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Medical Laboratory Scientists' Perceptions of Their Affective Domain Development

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Walden University
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Abstract

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MS, Walden University, 2015

BS, North Dakota State University, 2009

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Higher Education Leadership, Policy, and Management (Self-Designed)

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Abstract

The affective and professional development of health care professionals, including medical laboratory science (MLS) professionals, is important for their employability and provision of effective patient care. The problem is that affective development is critical to graduate employability and the quality of care provided in health care settings, yet there is limited research about which activities and experiences are perceived by MLS students as beneficial for their affective domain development. The purpose of this basic qualitative study was to understand how MLS students describe the usefulness of program learning activities and experiences as supporting their affective development, within the framework of social cognitive and emotional intelligence theories, through semistructured interviews. A total of 12 MLS program graduates from one large Midwestern university were interviewed. Data were analyzed using open manual coding to identify emergent themes. The data revealed that their affective domain development was influenced by interactions with different types of people through a variety of learning experiences and activities in diverse settings integrated during the program coursework. By integrating affective domain components into program coursework, MLS programs may provide opportunities that are supportive of student affective domain development that will be beneficial to their employability and the quality of care that they provide to patients. Developing coursework activities that enhance and are supportive of student affective development will promote positive social change by increasing graduate employability to help reduce the workforce shortage of MLS professionals, as well as promoting quality of patient care in healthcare settings.

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Dedication

I would like to dedicate this to Jeff and Ginny. Without your support, encouragement, and patience, this would not have been possible. Thank you for always being my inspiration. I love you 3000.

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Chapter 1: Introduction to the Study

Affective Domain Development

Laboratory professionals are a vital part of the health care team. Laboratory professionals, including medical laboratory scientists, make up the third largest group of health care professionals and provide vital data to the health care team for the prevention, diagnosis, treatment, and management of health and disease (American Society for Clinical Laboratory Science [ASCLS], n.d.). The clinical laboratory is facing a critical workforce shortage of laboratory professionals, and laboratory professions are expected to grow at a rate of 11% by 2028, almost twice the growth rate of all other occupations at 5% (Bureau of Labor Statistics, 2019). The workforce shortage is further complicated by accredited medical laboratory science (MLS) programs having continued threats of closure by college and university leaders across the United States, likely due to high operating costs and a misunderstanding by leadership of the need for these programs (ASCLS, n.d.-b). The number of laboratory science programs in the U.S. has decreased by 6.5%, forcing other laboratory professional programs to increase their enrollment to try and offset the national workforce shortage. With the challenges of the shortage and continued program closures facing the laboratory profession, it is important to graduate students who are ready to enter the workforce and who have the skills and knowledge to provide effective and efficient patient care.

In addition to the having the skills and knowledge to competently perform the work of a medical laboratory scientist, it is critical that graduates of MLS programs have the affective and professional skills that they need to effectively contribute to providing

quality patient care. Affective domain development of students preparing to enter health care professions is an important factor in providing effective patient care (Larin et al., 2014). Affective skills are valuable because they may help unlock students' cognitive potential and improve their employability (Bandaranaike & Willison, 2015). Affective domain skills, such as communication, critical thinking, and collaboration skills, are necessary for the employability of health care professionals (Shafakhah et al., 2018). As an important part of the health care team, medical laboratory scientists need to develop their affective domain during MLS coursework to prepare them to provide quality patient care once they enter the professional field.

While the need for affective development during health science programs is well established in the literature (Bandini et al., 2017; Jensen & Jetten, 2016; Kadar & Thompson, 2017; Maxwell et al., 2016; Nortje & Hoffmann, 2018; Poirier et al., 2017; Shafakhah et al., 2018; Welp et al., 2018), there is a need to determine which experiences or activities during program coursework are most beneficial from the student perspective to support their affective domain development. In this study, I sought to understand how students perceive the value and usefulness of program coursework activities and experiences that support their affective development. By exploring MLS student perceptions of their affective development during program coursework activities and experiences, the results found in this study may contribute to the literature by adding insight from a new perspective—that of the MLS student. The results may provide a greater understanding of the curricular activities that MLS students value for their affective development, which can inform program changes related to curriculum

development and instruction. Developing curriculum and coursework activities that are supportive of student affective development is expected to promote positive social change by increasing graduate employability to help reduce the medical laboratory workforce shortage, as well as promoting quality of patient care in healthcare settings.

