's mean score rose to 3.4438, with a standard deviation equal to 0.45261. The t-test revealed a statistically significant difference, resulting in a t-value of -2.351 with degrees of freedom equal to 48, a p-value equal to 0.023, and a moderate Cohen's d of -0.674 that indicated a significant improvement in MTLA scores for the intervention group compared to the control group.

In summary, the initial analysis confirmed no significant pre-existing differences in MTLA scores between the control and intervention groups before the clerkship. However, post-clerkship findings showed a notable enhancement in MTLA scores among the intervention group, emphasizing the potential positive impact of the provided training within this specific participant population and setting.

Figure 14

Independent Samples t-Test Results and Effect Sizes for Pre- and Post-Clerkship MTLA Scores in Control and Intervention Groups

Phase	t-test statistic	Degrees of Freedom (df)	p-value (One-Tailed)	p-value (Two-Tailed)	Cohen's d	Power
Pre-Clerkship Intervention vs Control	-0.611	48	0.272	0.544	0.43405	0.318
Post-Clerkship Intervention vs Control	-2.351	48	0.011	0.023	0.54005	0.455

Research Question One

The first research question asked, “Does mental toughness and leadership training provided by Boost Incorporated lead to an increase in the emotional quotient of medical students during their Surgical Clerkship in the clinical year, as measured by the Boost MTLA?”

Linear Regression and ANOVA

Prior to evaluating the impact of training on emotional quotient scores, as measured by MTLA in third-year medical students within their Surgical Clerkship, both a Linear Regression Analysis and an ANOVA were conducted (Bosméan et al., 2022). These analyses were fundamental in establishing a foundational understanding of the relationships between pre-course and post-course MTLA scores.

The regression analysis assessed the predictive power of pre-clerkship MTLA scores on post-clerkship MTLA scores (Bosméan et al., 2022). The results were significant, confirming a substantial relationship between these variables. Specifically, the regression model explained about 44.9% of the variance in post-course MTLA scores, as evidenced by an R-squared value of 0.449. The model's efficacy was further substantiated by a high statistical significance with a p-value of less than 0.001. The analysis revealed a coefficient of 0.877 for pre-clerkship MTLA scores and a standardized coefficient (Beta) of 0.670, indicating a strong positive correlation. This suggests that for each unit increase in pre-clerkship MTLA scores, there is an anticipated increase of approximately 0.877 units in post-clerkship MTLA scores.

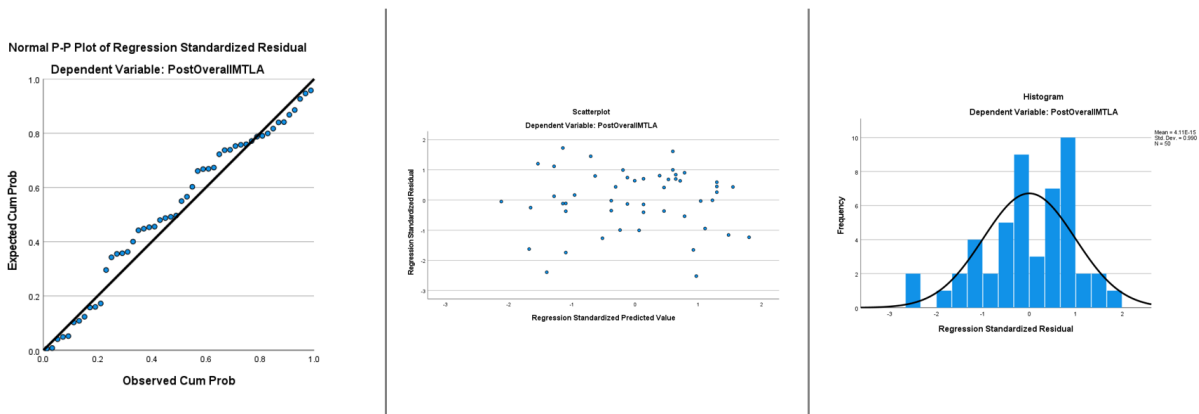
The ANOVA, conducted alongside the regression analysis, tested the statistical significance of the relationship between pre-course and post-course MTLA scores (Bosméan et al., 2022). The ANOVA results strongly supported the reliability of the regression model, showing an F-value of 39.044 and a p-value of less than 0.001. This indicated that the correlation

observed was highly unlikely to be due to random variation, thus reinforcing the regression analysis findings.

In summary, the regression and ANOVA analyses established a clear and statistically significant relationship between pre-clerkship and post-clerkship MTLA scores (Bosméan et al., 2022). The Linear Regression Analysis and ANOVA results provided a solid foundation for the subsequent investigation into the main research question: the trainability of emotional intelligence, using Boost’s curriculum, in third-year medical students within their Surgical Clerkship. This transition from analyzing predictive relationships to assessing the effectiveness of an intervention on specific emotional intelligence components in medical students forms the core of the study's next phase, addressed through a paired samples t-test. In closing, a visual overview of these findings is shown in the figure below.

Figure 15

Linear Regression and ANOVA Results on Pre-Clerkship and Post-Clerkship MTLA Scores



Paired Samples t-Test

The assessment of a randomized controlled study typically encompasses examining significant differences between control and intervention groups and differences within groups across different time points (Field, 2018). A paired samples t-test, commonly applied in such

analyses, allows for comparing the means of two related groups to determine the presence of statistically significant differences (Howell, 2012). This test is particularly suited for instances where two sets of related observations, such as pre-intervention and post-intervention scores from the same participants, need to be compared.

This study applied the paired samples t-test to each group's paired observations to ascertain if the mean difference deviates significantly from zero (Field, 2021). Within the framework of a randomized controlled trial, the t-test plays an integral role in gauging the effectiveness of an intervention over time, shedding light on its long-term efficacy and any potential side effects or complications (Howell, 2012). The careful application of the paired samples t-test is instrumental in providing an accurate evaluation of within-group differences and the overall impact of an intervention, thereby contributing valuable insights for future research and clinical applications.

Figure 16

Paired Samples T-Tests for Control and Intervention Groups

Control Group							
Pair	Mean Difference	Standard Deviation	t-statistic	p-value (One-Tailed)	p-value (Two-Tailed)	Effect Size (Cohen's d)	Power
Pair 1: Leadership	0.071	0.527	0.621	0.271	0.542	0.527	0.091
Pair 2: Concentration	0.056	0.439	0.582	0.283	0.567	0.439	0.086
Pair 3: Mental Attitude	0.016	0.592	0.125	0.451	0.901	0.592	0.052
Pair 4: Anxiety	0.262	0.767	1.568	0.066	0.132	0.767	0.321
Pair 5: Goals	-0.016	0.506	-0.147	0.442	0.885	0.506	0.052
Pair 6: Emotions	0.040	0.489	0.371	0.357	0.715	0.489	0.064
Pair 7: Overall MTLA	0.072	0.423	0.779	0.223	0.445	0.423	0.115

Intervention Group							
Pair	Mean Difference	Standard Deviation	t-statistic	p-value (One-Tailed)	p-value (Two-Tailed)	Effect Size (Cohen's d)	Power
Pair 1: Leadership	0.242	0.459	2.840	0.004	0.008	0.527	0.783
Pair 2: Concentration	0.421	0.537	4.222	0.000	0.000	0.784	0.983
Pair 3: Mental Attitude	0.381	0.578	3.550	0.001	0.001	0.659	0.929
Pair 4: Anxiety	0.706	0.6204	6.130	0.000	0.000	1.138	0.999
Pair 5: Goals	0.179	0.513	1.880	0.035	0.071	0.349	0.443
Pair 6: Emotions	0.224	0.510	2.363	0.013	0.025	0.439	0.626
Pair 7: Overall MTLA	0.360	0.386	5.024	0.000	0.000	0.933	0.998

This research question investigated whether emotional intelligence is trainable using Boost's curriculum in clinical phase students, specifically while on their Surgical Clerkship. A paired samples t-test was conducted to compare the mean scores of various emotional intelligence constructs between the control and intervention groups before and after the intervention. The results showed that emotional intelligence is trainable in medical students during the clinical phase settings of medical school, evident through statistically significant increases in emotional intelligence scores for the intervention group across all measures as overall MTLA scores had a mean of -0.360, standard deviation of 0.385, and a p-value of less than 0.001. In particular, the intervention group exhibited significant changes in the leadership component, with a mean of -0.242, standard deviation of 0.459, and a p-value of 0.008. The intervention group demonstrated notable enhancements in the concentration component with a mean of -0.421, a standard deviation of 0.537, and a p-value of less than 0.00. The intervention group exhibited a mean of -0.381, a standard deviation of 0.578, and a significant p-value of 0.001 for the component of mental attitude. The intervention group showed a mean of -0.706, a standard deviation of 0.620, and a significant p-value of less than 0.001 for the component of anxiety. The intervention group exhibited a mean of -0.179, a standard deviation of 0.513, and a p-value of 0.071 for the component of goals. Finally, the intervention group recorded a mean of -0.224 and a standard deviation 0.510 within the emotion component, demonstrating a statistically significant p-value of 0.025. In contrast, the control group showed no significant changes in emotional intelligence constructs, with all p-values measuring greater than 0.05.

Repeated Measures ANOVA

A repeated measures ANOVA was utilized to investigate this research question further, assessing significant differences in means across variables categorized differently. The within-

subjects factor was the measurement of time, encompassing two levels: before and after the intervention. The between-subjects factor was group status, divided into control and intervention groups. This method is particularly relevant for examining the intervention's effectiveness over time and its variation across different groups (Armstrong, 2017).

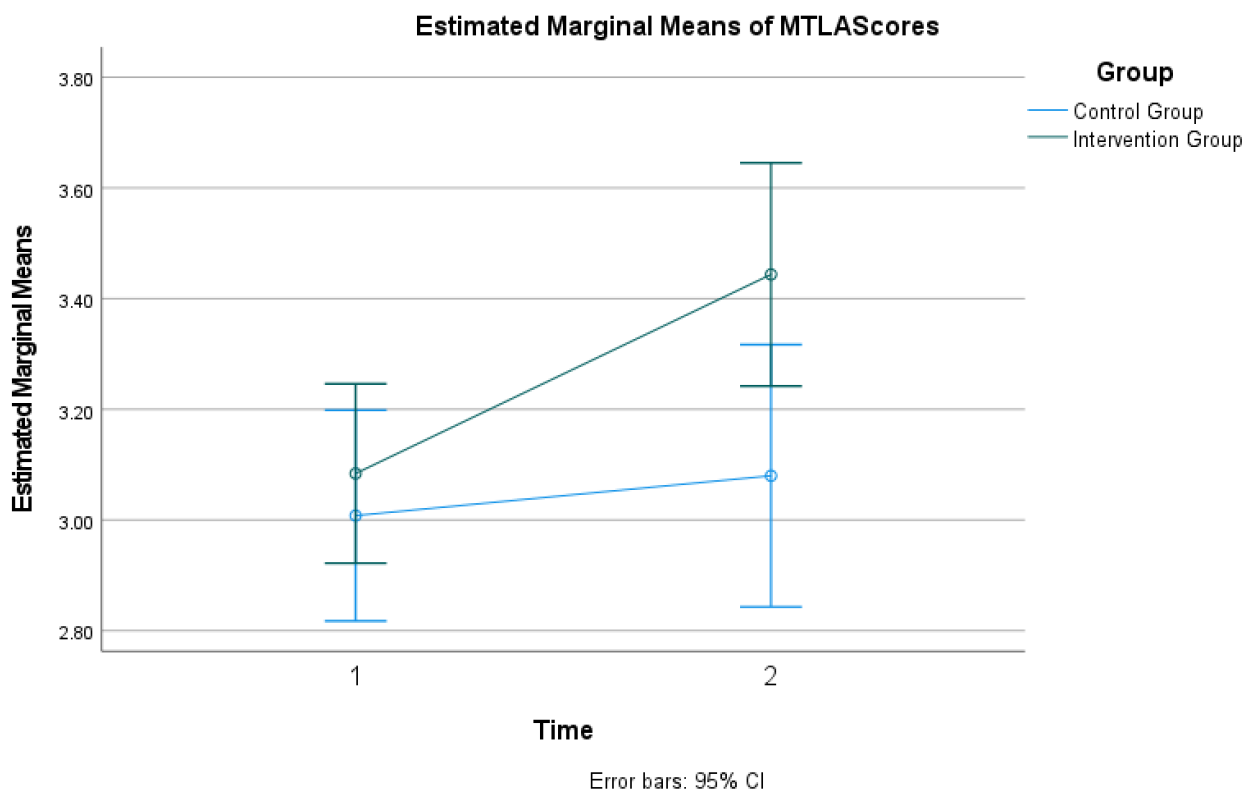
The statistical analysis revealed a significant time effect on MTLA scores, indicating that participants' scores increased before and after the intervention. This effect was substantial, with a very low probability of occurrence by chance, as reflected in the significance level being less than 0.001. The effect size, captured by Partial Eta Squared, was 22.7%, signifying a strong impact of the time factor on score variability. A significant interaction between time and group membership was also observed, with an F statistic of 6.255 and a significance level of 1.6%, indicating that the intervention and control groups experienced different levels of change in their MTLA scores over time, with 11.5% of the change attributable to this interaction. Sphericity, which presumes equal variances of differences for all paired group combinations, was confirmed, lending credence to the within-subjects effects observed.