Background

Affective domain development of students is important in health professional programs. There is some evidence that affective development has a positive impact on student achievement (Jensen & Jetten, 2016), supports positive outcomes in teamwork and performance (Welp et al., 2018), and correlates to effective patient care (Kadar & Thompson, 2017). Curriculum that aims to improve students' professional development is valued by students, according to Langendyk et al. (2016). Optimal activities and experiences during student coursework play a role in student professional development (Rizzolo et al., 2016) and relate to affective development (Henry & Murray, 2018). Student activities and experiences that contribute to student affective development in MLS programs are an area needing further research.

When evaluating curricula for activities and experiences that enhance affective domain development of students, there are many considerations that faculty need to examine. Several potential factors and inhibitors that can influence professional identity development may be within the control of the faculty or curriculum (Shafakhah et al., 2018). Bandini et al. (2017) found that the hidden curriculum, self-reflection activities, and small group discussions related to students' emotional experiences are beneficial to the professionalization of medical students. Nortje and Hoffmann (2018) noted the

importance of curricula builders to incorporate activities and experiences, such as reflection, to support the professional development of health science students. Further study is needed to gain a deeper understanding of students' perceptions related to their affective development, including self-awareness and empathy (Maxwell et al., 2016; Poirier et al., 2017). The need to incorporate student affective development in the curriculum of health science programs is well established in the literature.

Many health profession programs are represented in the literature, including medicine and nursing; however, there is limited research about MLS students. Because laboratory science professionals are the third largest group of health care professionals in the United States (ASCLS, n.d.-a), there is a need to gain a deeper understanding of which activities or experiences students perceive as the most beneficial to support their affective domain development throughout MLS program coursework. MLS professionals are a vital part of the health care team but have different expectations and responsibilities than their health care team counterparts in medicine and nursing. This research topic needs to be studied because affective development (e.g., self-awareness, emotional intelligence, empathy, and communication) is important to the graduate employability of future MLS professionals and, more importantly, to the quality of care provided in health care settings.

Problem Statement

Laboratory professionals are an important part of the health care team. MLS professionals are the third largest group of healthcare professionals in the United States and are an important part of patient care by providing critical testing and laboratory data

that inform patient diagnosis, treatment, and monitoring (ASCLS, n.d.-a). The affective

development of future health care professionals, including MLS professionals, is

important for providing effective patient care (Larin et al., 2014). Bandaranaike and

Willison (2015) noted the social value of affective skills, suggesting that those skills may

be the key to unlocking students' cognitive potential and improving student

employability. There is a positive correlation between patient satisfaction and outcomes

and the empathy of patients' health care providers (Ratka, 2018). Stephany (2014)

documented that patient evaluations revealed that even if healthcare workers demonstrate

adequate technical care, a lack of empathy by workers lowered patients' satisfaction with

care received. Communication, critical thinking, and collaboration skills are necessary for

the employability of health care professionals (Shafakhah et al., 2018). As members of

the health care team, it is important that MLS professionals develop their affective

domain during program coursework to prepare them to provide quality patient care once

they enter the professional field.

　　　　While the need for student affective development during health science programs

is well established in the literature (Bandaranaike & Willison, 2015; Jensen & Jetten,

2016; Kadar & Thompson, 2017; Larin et al., 2014; Maxwell et al., 2016; Nortje &

Hoffmann, 2018; Ratka, 2018; Shafakhah et al., 2018), there is a need to determine which

activities or experiences during program coursework students perceive to be valuable in

supporting their affective domain development. Further research and evaluation are

needed to determine which activities provide the greatest opportunities for emotional

intelligence development, empathy, and self-awareness skills (Foster et al., 2015; Larin et

al., 2014). In a study examining MLS and nursing student perceptions of learning environments and opportunities for affective skill development, Barcelo (2016) suggested that further research is needed to better understand the affective development of health science students. Henry and Murray (2018) found that engaging and immersive experiences helped geoscience students develop their affective domain, and they recommended that future studies explore how activities and experiences impact student affective domain development in other programs. In a quantitative study to assess the impact of adding media to an honors course on pharmacy student affective development, Poirier et al. (2017) discussed the need for future qualitative research to better understand student perceptions of their affective development, including self-awareness and empathy. While there are multiple studies on the importance of affective development in other disciplines (Larin et al., 2014; Nortje & Hoffmann, 2018; Peddle et al., 2019), there is a lack of information about MLS students. The problem is that affective development is critical to graduate employability and quality of care provided in health care settings, yet there is limited research about which program coursework activities and experiences are perceived by MLS students as beneficial for their affective domain development. For this study, I sought to explore how MLS students perceive the value and usefulness of program coursework activities and experiences that promote their affective domain development.