Levene's Test for Equality of Error Variances applied to the data before the intervention showed no significant difference in variances between groups, indicating homogeneity. Post-intervention, however, Levene's Test approached significance with a p-value of 0.052, suggesting a potential increase in variance among the groups that nearly reached the conventional cutoff for statistical significance. In assessing the effect of group membership on MTLA scores, independent of time, the between-subjects effects analysis did not reveal a significant impact, resulting an F-value of 2.950 with a p-value equal to 0.092. Despite this, the mean scores for the intervention group increased from an estimated 3.084 to 3.444, while the control group's mean scores rose from 3.008 to 3.080. Although not statistically significant after

adjusting for multiple comparisons, this trend suggests a more substantial benefit for the intervention group, as visually confirmed by the Estimated Marginal Means plot. This plot provides a clear illustration of the changes in MTLA Scores over time for both the control and intervention groups, underlining the differential impact of the intervention as reflected in the statistical analysis.

Figure 17

Change in MTLA Scores Before and After Clerkship for Control and Intervention Groups



One-Way ANCOVA

Lastly, a One-Way ANCOVA was conducted to delve deeper into the effects of an intervention on post-clerkship overall MTLA scores, accounting for initial score differences. The covariate in this analysis was the pre-clerkship overall MTLA score, while the independent variable was group status, with participants divided into a Control Group and an Intervention

Group. The ANCOVA is suited to control for initial differences and assess the unique contribution of the independent variable on the outcome (O'Connell et al., 2017).

The ANCOVA results indicated a statistically significant adjusted mean difference between the groups' post-clerkship overall MTLA scores. The pre-clerkship overall MTLA scores variable used as a covariate significantly predicted post-clerkship MTLA scores, with a very low probability of the relationship occurring by chance ($p < 0.001$). The partial eta squared of 46.2% for this covariate denoted a solid effect, illustrating that pre-clerkship MTLA scores strongly predicted post-clerkship MTLA scores.

The Group variable showed a significant effect with an F-value of 6.769 and a corresponding p-value equal to 0.012 with a partial eta squared of 12.6%, indicating that group membership explained a meaningful proportion of the variance in post-clerkship scores. This finding suggests that the intervention group benefited more from the intervention than the control group in comparison. Levene's Test for Equality of Error Variances confirmed the homogeneity of variance across the groups with a non-significant result, as indicated by a p-value of 0.394. This suggests that the assumption of equal error variances was met, which supports the validity of the ANCOVA model.

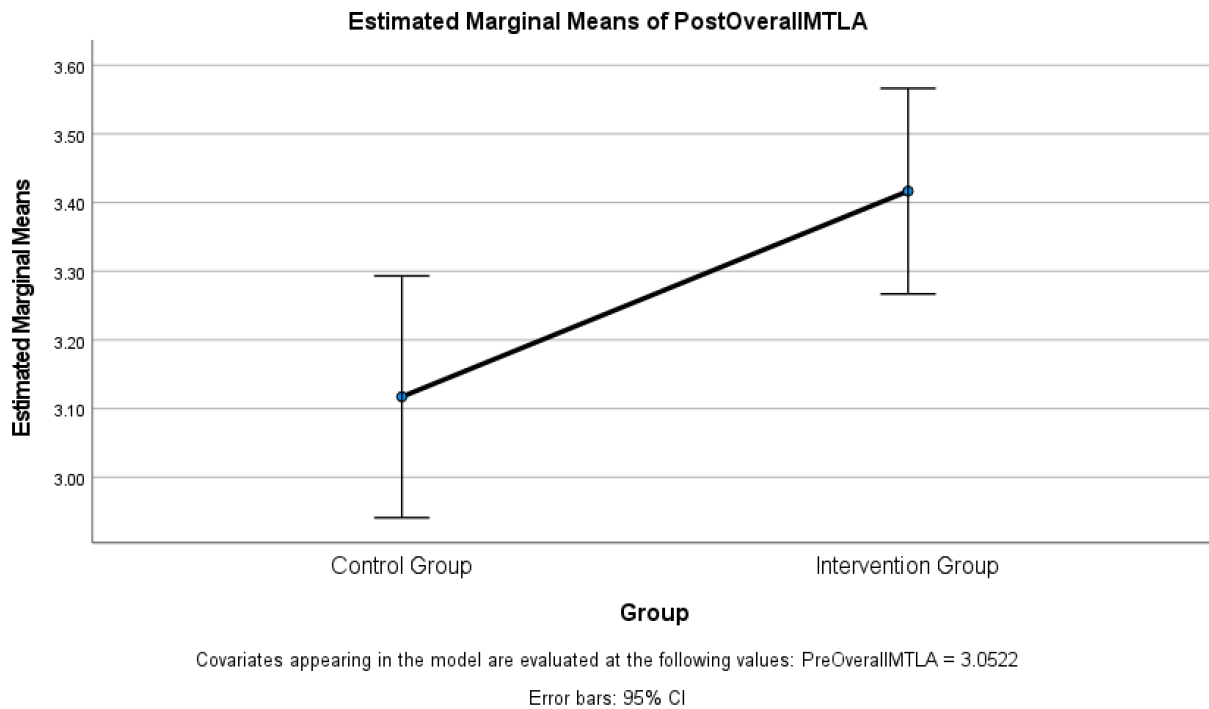
In addition, the observed power for the main effect of the group was 0.722, indicating a substantial likelihood of detecting a group effect, while the power for the pre-clerkship overall MTLA scores variable as a covariate was perfect at 1.000. This high power implies a high probability that the study could detect an effect if there was one to be observed, affirming the effectiveness of the intervention. Parameter estimates indicated a significant negative coefficient for the control group, as evidenced by a B-value of -0.299 and a p-value of 0.012, signifying that

the control group's post-clerkship MTLA scores were, on average, lower than those of the intervention group.

In conclusion, the One-Way ANCOVA analysis provided strong evidence that the intervention was effective in improving post-clerkship overall MTLA scores, particularly for those in the Intervention Group. Including pre-test scores as a covariate allowed for a more precise evaluation of the intervention's impact, and the high observed power of the analysis adds confidence to these findings. The Estimated Marginal Means plot would visually depict these results, clearly illustrating the differential benefit conferred by the intervention.

Figure 18

Comparison of Adjusted Post-Clerkship MTLA Scores Between Control and Intervention Groups



Research Question Two

The second research question asked, “What is the nature of the relationship between emotional quotient, indicated by Boost's MTLA scores, and academic performance, specifically NBME Surgery Shelf Exam scores, among medical students in their Surgical Clerkship?"

To investigate this, a Pearson Correlation test was utilized, which is a statistical method for determining the strength and direction of a linear relationship between two continuous variables to investigate this relationship (Vohra & Akhtar, 2019). Appropriate for a randomized controlled study, the Pearson Correlation test allows for examining relationships between variables while controlling for external factors, a cornerstone principle in RCTs. The test generates a correlation coefficient ranging from -1 to 1, with values near -1 indicating a strong negative correlation, values around 0 suggesting no correlation, and those near 1 signifying a strong positive correlation. This coefficient is crucial for determining if a significant correlation exists and the magnitude of that relationship (Vohra & Akhtar, 2019). In this study, the Pearson Correlation test was used to assess the potential connection between levels of emotional intelligence and academic outcomes among medical students in their surgical clerkship.

Figure 19

Pearson Correlation Coefficients for Control and Intervention Groups

Correlations		
Pretest MTLA with NBME Surgery Shelf	Pearson Correlation	0.188
	Sig. (2-tailed)	0.191
	N	50
Post-Test MTLA with NBME Surgery Shelf	Pearson Correlation	0.142
	Sig. (2-tailed)	0.326
	N	50
Control Pretest MTLA with Control NBME Surgery Shelf	Pearson Correlation	0.211
	Sig. (2-tailed)	0.358
	N	21
Control Post-Test MTLA with Control NBME Surgery Shelf	Pearson Correlation	0.341
	Sig. (2-tailed)	0.130
	N	21
Intervention Pretest MTLA with Intervention NBME Surgery Shelf	Pearson Correlation	0.222
	Sig. (2-tailed)	0.247
	N	29
Intervention Post-Test MTLA with Intervention NBME Surgery Shelf	Pearson Correlation	0.163
	Sig. (2-tailed)	0.397
	N	29

The analysis examined the relationship between emotional intelligence, as measured by both pre-clerkship and post-clerkship overall MTLA scores, and academic performance, as indicated by overall NBME Surgery Shelf Exam scores. This was conducted collectively for both groups and then separately for the control and intervention groups.

The initial analysis showed that the overall pre-clerkship MTLA scores had a weak positive correlation with NBME Surgery Shelf scores, indicated by a Pearson Correlation coefficient of 0.188 and a significance level of 0.191 with the 95% confidence interval for the correlation ranging from -0.095 to 0.443. The overall post-clerkship MTLA scores also demonstrated a weak positive correlation with NBME Surgery Shelf scores, evidenced by a Pearson Correlation coefficient of 0.142 and a significance level of 0.326 with the 95% confidence interval for the correlation ranging from -0.142 to 0.404. Based on 50 observations, these outcomes were not statistically significant, as the p-values exceeded the threshold of 0.05 and the confidence intervals included zero.

In the control group, the pre-clerkship overall MTLA scores exhibited a weak positive correlation with control NBME Surgery Shelf scores, reflected by a Pearson Correlation coefficient of 0.211 and a significance level of 0.358 with the 95% confidence interval for the correlation ranging from -0.242 to 0.589. The post-clerkship overall MTLA scores also showed a weak positive correlation with control NBME Surgery Shelf scores, demonstrated by a Pearson Correlation coefficient of 0.341 and a significance level of 0.130 with the 95% confidence interval for the correlation ranging from -0.106 to 0.674. Based on 21 observations, these findings did not reach statistical significance, indicated by p-values above 0.05 and confidence intervals including zero.

For the intervention group, the pre-clerkship overall MTLA scores' correlation with intervention NBME Surgery Shelf scores was similarly weak, reflected by a Pearson Correlation coefficient of 0.222 and a significance level of 0.247 with the 95% confidence interval for the correlation ranging from -0.157 to 0.544. The post-clerkship overall MTLA scores' correlation with intervention NBME Surgery Shelf scores was also weak, demonstrated by a Pearson Correlation coefficient of 0.163 and a significance level of 0.397 with the 95% confidence interval for the correlation ranging from -0.216 to 0.500. Based on 29 observations, these results were not statistically significant due to p-values exceeding 0.05 and confidence intervals including zero.

Research Question Three

Introduction to Focus Group Analysis

Focus group discussions were employed as a methodological tool to address the third research question. These discussions, strategically designed to elicit in-depth perspectives, were crucial in understanding participants' experiences and responses to the Boost training program (Braun & Clarke, 2019). The focus groups were centered around three primary questions. Participants were prompted to offer open-ended responses, and the resulting data was subjected to a deductive thematic analysis. As emphasized by Creswell et al. (2017), this approach is essential in qualitative research for acquiring in-depth insights. The objective was to delve into participants' experiences with Boost's training curriculum during their third-year Surgery Clerkship and evaluate the impact of its delivery. Thematic analysis began with initial and open coding, employing an in vivo method that involves using participants' own language for codes (Manning, 2017). These codes were then systematically grouped into categorical themes,

revealing insights into participants' personal feelings about the training, their self-discoveries during the process, and the impact of the curriculum's delivery method throughout the clerkship.

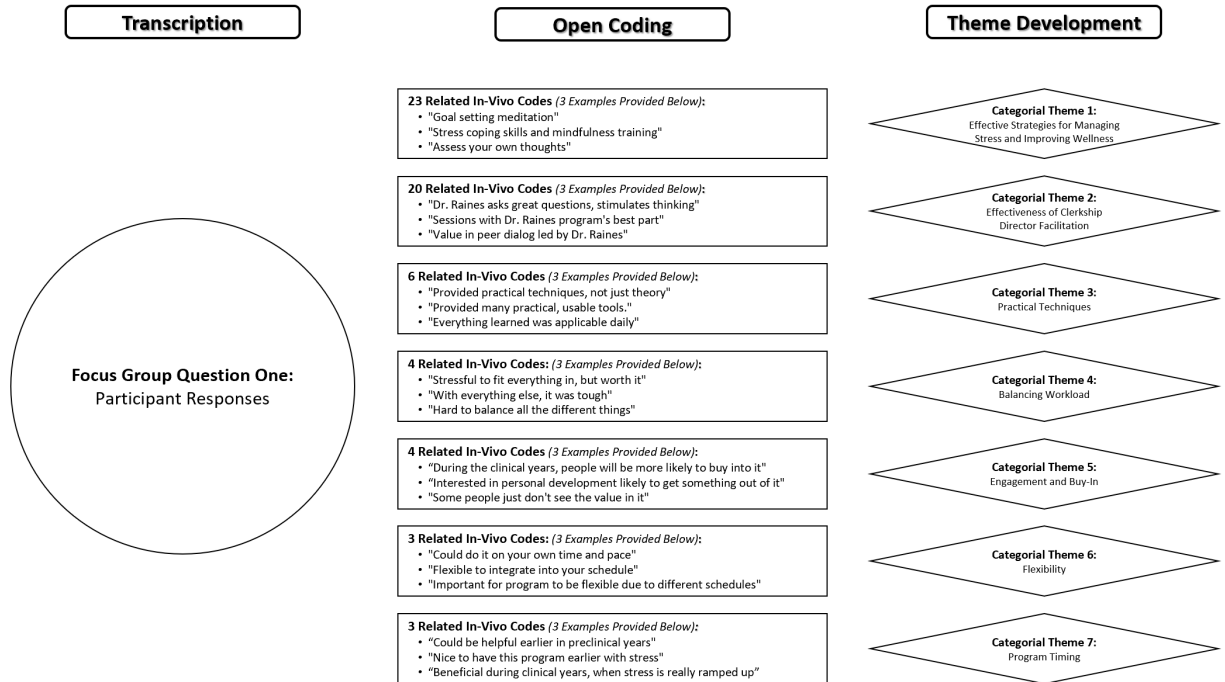
Focus Group Question One

The initial query to all focus group participants was: "Describe how you felt about the training and explain what you learned about yourself throughout the clerkship."

This question aimed to draw out participants' reflections on the training experience, particularly their self-awareness and development during the clerkship. The responses were essential in guiding the thematic analysis. Several major themes emerged: Effective Strategies for Managing Stress and Improving Wellness, Effectiveness of Clerkship Director Facilitation, Practical Techniques, Balancing Workload, Engagement and Buy-In, Flexibility, and Program Timing. These themes collectively highlight the multifaceted impact of the training's delivery, ranging from personal stress management strategies to the broader influence of the clerkship director's role in shaping the training experience. This thematic exploration directly relates to the focus group question, illustrating how participants' experiences and the training delivery method intertwine. To succinctly present these findings, the figure below visually summarizes the thematic analysis, illustrating the structure and interconnections between the identified codes and the developed themes.

Figure 20

Summary of Thematic Analysis from Focus Group Question One



The categorical theme Effective Strategies for Managing Stress and Improving Wellness was the most commonly discussed, with 23 in vivo codes identified. Participants found goal setting, envisioning their future goals, and guided goal setting meditation to be helpful tools for focusing their thoughts, measuring their progress, and holding themselves accountable. One participant said, "I like the goal-setting exercise. It's a helpful way to measure my progress and hold myself accountable." Additionally, participants reported that the breath and move on (BAMO) activity effectively managed stress and promoted focus. One participant said, "I really liked BAMO. It was a helpful coping mechanism for managing stress and staying focused in high-pressure situations." The categorical theme Effectiveness of Clerkship Director Facilitation was the second most discussed, with 20 in vivo codes identified. Participants found the meetings with Dr. Raines more beneficial than the lessons and appreciated his openness and vulnerability about his experiences. One participant said, "Discussions with Dr. Raines were really great, and I would feel reinvigorated after leaving." The categorical theme Practical Techniques included 6 in

vivo codes and highlighted the value of practical, actionable strategies for managing stress. One participant said, "They really did provide a lot of tools that were practical and that we could use." The categorical theme of Balancing Workload was discussed in 4 in vivo codes, with participants expressing the challenge of fitting the training into their already busy schedules. One participant said, "It was stressful to try and fit everything in, but I think it was worth it." The categorical theme of Engagement and Buy-In was discussed in 4 in vivo codes, with participants expressing the challenge of convincing some individuals of the value of the training. One participant said, "I think that it's going to be a little bit harder to convince people to do it during the preclinical years, but during the clinical years, I think people will be more likely to buy into it." The categorical theme of Flexibility was discussed in 3 in vivo codes, with participants appreciating the ability to complete the training on their own time and at their own pace. One participant said, "I liked that you could do it on your own time and at your own pace." Finally, the categorical theme of Program Timing was discussed in 3 in vivo codes, with participants appreciating the timing of the Boost training curriculum. One participant said, "I think that it's more beneficial to do it during the clinical years because that's when the stress is really ramped up."

Based on the analysis of the participant's responses to the first focus group question, the stress management training program demonstrated its effectiveness in helping participants manage stress and improve wellness during their clerkship. The emergence of seven major categories, including Effective Strategies for Managing Stress and Improving Wellness, Effectiveness of Clerkship Director Facilitation, Practical Techniques, Balancing Workload, Engagement and Buy-In, Flexibility, and Program Timing, provided valuable insights into the different aspects of the training that were most beneficial. Participants found goal setting, envisioning future goals, and guided goal setting meditation helpful in focusing their thoughts,

measuring their progress, and holding themselves accountable. Additionally, the BAMO (breath and move on) activity was identified as another effective coping mechanism for managing stress and staying focused. However, some participants faced challenges balancing the training with their busy schedules and convincing others of its value. Overall, the training was well received, with participants appreciating the practical, actionable strategies and the flexibility to complete it on their own time and at their own pace. These findings suggest that implementing similar programs may be beneficial for medical students in managing the stresses of their training.

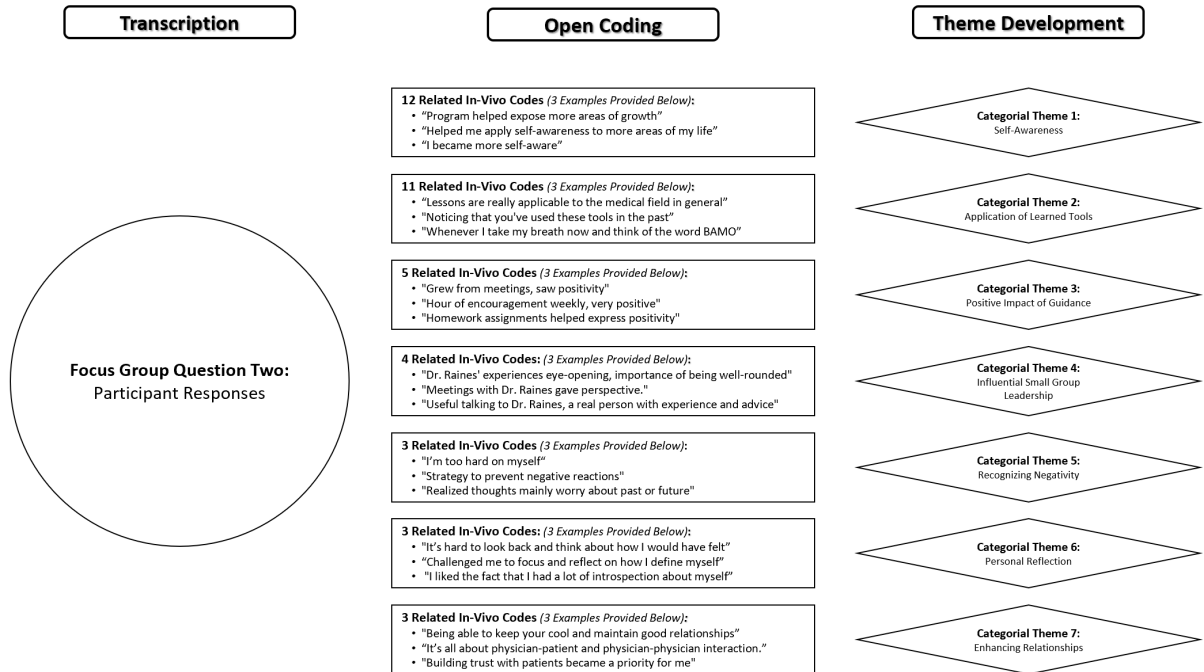
Focus Group Question Two

The second query to all focus group participants was: "How did this experience help you to become more aware of your strengths and identify your areas for growth as a medical learner and future clinician?"

This question aimed to delve into the participants' experiences and their impact on self-awareness, specifically concerning strengths and areas for growth as learners and future clinicians. This subsection presents a thematic analysis that illuminates the participants' reflections. Several key themes emerged by analyzing the focus group data, providing valuable insights into participants' self-awareness, growth, and professional development. The figure presented below visually depicts the thematic analysis of participant responses to the second focus group question, highlighting the organization and interconnections between the identified codes and the themes subsequently derived from them.