Purpose of the Study

The purpose of this basic qualitative study was to understand how MLS students perceive the usefulness of program coursework activities and experiences as supporting

their affective development. Expanding the understanding of MLS student perceptions of affective domain development during program coursework is important to identify what elements and activities students find most valuable. The literature was expanded by exploring MLS student perceptions of the activities and experiences that were beneficial in supporting their affective domain development during program coursework.

Research Question

RQ.   How do medical laboratory science students describe their experiences with program learning activities that support their affective development?

Conceptual Framework

Bandura's (1991) social cognitive theory and Goleman's (1995) emotional intelligence theory provided direction for exploring MLS student perceptions related to their affective development in this study. Bandura's (1991) social cognitive theory evolved from social learning theory in 1986. The main principles of social cognitive theory include the behavioral, cognitive, and environmental factors that reciprocally and dynamically influence learning. Those principles presented a framework to support exploring the value that students perceive related to the activities and experiences in MLS program coursework. Activities and experiences provided through coursework have cognitive, social, and environmental factors that may influence student affective development.

In addition to the cognitive, social, and environmental factors that may influence student affective development, it is important to describe the affective skills that are important for students to develop during health profession programs, including MLS

programs. Goleman (1995) described six skills in the theory of emotional intelligence:

self-awareness, self-motivation, empathy, interpersonal skills (e.g., communication),

leadership, and emotion management. These affective skills are important for MLS

students to develop during program coursework that will support employability and

quality patient care. Additionally, the MLS program technical standards for students

encompass the skills described by Goleman. Both theories form a foundation to describe

the social, cognitive, and environmental factors (social cognitive theory) and skills

(emotional intelligence theory) that may emerge from the student perspective related to

affective development during MLS coursework activities and experiences.

Nature of the Study

To address the gap in the research, the nature of this study was a basic qualitative

study. This method was applied to collect data from recent MLS graduates on their

perceptions of their affective development in their program's coursework activities and

experiences that they found most useful and valuable to support their affective domain

development. Ravitch and Carl (2016) described qualitative research as a method to

understand the lived experiences of individuals. This approach allowed for the

exploration of MLS students' perceptions related to their affective development during

MLS program coursework.

The research study setting was a public university in the Midwest that had an

MLS program with undergraduate, certificate (postbaccalaureate), and graduate students.

The sample of participants included recent graduates of the MLS program who had

completed the final year (senior), consisting of approximately 41 students. The data were

collected from interviews with 12 recent graduates. Participants were recruited from the recent graduates of the MLS program through purposive sampling.

The data collected were analyzed through thematic coding to gain understanding of how MLS students perceive the value and usefulness of program coursework activities and experiences that support their affective development. In this study, I sought to understand how MLS students described their experiences with program learning activities and experiences that supported their affective development. Data were analyzed using manual coding, which was then categorized and analyzed for themes. An unbiased position was prioritized when reviewing the students' interview responses. To strengthen the study results, I took several measures including review of the interview questions by an expert panel, verification of the interview transcript by each participant by asking participants to review their transcripts, and maintaining an audit trail during the data analysis phase.

Definitions

Affective domain: The attitudes, values, and behaviors of a student during their health science program and as they transition into the workforce as a professional (Kretchmar, 2019).

Affective domain development: The change in a student's attitudes, values, and behaviors (Hayes, 2016) during their health science program and as they prepare to transition into the workforce as a professional.

Emotional intelligence: The ability to be aware of the emotions of others and of oneself, as well as to regulate one's verbal and nonverbal expression of emotion (Mayer & Salovey, 1997).

Employability: The skills, attributes, and qualifications needed to carry out the responsibilities and tasks of a career (Helens-Hart, 2019).

Medical laboratory science (MLS): The discipline in which graduates from accredited medical laboratory science programs, referred to as *medical laboratory scientists*, work in a laboratory to detect and evaluate laboratory data that provide critical information to help the health care team in the diagnosis, treatment, and/or management of patients (ASCLS, n.d.-a).

Program learning activities: Activities that lead to the achievement of expected course and program outcomes (National Accrediting Agency for Clinical Laboratory Sciences [NAACLS], 2020).

Assumptions

One of the assumptions of this study was that the participants provided truthful and honest responses that were free of bias. Another assumption was that I would be able to separate my role as a researcher from my role as faculty within the MLS program. It was assumed that all students in the MLS program would have experienced some level of affective domain development during program coursework.

Scope and Delimitations

For my study, I chose to explore student perceptions related to the value and usefulness of program learning activities and experiences that support their affective

domain development. I chose this topic because there is little research regarding the MLS

discipline, or the education of future MLS professionals. Exploring MLS student

perceptions of affective domain development during program coursework requires

recruitment of specific participants through purposive sampling and semistructured

interviews. Only participants who were recent graduates of an MLS program were

included because it was assumed that they would be better able to recall their recent

experiences related to their affective domain development during program coursework.