Figure 21

Summary of Thematic Analysis from Focus Group Question Two



The first theme of Self-Awareness was most prominent, underscored by 12 in vivo codes, highlighting participants' recognition of more growth areas than strengths, contributing to increased self-awareness. One participant captured this by stating, "For me, the program helped expose more growth areas than it did areas of strength. It made me realize that I have room for improvement. The second theme, Application of Learned Tools, was supported by 11 in vivo codes. It focused on participants' recognition and utilization of tools acquired in the program. Participants reported applying these tools and acknowledged their practical applicability in medicine. One participant noted, "These lessons apply to the medical field in general." The third theme, the Positive Impact of Guidance, emphasized the value of receiving guidance and encouragement in fostering personal growth and reframing negative thoughts, as supported by 5 in vivo codes. Participants highlighted how guidance helped them, with one stating, "Having someone giving an hour of encouragement per week is a really positive change from the rest." The fourth theme, Influential Small Group Leadership, centered around the program facilitator's

role in promoting perspective guidance, underscored by 4 in vivo codes. Participants acknowledged the facilitator's impact, with one sharing, "A lot of what was eye-opening for me was Dr. Raines and his experiences." The fifth theme, Recognizing Negativity, sheds light on participants' awareness of their self-criticism and worries, supported by 3 in vivo codes. Participants expressed efforts to overcome automatic negative reactions, with one noting, "I think that strategy is going to prevent me from having those negative effects from automatically negatively reacting to things." The sixth theme, Personal Reflection, underscored the value of introspection, as evidenced by 3 in vivo codes. Participants appreciated the opportunity for self-reflection, leading to a better understanding of themselves. One participant stated, "This course has really challenged me to focus and reflect on how I define myself and what my strengths and weaknesses are." Lastly, the seventh theme, Enhancing Relationships, highlighted the program's focus on improving interactions, supported by 3 in vivo codes. Participants recognized the importance of these interactions, with one sharing, "Being able to keep your cool and maintain good relationships even with people who you disagree with or don't get along with creates a much more professional environment."

In summary, the thematic analysis of this second question offers a comprehensive understanding of participants' reflections on self-awareness, growth, and professional development within the focus groups. The identified themes shed light on crucial aspects such as self-awareness, the practical application of learned tools, the positive impact of guidance, the influential role of the program facilitator, recognition and overcoming of negativity, the value of personal reflection, and the enhancement of relationships. These findings highlight the importance of self-awareness in recognizing areas for growth and leveraging strengths in the journey of learners and future clinicians. The participant's ability to apply the learned tools

demonstrates their practical applicability and effectiveness. Moreover, the positive impact of guidance emphasizes the significance of support and reframing negative thoughts. The influential role of the program facilitator underscores the value of mentorship in professional development. Additionally, the participants' recognition of negativity and commitment to personal growth and resilience showcase their dedication. The value of personal reflection and introspection further emphasizes the power of self-exploration in gaining deeper insights. Lastly, the emphasis on enhancing relationships underscores the crucial role of effective communication and professionalism in creating positive working environments. Overall, this thematic analysis provides valuable implications for educational programs that foster self-awareness, growth, and professional development among learners and future clinicians.

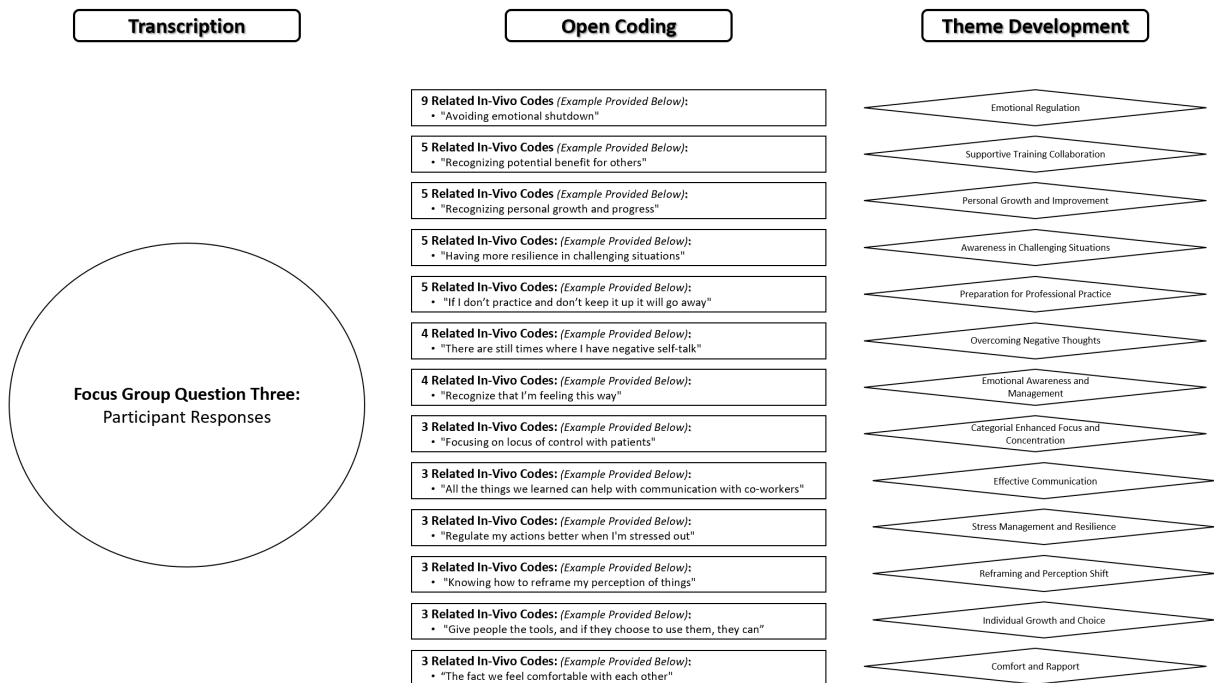
Focus Group Question Three:

The third query to all focus group participants was: " After participating in this clerkship, how are you better prepared to be a more successful medical student and future physician?"

This question delved into the participants' experiences and perceptions through inductive thematic analysis. It offered valuable insights into their transformative journey as they progressed toward becoming accomplished medical students and future physicians. The following section highlights the key themes from the participants' narratives. By analyzing the focus group data, the aim was to uncover the diverse and detailed experiences of the participants, shedding light on their personal growth, challenges faced, and the development of essential skills and qualities necessary for their future medical careers. In summary, the analysis of this question aimed to provide a comprehensive understanding of the participants' reflections and contribute to the existing knowledge on the transformative impact of educational programs in the medical field.

Figure 22

Summary of Thematic Analysis from Focus Group Question Three



Emotional Regulation emerged as the first theme, highlighting participants’ improved ability to regulate their emotions in challenging situations. Through in-depth data analysis, nine quotes represented by 9 in vivo codes were identified. Participants expressed strategies such as understanding what they can’t control and embracing the positives, even in difficult situations. One participant’s quote, “Understanding what you can’t control,” exemplified the increased awareness and application of emotional regulation techniques.

Supportive Training Collaboration emerged as the second theme, emphasizing the importance of collaboration and constructive feedback in enhancing participants’ preparation. Through analysis, five quotes represented by 5 in vivo codes were identified. Participants recognized the potential benefits for others and provided constructive critiques to improve

communication and overall patient care. One participant's statement, "Recognizing potential benefit for others," underscored the value placed on collaboration in the clerkship experience.

The third theme, Personal Growth and Improvement, reflected participants' acknowledgment of personal growth and progress throughout the clerkship. Analysis revealed five quotes represented by 5 in vivo codes, where participants emphasized the positive critiques received for improvement and actively sought opportunities for personal growth. One participant's remark, "Recognizing personal growth and progress," demonstrated their heightened awareness of their development during the clerkship.

Awareness in Challenging Situations emerged as the fourth theme, focusing on participants' increased awareness and resilience in challenging encounters—analysis of the data identified five quotes represented by 5 in vivo codes. Participants acknowledged the importance of staying composed in difficult situations and understanding the diverse backgrounds of individuals. One participant highlighted "Having more resilience in challenging situations," indicating a strengthened ability to navigate complex scenarios.

Preparation for Professional Practice was identified as the fifth theme, highlighting participants' perception of being well-prepared for the demands of professional practice. Through analysis, five quotes represented by 5 in vivo codes were identified. Participants recognized the importance of continuous training, improved communication skills, and the need to adapt to early mornings and long hours. One participant's statement, "It's preparing me for early mornings and long hours," revealed their readiness for the challenges ahead.

The sixth theme, Overcoming Negative Thoughts, centered around participants' efforts to combat negative self-talk and intrusive thoughts. Through analysis, four quotes represented by four codes were identified, reflecting participants' acknowledgment of negative reviews but

active work to reframe and overcome them. One participant's statement, "There are still times where I have negative self-talk," illustrated their awareness and determination to combat negativity.

Emotional Awareness and Management emerged as the seventh theme, emphasizing participants' increased ability to recognize and manage their emotions effectively. Through analysis, four quotes represented by 4 in vivo codes were identified. Participants expressed the importance of emotional awareness and avoiding emotional shut down in stressful situations. One participant's statement, "I feel like I had a decent handle on recognizing my emotions," demonstrated an improved understanding of emotional self-awareness.

Enhanced Focus and Concentration, the eighth theme, centered around participants' improved ability to maintain focus and concentration during their clerkship experience. Analysis revealed three quotes represented by 3 in vivo codes. Participants recognized the importance of focusing on the locus of control with patients and maintaining a focused mindset. One participant mentioned "Focusing on the locus of control with patients," highlighting their enhanced concentration in patient interactions.

Effective Communication emerged as the ninth theme, highlighting the significance of improved communication skills for participants' success. Through analysis, three quotes represented by 3 in vivo codes were identified. Participants emphasized the importance of effective communication in providing better patient care and fostering positive relationships with colleagues. One participant stated, "Better communication with each other leads to better care for the patient," underscoring the impact of communication skills in the medical setting.

The tenth theme, Stress Management and Resilience emphasized participants' enhanced stress management skills and resilience in demanding situations. Through analysis, three quotes

represented by 3 in vivo codes were identified. Participants recognized the importance of not internalizing negative comments or stress and regulating their actions better under pressure. One participant mentioned, “Recognizing that it’s a stressful situation but also recognizing that you don’t have to let it take over,” highlighting their improved ability to manage stress effectively.

Reframing and Perception Shift emerged as the eleventh theme, focusing on participants’ ability to reframe negative aspects and shift their perspectives. Through analysis, three quotes represented by 3 in vivo codes were identified. Participants highlighted their capacity to reframe negative thoughts and adopt more positive perceptions. One participant mentioned, “Reframe negative aspects about yourself and tell yourself something different,” indicating their cognitive flexibility and ability to reframe negative experiences.

The twelfth theme, Individual Growth and Choice, emphasized participants' recognition of personal growth and the power of individual choice. Through analysis, three quotes represented by 3 in vivo codes were identified. Participants acknowledged the importance of personal agency in utilizing the tools provided and choosing the best approach in various situations. One participant stated, “Give people the tools, and if they choose to use them, they can use them,” highlighting the role of individual choice in personal growth.

Comfort and Rapport emerged as the thirteenth theme, highlighting participants’ appreciation for a supportive and comfortable learning environment. Through analysis, three quotes represented by 3 in vivo codes were identified. Participants recognized the significance of feeling satisfied with peers and its positive impact on their overall experience. One participant mentioned, “Part of the effectiveness in the meetings was in the fact we feel comfortable with each other,” underscoring the importance of rapport in promoting effective learning.

These findings, derived from the thematic analysis, demonstrate the profound impact of the clerkship experience on participants' emotional regulation, supportive collaboration, personal growth, situational awareness, preparation for professional practice, and various other essential skills and qualities. The in-depth exploration of participants' experiences and perceptions has revealed the transformative nature of the clerkship, highlighting its role in shaping participants' development as medical professionals. The results from the analysis of this third question underscore the importance of educational programs that provide immersive and experiential learning opportunities, equipping future physicians with the necessary competencies to navigate the complexities of healthcare. Moreover, these findings have implications for enhancing medical education practices and curricula. Moving forward to the next chapter, the Discussion, a deeper dive will be taken into the impact of these findings, critically analyzing their significance, and providing comprehensive recommendations for future educational practices and research in medical education.

Chapter 5: Discussion of Findings and Study Conclusion

Restatement of Research Problems and Questions

The research study identified and investigated the problem of inadequate professionalism skills training within medical education, a critical issue considering the essential role these abilities play in enabling medical professionals to collaborate effectively and provide optimal patient care (Shrank et al., 2004). Shrank et al. (2004) build on this by emphasizing the significance of fundamental medical professionalism components such as effective communication, genuine empathy, inclusive resiliency, stress relief, emotive management, and conflict resolution, particularly in the complex healthcare environment. They also identify a marked discrepancy between the prevailing culture in academic medical centers and the ideal standards of professionalism, highlighting an urgent need for improved role modeling and a more comprehensive assessment of student professionalism. Research conducted by Altirkawi (2014) also notes this gap, pointing to a growing emphasis on medical professionalism and revealing a significant gap in our educational systems, necessitating more effective teaching and evaluation methods for these skills. Finally, research conducted by Elliot et al. (2009) complements these observations by advocating for consistent and longitudinal approaches in the instruction and assessment of professionalism, arguing that such methods are crucial to address these educational deficits and better equip medical learners to navigate the myriad challenges of modern healthcare settings.

To address this problem, the study was designed to explore three fundamental research questions, each stemming from a broader aim. Its primary objective was to investigate the effectiveness of Boost Incorporated's mental toughness and leadership training in enhancing the emotional quotient of medical students during their Surgical Clerkship. This aim included

assessing the trainability and potential increase in emotional intelligence, measured explicitly by the Boost MTLA, within this phase of medical education. The study also examined the relationship between emotional quotient, as indicated by Boost's MTLA scores, and academic performance, focusing on the NBME Surgery Shelf Exam scores during the Surgical Clerkship. Understanding this relationship is crucial in evaluating the impact of emotional intelligence training on academic success. Finally, the research explored the effectiveness of instructor-led small group sessions as a method for delivering this specialized training during the third-year Surgery Clerkship. This component aimed to determine the impact of such learning experiences on students' emotional intelligence development and their overall educational experience, ultimately contributing to our understanding of professionalism training in medical education.

These research questions formed the foundation of our investigation by providing a comprehensive framework to shed light on the trainability of emotional intelligence, its correlation with academic performance, and the effectiveness of faculty-led small-group learning in enhancing emotional intelligence among clinical phase medical students. By addressing these research questions, the aim was to contribute valuable insights into improving professionalism instruction and cultivating essential skills in medical education.

Building upon the research problem and research questions, this study proposed the hypothesis that integrating emotional intelligence training in the clinical phase of medical school would lead to elevated levels of emotional intelligence in medical students. It was anticipated that these enhanced levels of emotional intelligence would positively correlate with academic performance, particularly during the third year of study within the context of the General Surgery Clerkship. This hypothesis underscores the significance of integrating emotional intelligence training into the medical curriculum, suggesting that this inclusion could positively impact

medical students' professionalism skills and establish an influential relationship with their academic performance. Furthermore, faculty-led small group learning sessions were hypothesized to serve as a relatable and practical educational experience for coaching emotional intelligence among clinical phase medical students providing them with valuable skills and knowledge to enhance their professional development.

By reiterating the research problem, reviewing the research questions, and restating the hypothesis, I aimed to provide a comprehensive and cohesive overview of the core objectives of the study. This restatement reaffirmed the significance of the research problem and questions and established a clear direction for the subsequent discussion. In the forthcoming sections, I delve into the findings and interpretations, acknowledge limitations, discuss implications, and provide recommendations based on the outcomes of our research. Restating these key elements allows readers to grasp the importance of our study's objectives and their relevance to the subsequent sections, facilitating a deeper understanding of the significance and implications of our research.

Summary of Key Study Findings

In summary, the study had three primary aims, each corresponding to a specific research question. The first aim aimed to demonstrate that medical students undergoing emotional intelligence training provided by Boost Incorporated in their clinical year, particularly within their Surgical Clerkship, would exhibit an increase in their emotional quotient, as measured by the Boost MTLA. The second aim sought to investigate the nature of the relationship between emotional quotient, as indicated by Boost's MTLA scores, and academic performance, specifically focusing on the NBME Surgery Shelf Exam scores among medical students during their Surgical Clerkship. The third aim was to assess the effectiveness of faculty-led small group learning as a method for delivering emotional intelligence training and to explore its impact on

learners' experiences during their third-year Surgery Clerkship. These research aims were developed in line with the research questions and formed the foundation of our study.

The most significant finding of this study was that emotional intelligence was trainable in medical students during the clinical phase settings of medical school. The intervention group, which received emotional intelligence training, showed statistically significant improvements in various emotional intelligence constructs, including leadership, concentration, mental attitude, anxiety, goals, emotions, and overall emotional quotient. In contrast, the control group showed no significant changes in the same emotional intelligence concepts. These results suggest that incorporating emotional intelligence training in the curriculum improved emotional intelligence skills among medical students.

While our findings suggest no negative correlation between emotional intelligence training and academic performance on the NBME Surgical Shelf Examinations, it is essential to approach the integration of this training into the curriculum thoughtfully. While potential collaboration with existing academic coursework is implied, careful consideration is required to ensure that it aligns with the curriculum's structure and demands. Further evaluation and planning are necessary to determine the most effective way to incorporate this training into the medical curriculum while enhancing students' academic and cognitive performance.

Additionally, our study revealed a positive correlation between emotional intelligence scores and academic performance scores, although statistical significance was not reached. This suggests that emotional intelligence levels may influence medical students' academic performance during their third year of study. However, it is essential to acknowledge that more extensive research with a larger sample size is required to establish a significant impact.

The study also explored the effectiveness of faculty-led small group learning as a method for coaching emotional intelligence in clinical phase medical students. Participant responses from focus groups indicated that the stress management training program implemented during the clerkship was effective in helping participants manage stress and improve wellness. Key beneficial aspects included goal setting, envisioning future goals, guided goal setting meditation, and the BAMO (breath and move on) activity. However, participants faced challenges balancing the training with their busy schedules and convincing others of its value.

Overall, this study contributes to understanding emotional intelligence training and its potential benefits for medical students. The findings suggest the potential development of emotional intelligence, indicating the need for further research to confirm this conclusively and explore its implications for future academic curricula. The study also highlights the importance of incorporating stress management and wellness programs within medical education to support students in their personal and professional development, as reflected within in vivo codes such as “recognizing that it's a stressful situation but also recognizing that you don't have to let it take over” and “regulate my actions better when I'm stressed out.” Additionally, these findings, which reveal significant improvements in MTLA scores among the intervention group participants, highlight the necessity of incorporating emotional intelligence training into medical education. By integrating such training, medical curricula can foster crucial emotional intelligence skills and enrich the learning experience with diverse methods, like faculty-led small group sessions, thereby ensuring a more comprehensive development of future healthcare professionals. However, further research is recommended to explore the long-term effects of emotional intelligence training on academic performance and clinical practice outcomes in medical students.

Interpretation of Results

This section aims to interpret the findings from the three research questions posed within the study. These questions examined the impact of Boost Incorporated's emotional intelligence training program on medical students and their MTLA scores while enrolled in the Surgical Clerkship course, a key component of their clinical education phase. The first research question investigated whether mental toughness and leadership training, provided by Boost Incorporated, enhanced the emotional quotient of medical students in their Surgical Clerkship during the clinical phase of medical school. This was measured using the Boost MTLA. The second question explored the nature of the relationship between the emotional quotient, as indicated by Boost's MTLA scores, and academic performance, particularly in relation to the NBME Surgery Shelf Exam scores of medical students in their Surgical Clerkship. Lastly, the third question examined how learners perceived the effectiveness of faculty-guided small group learning to deliver Boost Incorporated's mental toughness and leadership training within their third-year Surgery Clerkship. Analyzing the results and integrating established educational frameworks and theories, I aim to deepen my understanding of emotional intelligence training and its implications for medical education.

Research Question One

This study investigated whether mental toughness and leadership training provided by Boost Incorporated leads to an increase in the emotional quotient of medical students within their surgical clerkship in the clinical year. Initially, a Linear Regression Analysis and an ANOVA were conducted to establish a foundational understanding of the relationships between pre-clerkship and post-clerkship MTLA scores. These analyses aimed to determine how pre-

clerkship scores could predict post-clerkship scores. Following this, a paired samples t-test was employed to compare the mean scores of the emotional quotient, as measured by the Boost MTLA, between the control and intervention groups before and after the intervention. This approach was instrumental in assessing the direct impact of the training program on students' emotional intelligence levels.

Initially, these results highlighted the trainability of emotional intelligence, showing significant improvements in the intervention group's overall MTLA scores and in each of the six components that make up this assessment. The regression analysis showed a substantial relationship between the pre- and post-clerkship MTLA score variables, demonstrating that the regression model effectively explained a significant portion of the variance in post-clerkship MTLA scores. The ANOVA corroborated these findings, confirming the statistical significance of the regression model's results.

In particular, the intervention group exhibited statistically significant improvements in the MTLA components of leadership, concentration, mental attitude, anxiety, goals, and emotions, further substantiated by the paired samples t-test. This analysis revealed overall mean MTLA scores and specific component improvements with significant p-values. In contrast, the control group exhibited no significant changes in emotional intelligence constructs. These compelling findings highlight the effectiveness of Boost's emotional intelligence training in fostering notable improvements across MTLA domains, underscoring its potential for enhancing the emotional intelligence skills of medical students within clerkships.

Additional statistical analyses, including a Repeated Measures ANOVA and a One-Way ANCOVA, were conducted to assess the intervention's impact further. The Repeated Measures

ANOVA revealed significant time effects on MTLA scores and meaningful interaction between time and group membership. The One-Way ANCOVA, accounting for initial score differences, indicated a significant adjusted mean difference in post-clerkship overall MTLA scores between groups, particularly favoring the intervention group.

The outcomes of this analysis have been further interpreted using established educational theoretical frameworks. These findings resonate with Goleman's (1995) theory, which underscores the potential of training interventions to enhance emotional intelligence across various contexts. This includes integrating such training into medical curricula and equipping students with vital skills for effective interpersonal dynamics, patient communication, and stress management. Additionally, the principles of Dewey's reflective thinking and experiential learning (Dewey, 1933) suggest benefits for students who actively engage with their emotions and experiences, applying emotional intelligence skills in clinical settings. This approach supports the development of empathetic relationships between medical students and patients, promoting patient-centered care and ethical practices, in line with Nel Noddings' relational ethics framework (Noddings, 2012). Likewise, incorporating diversity into emotional intelligence training, as advocated by Geneva Gay's culturally responsive pedagogy framework (Gay, 2018), enhances medical professionals' ability to understand and address the needs of diverse patient populations. The study's methodology, integrating Michael Schiro's four educational visions and Paulo Freire's critical consciousness, provides a theoretical lens for examining the impact of emotional intelligence training. It aligns with Schiro's learner-centered ideology (Schiro, 2013) by empowering students and fostering autonomy. It also reiterates his social reconstructionist vision by considering the broader social and cultural factors influencing emotional intelligence development. Lastly, Freire's emphasis on critical consciousness (Freire, 1973) highlights the

transformative nature of emotional intelligence training, prompting students to reflect critically on their emotions and societal contexts.