Additionally, the MLS student perspective regarding affective domain development was

explored for this study because it had not previously been established in the literature.

The participants recruited were all from one public university in the Midwest. This

university was selected because its MLS program has a strong focus on affective domain

development that is integrated throughout the program's coursework. Although an open-

ended survey might have been administered, that method of data collection would not

have allowed for immediate extended inquiry or clarification. As a sole data source, an

open-ended survey might not have provided the detailed or rich responses received from

interviews.

Limitations

There were several recognized limitations, which included the generalizability

and the timeframe of this study. Generalizability is acknowledged as a limitation of this

study due to the small sample size and obtaining the data from only one school and MLS

program. This may impact the ability of other laboratory science programs to generalize

the findings in the context of their program and school. Despite the standards for

accreditation for MLS programs being identical, the interpretation and application of those standards in terms of the activities and experiences provided to students may vary widely. This may impact the perceptions of MLS students at various programs regarding the activities and experiences that they find most beneficial for their affective domain development. Another limitation was the sample size. The decision to select a sample size of eight to 14 participants was made, as this was an exploratory study. The actual sample size was 12 participants. The goal of this research study was to contribute to the literature in an area where there is a dearth of research available from the perspective of the MLS student. The research for this study was chosen to take place at a single university and program for similar reasons, in addition to the accessibility and convenience of the potential participants.

Time was another limitation in this study. The time span in which data were collected was shortened due to the nature of this study as a basic exploratory qualitative study and because this was for a dissertation project. The timing and shortening the window of data collection was selected to align with the research study's nature and design. Future research opportunities will allow for expansion of this study at additional institutions and MLS programs, as well as exploring how affective domain development changes throughout students' progression from the time of admission until graduation and beyond.

<div align="center">**Significance**</div>

Exploring the point of view of MLS students regarding the activities of their program coursework is expected to provide insight into the value of MLS coursework

activities and experiences to develop their affective domain. By exploring student perceptions related to the value and usefulness of program learning activities and experiences to support their affective development, this study contributed by adding insight from a new perspective—that of the MLS student. The affective development of MLS students improves the quality of patient care. The results from this study may provide insight into the curricular activities that students' find most valuable and useful for their affective development, which can inform program changes related to MLS curriculum development and instruction. Developing curriculum and coursework activities that enhance and are supportive of student affective development will promote positive social change by increasing graduate employability to help reduce the workforce shortage of MLS professionals, as well as promoting quality of patient care in healthcare settings.

Summary

What is known about affective domain development is limited to many of the well-known and highly researched healthcare fields, such as nursing and medicine. However, there is limited research regarding the learning activities or experiences that are beneficial for the affective domain development of MLS students. In this study, I explored MLS students' perceptions of their affective domain development during program coursework and descriptions of the learning activities and experiences that were valuable for their affective domain development.

In Chapter 2, I explore the recent literature related to affective domain development, performance and affective development, graduate employability, educating

for affective development, and student perceptions of affective domain development. The framework of this study was based on social cognitive theory and emotional intelligence theory, which provided a foundation to evaluate student perceptions in terms of the factors (behavioral, cognitive, and environmental) that influence their development of affective domain skills and behaviors.

Chapter 2: Literature Review

The medical laboratory profession is currently facing many challenges. An urgent challenge is a critical workforce shortage of medical laboratory professionals (Bureau of Labor Statistics, 2019), as well as continuous threats of laboratory science program closures across the country due to high operating costs and misunderstanding of the need for these programs by administration (ASCLS, n.d.-b). With these obstacles facing the laboratory, it is important to graduate students who are ready to enter the workforce and who have the skills and knowledge to provide effective and efficient patient care. Affective domain skills, including communication, critical thinking, and collaboration skills, are essential for the employability of health care professionals (Shafakhah et al., 2018). Additionally, the development of affective domain skills is correlated with providing effective patient care (Kadar & Thompson, 2017). It is important for MLS programs to incorporate activities and experiences during program coursework that support students' affective domain development to prepare them to enter the workforce upon graduation.

The problem is that affective development (e.g., emotional intelligence, empathy, communication) is critical to graduate employability and the quality of care provided in health care settings, yet there is limited research about which learning activities and experiences are perceived by students as beneficial and as supporting their affective development during MLS coursework. In this study, I explored how MLS students perceive the value and usefulness of program coursework activities and experiences as supporting their affective development. The purpose of this qualitative study was to

explore MLS students' perceptions about the value and usefulness of program learning activities and experiences to support their affective development.