In closing, the study highlights the trainability of emotional intelligence in third-year medical students within their Surgery Clerkship in the clinical phase of medical school. The comprehensive statistical analyses, encompassing Linear Regression, ANOVA, Paired Samples t-test, Repeated Measures ANOVA, and One-Way ANCOVA, more than adequately support these findings. Integrating educational theory throughout the research process, from identifying the problem and formulating research questions to interpreting results, enhances understanding of how emotional intelligence training aligns with established educational frameworks and theories within this context. These findings contribute to developing well-rounded medical professionals with academic competence, clinical skills, and professionalism abilities, essential for patient-centered care in the unique medical education environment.

Research Question Two

In this subsection, the study examined the relationship between emotional quotient, as indicated by Boost's MTLA scores, and academic performance, specifically focusing on NBME Surgery Shelf Exam scores among third-year medical students within their Surgical Clerkship using a Pearson correlation test. This statistical method is commonly employed to measure the strength and direction of a linear relationship between two variables while controlling for extraneous variables, a fundamental principle of randomized controlled studies (RCTs). This analysis examined the relationship between the control and intervention groups' emotional intelligence scores and academic performance scores. It found a positive but weak correlation between emotional intelligence and academic performance. These findings suggested that while

there may be a relationship between emotional intelligence levels and academic performance among medical students in their third year, the relationship did not reach statistical significance, indicating a relatively weak association. Additionally, it is essential to note that the analysis did not reveal any negative correlation, significant or insignificant, suggesting that the intervention did not adversely impact study participants' academic performance.

The outcomes of this analysis are further interpreted through various educational theoretical frameworks. Drawing from Dewey's reflective thinking and experiential learning concepts, the study explores the potential influence of emotional intelligence on academic performance. Dewey's approach emphasizes the importance of active emotional engagement and reflective practices, which could offer insights into how emotional intelligence affects students' academic achievements. Noddings' relational ethics framework is considered for its emphasis on empathetic bonds between medical students and patients and its potential impact on academic performance and patient-centered care. This perspective underlines the significance of emotional intelligence in fostering relationships that can enhance learning and patient care. The study also incorporated insights from Gay's culturally responsive pedagogy framework, suggesting that embracing cultural diversity in emotional intelligence training could positively influence students' academic performance by enhancing their ability to understand and meet the needs of diverse patient populations. Finally, Schiro's educational visions and Freire's critical consciousness are utilized to interpret the results. Schiro's learner-centered and social reconstructionist visions and Freire's emphasis on critical engagement with emotions and social contexts provide a comprehensive understanding of the implications of emotional intelligence training.

In summary, this study's use of the Pearson correlation test to explore the relationship between emotional intelligence and academic performance highlights a potential association that requires further investigation. Integrating diverse educational theories, such as those proposed by Dewey, Noddings, Gay, Schiro, and Freire, enhances the understanding of how emotional intelligence training aligns with established frameworks and its potential impact on academic performance in medical education.

Research Question Three

Recognition of Common Threads

The results from the focus group analysis provided valuable insights into the participants' experiences and perceptions regarding the facilitation of small group learning as a method for coaching emotional intelligence using Boost's curriculum to in third-year medical students within their Surgical Clerkship. The analysis revealed several themes that shed light on the participants' perspectives, offering a comprehensive understanding of their experiences and the impact of the educational program.

The first common thread, Effective Strategies for Managing Stress and Improving Wellness, highlighted the participants' positive responses to the stress management training program. Participants found the program helpful in managing stress and improving their overall wellness. They specifically mentioned the effectiveness of goal setting, envisioning future goals, guided goal-setting meditation, and the BAMO (breath and move on) activity. These findings support the hypothesis that the stress management training program would be beneficial in helping medical students manage stress and enhance their wellness, which is in line with existing

literature that emphasizes the importance of stress management and wellness interventions in medical education (Ayala et al., 2018; Dyrbye et al., 2014).

The second and third common threads, Effectiveness of Clerkship Director Facilitation and Practical Techniques, both underscored the practical benefits of the program. Participants expressed appreciation for the facilitator's role and found the meetings with the clerkship director beneficial, appreciating his openness and vulnerability in sharing his experiences. Additionally, they valued the practical nature of the tools provided in the program, recognizing their applicability in real-world medical settings. These findings support the hypothesis that faculty facilitation in small-group learning can be relatable and impactful in coaching emotional intelligence while providing practical techniques for managing stress. The participants' positive response to the facilitator's guidance and the program's practical tools are consistent with the present literature on the importance of effective mentorship, role modeling, and practical skill-building in medical education (Tayade & Latti, 2021; Shanafelt et al., 2019; Irby et al., 2010).

The fourth common thread, Balancing Workload, highlighted the challenge participants faced in fitting the training into their busy schedules. This unexpected finding indicates that time constraints and workload pressures can affect the implementation and engagement with emotional intelligence training. It suggests that careful consideration should be given to the timing and scheduling of such programs to ensure maximum participation and effectiveness, which resonates with current literature on the time constraints and workload challenges medical students face (Dyrbye et al., 2014; West et al., 2016). Medical educators should consider strategies to address these challenges, such as offering flexible timing options or integrating the training within existing curriculum components.

The fifth common thread, Engagement, and Buy-In, revealed that some participants faced challenges convincing others of the value of the training. This finding suggests that not all individuals may readily recognize the importance of emotional intelligence training in medical education. It emphasizes the need for raising awareness and promoting buy-in among students and faculty to optimize the effectiveness of such programs, which aligns with existing literature on the importance of creating a supportive culture and fostering buy-in for educational initiatives (Cruess et al., 2018). Medical educators should consider implementing strategies to foster a culture of understanding and appreciation for emotional intelligence training, such as involving influential faculty members, conducting informational sessions, or sharing success stories.

The sixth common thread, Flexibility, highlighted participants' appreciation for the flexibility of the training program, allowing them to complete it on their own time and at their own pace. This finding suggests that flexible delivery formats may enhance participants' engagement and satisfaction with the program, consistent with existing literature on the benefits of flexible learning approaches in medical education (Sandars et al., 2008; Blanchard et al., 2015). Medical educators should consider incorporating flexible delivery options such as online modules or asynchronous components to accommodate diverse learning preferences and needs.

The focus group analysis provides valuable insights into the participants' experiences and perceptions regarding facilitating small-group learning to coach emotional intelligence. The identified themes contribute to the existing literature and provide practical recommendations for implementing similar programs in medical education. By understanding the impact of stress management training, the role of faculty facilitation, the importance of practical techniques, the challenges of balancing workload, the need for engagement and buy-in, and the value of

flexibility, medical educators can develop effective strategies to integrate emotional intelligence coaching into clinical phase medical education.

Theoretical Integration

With the further interpretations of the results from this question, it is evident that the small group learning experience facilitated by faculty can be a relatable and applicable method for coaching emotional intelligence to clinical phase medical students. The program was effective in helping participants manage stress, improve wellness, and develop practical skills. The findings align with the educational theories of Michael Schiro, Paulo Freire, John Dewey, Nel Noddings, and Geneva Gay in several ways.

Michael Schiro's theory of conflicting curricular visions, specifically his emphasis on experiential learning, aligns with the findings that participants benefited from practical techniques and tools for managing stress in real-world medical settings. With balance and clarity, Schiro (2013) encapsulates curriculum theory by affirming that “Learner-Centered educators aim to stimulate the growth of people by designing experiences from which people can make meaning, fulfill their needs, and pursue their interests” (p.177). Schiro's theory highlights the importance of engaging students in hands-on experiences and connecting their learning to real-life situations, evident in the participants' positive experiences with the stress management training program. The emphasis on experiential learning in Schiro's theory, within the context of conflicting curricular visions, supports the notion that providing practical strategies and tools in a real-world context can enhance students' ability to effectively manage stress and apply their learning in their future medical careers (Schiro, 2013).

Paulo Freire's pedagogical theory of dialogue, which emphasizes mentorship and student engagement, resonates with the positive impact of the clerkship director's facilitation on

participants' perceptions and learning outcomes. Freire (1970) vividly stated, “Through dialogue, the teacher-of-the-students and the students-of-the-teacher cease to exist, and a new term emerges: teacher-student with students-teachers” (p. 80). Freire's theory emphasizes the importance of a student-teacher relationship built on mutual respect and dialogue, allowing for transformative learning experiences. The participants' positive experiences with the facilitation of the clerkship director align with Freire's emphasis on empowering students through mentorship and engagement (Freire, 2018).

John Dewey's educational philosophy of progressive education, mainly his focus on practical application in learning, is supported by participants' recognition of the practicality and applicability of the emotional intelligence training program in their future medical careers. Dewey (1938) famously paraphrased, “We learn by doing; our world is an ever-changing, practical world that we can only know through action.” His philosophical approach emphasizes integrating theory and practice, emphasizing learning by doing. The participants' recognition of the program's practical value and relevance to their future as medical professionals aligns with Dewey's emphasis on the importance of practical application in education (Dewey, 2004).

Nel Noddings' theory, the ethics of caring, emphasizes creating a supportive learning environment, reflected in participants' appreciation for the comfort and rapport within the small group learning setting. In addition, participants recognized the program's positive impact on enhancing relationships and professionalism. Noddings' theory supports establishing a caring and supportive educational environment where students' well-being and interpersonal connections are nurtured (Noddings, 2012). Noddings (1984) elegantly conveyed within the pages of her literary composition, which extensively elucidated her innovative educational approach, that “everything we do, then, as teachers, has moral overtones; through dialogue, modeling, the provision of

practice, and the attribution of best motive, the one-caring as teacher nurtures the ethical idea” (p. 179). The participants' experiences resonate with her emphasis on creating a moral, positive, and caring learning environment.

Similarly, Geneva Gay's theory of culturally responsive pedagogy aligns with the program's focus on inclusivity and diversity. In her inclusive curricular text on culturally responsive learning, Gay (2017) genuinely stated, “Culturally caring focuses on caring for instead of caring about the personal well-being and academic success of our students” (p. 57). While not explicitly mentioned in the provided interpretation, the program's emphasis on valuing diversity and creating an inclusive learning environment can be informed by Gay's theory. By incorporating culturally responsive practices, the program can ensure that all participants feel respected, understood, and included in the emotional intelligence training, regardless of their background. This approach acknowledges diverse learners' unique needs and perspectives and fosters an environment conducive to effective learning (Gay, 2018).

The results of this study contribute to the existing educational theories by providing empirical evidence of the effectiveness of small-group learning and faculty facilitation in coaching emotional intelligence. Overall, the integration of Michael Schiro's theory of conflicting curricular visions, Paulo Freire's theory of pedagogy of the oppressed, John Dewey's theory of democracy and education, Nel Noddings' theory of creating a supportive learning environment, and Geneva Gay's theory of culturally responsive learning environments enhances the understanding of how emotional intelligence training aligns with established educational frameworks and theories. The findings highlight the importance of incorporating stress management training, practical techniques, supportive facilitation, and flexible delivery formats in medical education curricula.

In conclusion, this study provides empirical evidence that small group learning facilitated by faculty is effective for coaching emotional intelligence in clinical phase medical students. Integrating educational theories strengthens an understanding of how emotional intelligence training aligns with established frameworks and theories. The findings emphasize the significance of creating a supportive learning environment, valuing diversity, and promoting practical skill-building. Based on these findings, it is recommended that medical education programs incorporate stress management training, practical techniques, and supportive facilitation to enhance students' emotional intelligence, well-being, and professional development. Additionally, implementing culturally responsive practices can ensure inclusivity and effectiveness for all participants. These insights contribute to the theoretical understanding of emotional intelligence and its influence on medical education.

Limitations of Study

This section identifies and discusses the critical limitations of a study focusing on professionalism skills within medical education, specifically emotional intelligence training, and its impact on medical students' academic performance and professional development. Acknowledging and addressing these limitations is essential to bolster the credibility and applicability of the findings, thereby advancing knowledge in this critical research area. The study encountered various methodological and external factors that influenced its outcomes. These included limited sample size, variable response rates, significant attrition, challenges in transferability, potential self-selection bias, contamination effects, the absence of blinding, constraints in measurement tools, and the timing of assessments. These factors emerged as significant limitations, impacting the reliability and accuracy of the data collected. By openly recognizing these limitations, the study paves the way for future research to address these areas,

mainly focusing on enhancing emotional intelligence training methods and assessment strategies in medical education. Addressing these limitations in future studies will improve the understanding of emotional intelligence training's impact on medical students and contribute significantly to developing professionalism skills within the medical field.

Small Sample Size

The study was confined to 140 third-year medical students from a single institution. This small sample size reduces the study's statistical power and may fail to detect significant relationships, affecting the generalizability of the results. Future studies should aim for larger, multi-institutional samples to enhance representativeness and statistical strength (Mikhael et al., 2020; MacCann et al., 2019).

Selection Bias Due to Voluntary Participation, Retention Rates, and Non-Adherence

The study's reliance on voluntary participation and the challenges posed by differential retention rates and participant non-adherence contributed to a selection bias. Voluntary participation might lead to a sample not representative of the broader student body, while variations in retention rates and adherence could further skew the sample. This combined selection bias can compromise the study's internal and external validity, potentially affecting the generalizability and reliability of the findings. To minimize this multifaceted selection bias, implementing random sampling or mandatory participation strategies can help ensure a more representative sample. Additionally, rigorous retention strategies and adherence monitoring can mitigate the impacts of differential retention rates and non-adherence, providing a more robust and valid study outcome (Kahan et al., 2015; Brown et al., 2018).

Attrition and Low Response Rates

There was a high dropout rate, with only 50 of the 140 students completing the requirements. Such attrition introduces bias, potentially affecting the study's validity. Employing strategies like regular follow-ups and participant incentives can help minimize dropout rates (Hopkins et al., 2019; Maddock & Blair, 2021).

Utilizing Boost MTLA as the Sole Measure of Emotional Intelligence

Boost's MTLA, used as the sole primary outcome measure for emotional intelligence, had not been previously used in this context. It might not fully capture the spectrum of emotional intelligence of the subjects. Future studies should consider using validated, established emotional intelligence assessment tools or multi-faceted assessment approaches (Dolev et al., 2019).

Lack of Pre-Test Equivalency Testing for Academic Ability

The study did not include a pre-intervention assessment of academic ability. This potentially complicates the interpretation of outcomes on the NBME Surgery Shelf Exam. Incorporating a pre-intervention assessment can establish baseline intellectual abilities and ensure comparability among participants (Prager et al., 2019)

Instrument Validity Limitations

The MTLA has not been extensively validated for the specific context of this study. This raises questions about the reliability and validity of the study's findings. Validating the instrument within the particular study context or using established, peer-reviewed tools can enhance the reliability and applicability of the findings (Scott et al., 2019).

Lack of Blinding

Participants were aware of their group assignments in the study. This awareness could influence their responses and behaviors, introducing bias. Exploring methods for participant

blinding or ensuring assessor blinding can reduce these biases (Anderson & Smith, 2018; Shahid et al., 2018; Moustgaard et al., 2020).

Contamination Effects

Potential information sharing among student subjects during training was a concern. This could affect the integrity of the study's outcomes. Suggestions for Improvement: Implementing stricter protocols for participant interaction and clear separation between intervention and control groups can mitigate these effects (Roth et al., 2018).

Timing of Investigation and Assessment

Another of the study's limitation was in its singular focus on assessing emotional intelligence and academic performance at a specific point during the Surgical Clerkship. This approach may not adequately capture the complex changes or developments in emotional intelligence over the longer course of medical education. Concentrating the assessment at a single time point could limit the ability to observe and understand the evolving nature of emotional intelligence in medical students. This may affect the accuracy of gauging how emotional intelligence influences academic performance and professional development over time. Future research should incorporate multiple assessment points throughout the medical education journey to comprehensively evaluate the longitudinal impact of emotional intelligence on academic performance. This approach, as suggested by Gupta et al. (2021), would allow for a more dynamic and in-depth analysis of the progression of emotional intelligence and its correlation with academic success, offering richer insights and a more robust understanding of its long-term effects.

Proprietary Nature of Boost's Training and Assessment

Details of Boost's training methods and assessment measures are proprietary and not fully disclosed to the public. This restricts the ability to fully assess what was trained and the relationship between the training content and assessment items. Future research should use open-source or fully disclosed training methods and assessment tools for transparency and replicability (Wicherts, 2016; National Academies of Sciences, Engineering, and Medicine, 2019).

Clerkship Director Facilitating Sessions

The clerkship director's dual role as facilitator and administrator could be perceived as a conflict of interest. This might influence student participation and objectivity, impacting the study's credibility. Assigning independent facilitators not involved in administrative roles can eliminate potential conflicts of interest (Romain, 2015).

Conflict of Interest in Qualitative Analysis

Given her association with Boost Incorporated, Dr. Kathy Ginter's involvement in the analysis presents a potential conflict of interest. This could bias the interpretation of qualitative data, affecting the study's objectivity. Involving independent analysts not affiliated with any involved parties can ensure unbiased analysis (Romain, 2015).

Misinterpretation of Effect Sizes

The reported effect sizes may be subject to overestimation due to the application of Cohen's *d*. This metric may not fully accommodate the heightened variability often in studies with small sample sizes. Such an overestimation could potentially distort the perceived impact of the investigated variables, leading to misconceptions regarding the study's findings and their practical relevance. Future research should utilize Hedges' *g* for calculating effect sizes to lessen this issue. Unlike Cohen's *d*, Hedges' *g* includes an adjustment for small sample bias, offering a

more conservative and accurate estimate of the effect sizes and upholding the research's validity and utility (Brydges, 2019).

Lack of Statistical Adjustments for Bias

No statistical adjustments were made to address potential biases in the analysis. This could result in skewed findings, affecting the credibility of the study's conclusions.

Implementing appropriate statistical adjustments and sensitivity analyses can account for potential biases (Yan et al., 2020).

In conclusion, by identifying and acknowledging these limitations, the study gains transparency and lays the groundwork for future research to target these aspects, ultimately bolstering the soundness and transferability of the findings (Naeem et al., 2014). This recognition of limitations not only paves the way for enhancing strategies to prevent similar issues in future research projects but also ensures a more comprehensive understanding of the relationship between emotional intelligence and academic performance in medical education, fostering advancements in this field. Future research can benefit from incorporating longitudinal studies, comparative studies, multi-institutional studies, enhanced mixed methods approaches, and blinded assessments further to advance the field of emotional intelligence in medical education (Adams et al., 2019; Uchino et al., 2020; Singh, 2023). Adopting these strategies will be instrumental in developing evidence-based practices within medical education, emphasizing the integration of emotional intelligence training and fostering improved educational outcomes. Together, these efforts will proactively address the identified limitations and contribute to a deeper, more practical understanding and application of emotional intelligence training in medical education.

Implications for Practice, Education, and Research

This chapter delves into valuable insights concerning the relationship between emotional quotient and academic performance among third-year medical students during their Surgical Clerkship. This section focuses on the implications of the study's findings and recommendations for implementation in practice, future research directions, and educational considerations. By integrating these recommendations into practice and conducting further research, I can contribute to existing knowledge, address gaps in professionalism instruction, and foster the development of essential skills in medical education.

Implications for Practice

The study's findings on emotional intelligence training underscore the significance of integrating such training into the curriculum. Medical education programs can enhance future medical professionals' professionalism and well-being by equipping students with the necessary skills for effective interpersonal dynamics, patient communication, and stress management. To achieve this, medical education institutions should consider incorporating dedicated training modules and experiential learning opportunities to develop emotional intelligence competencies (Dewsnap et al., 2021). For instance, in my postgraduate work at Oklahoma City University's College of Healthcare Professions, I actively participated in a comprehensive empathy training program designed for physician assistant students throughout their curriculum. This immersive experience has deepened my understanding of emotional intelligence and underscored the connection between empathy and professionalism.

Similarly, when introduced during the Surgical Clerkship as a stress management initiative, the effectiveness of interventional emotional intelligence training underscores the imperative for comprehensive stress management and wellness programs within medical education. These programs effectively bolstered students' personal and professional growth,

augmenting their well-being, resilience, and overall performance. Medical institutions should consider integrating approaches that equip students with tools to navigate stress, foster self-care practices, and nurture holistic well-being (Sudarshan et al., 2021; Klein & McCarthy, 2022).

Additionally, the study explored the effectiveness of faculty-led small-group learning in coaching emotional intelligence among clinical-phase medical students. Participants reported positive experiences and perceived benefits from these sessions. Faculty members can be role models, mentors, and facilitators in guiding students' emotional intelligence development. Implementing faculty-led small-group learning as a relatable and effective method can provide students valuable opportunities to enhance their emotional intelligence skills (Ndawo, 2021).

Lastly, the study revealed that participants appreciated the flexibility of the training program, allowing them to complete it on their own time and at their own pace. This finding suggests that flexible delivery formats, such as online modules or self-paced activities, can enhance participants' engagement and satisfaction with emotional intelligence training. To accommodate the busy schedules of medical students, medical education programs should consider incorporating flexible scheduling options. By providing flexibility in the delivery and scheduling of emotional intelligence training, institutions can ensure greater accessibility and participation among students (Hodzic et al., 2018).

Implications for Education

The study highlights the crucial role of emotional intelligence as a core competency in medical education. By explicitly integrating emotional intelligence as a learning outcome, educators can underscore its importance and provide structured opportunities for students to develop and enhance these vital skills. It is highly recommended that medical schools include

emotional intelligence as a core competency within their curricular frameworks, ensuring seamless integration into the educational curriculum (Reshetnikov et al., 2020).

Correspondingly, medical education institutions should strive to create more supportive learning environments that foster emotional intelligence development. This can be achieved through various means, such as faculty development programs that enhance educators' ability to support students' emotional growth, promoting a culture of psychological safety that encourages open communication and empathy, and implementing mentoring and coaching programs that provide individualized guidance and support. Creating a supportive learning environment nurtures students' emotional intelligence development and enhances their educational experience (Muñoz-Oliver et al., 2022).

Implications for Research

Future research could focus on conducting longitudinal studies to gain insights into the long-term impact of emotional intelligence training on medical students' academic performance and professional development throughout their medical education and beyond. By examining the trajectory of emotional intelligence development over an extended period, researchers can obtain a more comprehensive understanding of its relationship with academic performance and other outcomes in medical education. Additionally, comparative studies can provide a deeper understanding of the most effective strategies for enhancing emotional intelligence among medical students. Comparing various training methods, program durations, and delivery formats can inform the design and implementation of evidence-based interventions to promote emotional intelligence in medical education (Shekhawat, 2018; Foji et al., 2019).

The findings and limitations of the study underscore the necessity for additional research to investigate the impact of contextual factors and cultural diversity on the development and

expression of emotional intelligence in medical students. Investigating how cultural, social, and institutional contexts shape the acquisition and utilization of emotional intelligence skills can enhance our understanding of the complex interplay between emotional intelligence and medical education outcomes. This research can inform the development of culturally responsive and contextually appropriate interventions that address the unique needs of diverse medical student populations (Deliz et al., 2019).

In addition, future research should enhance the measurement tools used to assess emotional intelligence in medical students. This could entail a comprehensive examination of current measures' psychometric properties and validity and the development of new tools that encompass the multidimensional nature of emotional intelligence. By refining assessment methods, researchers can obtain more precise and reliable data regarding students' emotional intelligence levels, enabling better evaluation of interventions and more accurate tracking of progress over time (Cherry et al., 2014).

Finally, it is essential for similar studies to investigate effective strategies for the successful implementation of emotional intelligence training in medical education curricula. This includes a comprehensive examination of facilitators and barriers to performance, identification of best practices for program delivery, and exploration of the role of faculty and institutional support in integrating emotional intelligence training. Understanding the factors contributing to successful implementation can inform the development of guidelines and recommendations for incorporating emotional intelligence training into medical education programs (Yang et al., 2018).

By addressing these research gaps and building upon the current findings, future studies have the potential to provide a deeper understanding of the role of emotional intelligence in

medical education. Through focused investigations in these areas, researchers can enhance our understanding of the implications of emotional intelligence in medical education and its impact on student's development and success in their medical careers. This knowledge can pave the way for developing evidence-based practices that promote students' emotional intelligence growth and overall well-being, shaping a more effective and supportive learning environment for future medical professionals.

Dissertation Conclusion

In conclusion, this study successfully demonstrated the integration of diverse theoretical frameworks and research methodologies, resulting in a distinctive and comprehensive approach to address the research objectives, aims, and questions proposed when investigating the relationship between emotional quotient and academic performance in third-year medical students during their Surgical Clerkship. While the theory and methods utilized within the thesis may not be considered novel, the true innovation lies in their harmonious fusion and the strategic implementation of curriculum balance within medical undergraduate education.

The synthesis of these methodologies and theories offers a fresh perspective on medical education. The groundbreaking aspect of this work lies in the emphasis on curriculum balance, which nurtures a holistic and well-rounded education for medical undergraduate students. Qualitative feedback from focus group participants highlights the positive impact of faculty-led small-group learning sessions on stress management, wellness, and practical skills development. Additionally, the significant improvements in emotional intelligence constructs observed in the intervention group further support the effectiveness of this comprehensive educational approach.

This holistic approach significantly enhances medical undergraduate education by equipping students with the necessary knowledge, technical skills, and emotional intelligence

essential for healthcare practice, promoting the development of well-rounded individuals capable of navigating the complexities of patient care. By integrating diverse educational theories focusing on emotional intelligence, using various research methods, and emphasizing curriculum balance, this study addresses the evolving needs of the healthcare field. It prepares students for the demands of healthcare practice. The interconnectedness between emotional intelligence, professionalism, and academic performance are highlighted throughout the curriculum, emphasizing the importance of incorporating emotional intelligence training in medical education to foster competence and empathy among future healthcare professionals.

In final closure, this work's true innovation lies in strategically implementing diverse methodologies and theories to achieve curriculum balance. This study's holistic approach, supported by empirical evidence and participant feedback, significantly enhances medical undergraduate education. By fostering emotional intelligence and promoting curriculum balance, this research sets the stage for future advancements in medical education and the cultivation of holistically professional and competent healthcare practitioners.

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Appendices

Appendix A: IRB Approval Letter



Institutional Review Board for the Protection of Human Subjects

Initial Submission – Contingent Approval

Date: March 25, 2020

IRB#: 11797

Meeting Date: 03/23/2020

To: Alexander R. Raines, MD

Study Title: Emotional Quotient (EQ) in Relation to Traditional College of Medicine Surgery Clerkship.

Reference Number: 701587

The University of Oklahoma Health Sciences Center Institutional Review Board (IRB) reviewed the above-referenced study and identified the following specific issues that need to be addressed prior to granting final approval:

The IRB reviewed your submission and requested the following:

1. The IRB made comments and revisions to Version 1.2 of the Protocol. These include:

Section A Specific Aims: Aim 1--Randomization description is inaccurate. Refer to Section D Research and Design Methods for accurate description and make this change.

Section D Research and Design Methods 2. Indicate how cohort survey will be submitted to the study team.

Section J Recruitment and Enrollment--Indicate how the consent will be returned.

- Do not manually accept or reject any tracked changes. The IRB will accept the tracked changes and return a clean document to you upon final approval.
- To add the revision, click "Add a Revision" to create a new version. Do not upload your revised protocol by clicking "Add New Document".
- If you do not agree with some or all the comments/revisions, select 'no' that you do not accept these changes and provide comments in the Details text box to provide justification for why changes are not accepted.

2. Consent Form

The IRB made comments and revisions to Version 1.3 of the consent form which include these directives and changes:

What Will I Be Asked to Do in This Study?

1. Include how much time the training will take and provide more detail regarding the training.
2. Remove "access to educational records," if appropriate, or add this to the protocol.
3. Added that assessment will not be administered by anyone who has direct impact on your clerkship grades and that MLTA scoring will not affect your clerkship grade.

Why Might I Not Want to Participate in the Study?--Include that you will provide training after surgery to the control group.

865 Research Parkway, Suite 400, Oklahoma City, OK 73104 (FWA0007961)

What Data Are Being Collected?--Remove MBME Surgery Shelf scores or add this to the protocol.

Who Do I Call If I Have Questions, Suggestions or Concerns?--Add phone number for Dr. Raines.

Changes also include deletions for simplification and revisions for clarification.

- Do not manually accept or reject any tracked changes. The IRB will accept the tracked changes and return a clean document to you upon final approval.
- To edit the consent form, click "Add a Revision" to Version 1.2 to create a new version. Do not upload your revised consent form by clicking "Add New Document".
- If you do not agree with some or all the comments/revisions, select 'no' that you do not accept these changes and provide comments in the Details text box to provide justification for why changes are not accepted.

To respond to the issues stated above and resubmit to the IRB for review:

- Login to iRIS and open the Review Response Submission Form which will appear as an Incomplete Task on your home screen.
- Address the stipulations and attach any revised documents requested in Section 5.0 of the form.
- Submit the form to the IRB by clicking the 'Sign Off & Submit' button.

This letter does not serve as final approval. Final approval is contingent on IRB review and approval of your response. If the IRB does not receive your response within 60 days, this submission may be administratively withdrawn.

If you have questions about this notification or using iRIS, contact the HRPP office at (405) 271-2045 or irb@ouhsc.edu.

Sincerely,

Karen Beckman, MD, Chair
Institutional Review Board

Appendix B: IRB Annual Check-in Form for 2021



Office of Human Research Participant Protection
Institutional Review Board for the Protection of Human Subjects
Annual Check-In Form – HRPP Review – Acceptance Letter

Date: April 14, 2021

IRB#: 11797

To: Alexander R Raines, MD

HRPP Review Date: 04/14/2021

Check-In Due: 03/31/2022

Study Title: Emotional Quotient (EQ) in Relation to Traditional College of Medicine Surgery Clerkship.

Study Status: Active - Open - Expedited | Check-In Req

Reference Number: 714755

The Office of Human Research Participant Protection (HRPP) conducted an administrative review and accepted the Annual Check-In Form for the above-referenced study.

As principal investigator of this research study, it is your responsibility to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations at 45 CFR 46 and/or 21 CFR 50 and 56.
- Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
- Request approval from the IRB prior to implementing any/all modifications.
- Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
- Maintain accurate and complete study records for evaluation by the HRPP quality improvement program and if applicable, inspection by regulatory agencies and/or the study sponsor.
- Promptly submit administrative check-in documents to the IRB upon notification approximately 30 days prior to the check-in due date indicated above.
- Submit a check-in form at the completion of the project.

If you have questions about this notification or using iRIS, contact the IRB at 405-271-2045 or irb@ouhsc.edu.

Sincerely,

Amy M Weaver, HRPP Designee
Institutional Review Board

Appendix C: IRB Annual Check-in Form for 2022



The UNIVERSITY of OKLAHOMA
Office of Human Research Participant Protection
Institutional Review Board for the Protection of Human Subjects
Annual Check-In Form – HRPP Review – Acceptance Letter

Date: March 01, 2022 **IRB #:** 11797
To: Alexander R Raines, MD **Approval Date:** 03/01/2022
Reference #: 732544 **Check-In Due:** 02/28/2023

Study Title: Emotional Quotient (EQ) in Relation to Traditional College of Medicine Surgery Clerkship.
Study Status: Active - Open - Expedited | Check-In Req

The Office of Human Research Participant Protection (HRPP) conducted an administrative review and accepted the Annual Check-In Form for the above-referenced study.

As principal investigator of this research study, it is your responsibility to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations at 45 CFR 46 and/or 21 CFR 50 and 56.
- Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
- Request approval from the IRB prior to implementing any/all modifications.
- Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
- Maintain accurate and complete study records for evaluation by the HRPP quality improvement program and if applicable, inspection by regulatory agencies and/or the study sponsor.
- Promptly submit administrative check-in documents to the IRB upon notification approximately 30 days prior to the check-in due date indicated above.
- Submit a check-in form at the completion of the project.

If you have questions about this notification or using iRIS, contact the IRB at 405-271-2045 or irb@ouhsc.edu.

Sincerely,

Amy M Weaver, HRPP Designee
Institutional Review Board

Appendix D: IRB Annual Check-in Form for 2023



Office of Human Research Participant Protection
Institutional Review Board for the Protection of Human Subjects
Annual Check-In Form – HRPP Review – Acceptance Letter

Date: February 02, 2023 **IRB #:** 11797
To: Alexander R Raines, MD **Approval Date:** 02/02/2023
Reference #: 744546 **Check-In Due:** 01/31/2024

Study Title: Emotional Quotient (EQ) in Relation to Traditional College of Medicine Surgery Clerkship.
Study Status: Active - Open - Expedited | Check-In Req

The Office of Human Research Participant Protection (HRPP) conducted an administrative review and accepted the Annual Check-In Form for the above-referenced study.

As principal investigator of this research study, it is your responsibility to:

- Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations at 45 CFR 46 and/or 21 CFR 50 and 56.
- Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
- Request approval from the IRB prior to implementing any/all modifications.
- Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
- Maintain accurate and complete study records for evaluation by the HRPP quality improvement program and if applicable, inspection by regulatory agencies and/or the study sponsor.
- Promptly submit administrative check-in documents to the IRB upon notification approximately 30 days prior to the check-in due date indicated above.
- Submit a check-in form at the completion of the project.

If you have questions about this notification or using iRIS, contact the IRB at 405-271-2045 or irb@ouhsc.edu.

Sincerely,

Jared T King, HRPP Designee
Institutional Review Board

Appendix E : IRB Inactivation Letter



Institutional Review Board for the Protection of Human Subjects

Annual Check-In – Inactivation

Date: October 31, 2023 **IRB #:** 11797
To: Alexander R Raines, MD **Inactivation Date:** 10/31/2023
Reference #: 756405

Study Title: Emotional Quotient (EQ) in Relation to Traditional College of Medicine Surgery Clerkship.

Study Status: Inactive - Principal Investigator

On behalf of the Institutional Review Board (IRB), I have reviewed the Check-In Form for the above-referenced research study. You have indicated that this study has been completed and should be inactivated. This letter is to confirm that the IRB has inactivated this research study as of the date indicated above.

Note that this action completely terminates all aspects and arms of this research study. Should you wish to reactivate it, you will need to apply for new IRB approval.

All records relating to this research must be retained for at least three years after inactivation of the research. All versions of HIPAA forms and related documentation must be retained for at least six years from the date of creation or date of last effect, whichever is longer. All research records may then be destroyed consistent with the Health Sciences Center record retention and document destruction policies. Research records that contain any identifiable participant health-related information, including demographics, that are approved for destruction consistent with the retention and destruction policies must be destroyed consistent with the University's HIPAA Safeguards policies.

If you have questions about this notification or using iRIS, contact the IRB at 405-271-2045 or irb@ouhsc.edu.

Sincerely,

Ellen James, HRPP Designee
Institutional Review Board