Affective domain development is an important topic that is recognized in the research; however, few studies have established concrete findings regarding the activities and experiences that best support affective domain development during professional programs such as MLS programs. Several researchers have recognized the importance and need for further research on affective domain development (Rogers et al., 2018; Stephens & Ormandy, 2018; Wu et al., 2019). Related to affective domain development is the need for more study of the skills that make graduates employable, such as communication and teamwork skills (Scott et al., 2019). While some studies have explored affective domain development from the student perspective in terms of reflective journals (Rogers et al., 2018) or self-reported levels (Stephens & Ormandy, 2019), there is a dearth of literature related to the affective domain development of MLS students. Additionally, there is currently no research that could be identified as related to MLS students' perceptions of their affective domain development.

Literature Search Strategy

I completed a thorough review of the literature by using several different search engines and library databases through the Walden University library, including Thoreau, Education and related research (search by subject), and the Eric and Education Source combined search, with the majority of searches being conducted for studies published from 2016 through 2020. Google Scholar was also used as an external search engine. Exploration of the following topics achieved a greater understanding of the support that

program coursework, activities, and experiences may provide for the affective development of MLS students: affective domain development, performance and affective development, graduate employability, educating for affective development, and student perceptions of affective domain development. From these broad areas related to the research problem, purpose, and questions, the following search terms were explored in the initial literature review: *affective development, student perceptions, employability, medical laboratory science,* and *graduate employability*.

In order to focus the literature search on the problem, purpose, and research question, it was important to combine some terms to yield relevant results. Combinations of terms included *affective development* and *graduate employability, medical laboratory science, health care, health science, affective development* and *employability,* and *affective development* and *student perceptions.* The literature search was expanded to further research the literature related to the theories used in the framework for this study, and the following terms were searched: *emotional intelligence, emotional intelligence theory,* and *social cognitive theory.* Each of these terms related to the conceptual foundation of this study were included in my search, along with the term *medical laboratory science* to gain a deeper understanding of the literature relevant to the population being used in this study. When searching the literature for *emotional intelligence* and *medical laboratory science*, only four articles were found. When searching for *social cognitive theory* and *medical laboratory science*, only one article was found. Throughout the literature search process, the terms and combinations of terms evolved to identify current and relevant research articles.

Conceptual Framework

The combination of Bandura's (1991) social cognitive theory and Goleman's (1995) emotional intelligence theory provided the conceptual framework for this study. Together, they describe the social, cognitive, and environmental factors and skills that may emerge from the MLS student perspective related to their affective development during MLS program coursework.

Social Cognitive Theory

One of the theories that was a foundation for this study was social cognitive theory. Social learning theory was first published by Bandura (1960) and later evolved into social cognitive theory by 1986 (Bandura, 1991). The main principle of Bandura's (1991) social cognitive theory is that learning is reciprocally and dynamically influenced by behavioral, cognitive, and environmental factors (Bandura, 1991). Activities and experiences provided through MLS program coursework have cognitive, social, and environmental factors that may influence student affective development. Modeling is described as part of social cognitive theory and involves a complex process of behavior development that allows learner to gain understanding of the skills and established customs being demonstrated (Bandura, 1989). When considering modeling from the perspective of affective development of MLS students, those skills and customs include the affective and professional skills that are essential functions of the profession to provide quality patient care in the clinical laboratory.

Another relevant aspect of social cognitive theory (Bandura, 1991) includes the influence that it has on motivational processes. Through the lens of social cognitive

theory (Bandura, 1991), it is possible that MLS students may experience motivation to further develop their affective domain based on their observations of its importance during the program through coursework or their observations of the desired affective domain skills and behaviors of their clinical preceptors during their clinical experience rotations. Understanding and consistent demonstration of desired affective domain skills and behaviors may be influenced by the motivation that students experience from the behaviors modeled by others, including their peers, instructors, and preceptors.

While Bandura's (1991) social cognitive theory was not developed with health care disciplines in mind, it is relevant for exploring how cognitive, social, and environmental factors influence the learning of health science students, such as in MLS. Social cognitive theory supports a more open perspective on how environmental, social, and cognitive factors influence learning that impacts an individual's behavior and development (Manjarres-Posada et al., 2020). Within health care professions such as MLS, there are expected and desired behaviors of professionals that are found within the technical standards and are needed for success within the profession. The development of those desired behaviors and their affective domain of MLS students is critical during coursework to prepare students for the professional environment and to provide quality patient care.

While it is important for MLS students to develop affective domain skills and behaviors (Bandaranaike & Willison, 2015; Jensen & Jetten, 2016; Kadar & Thompson, 2017; Maxwell et al., 2016; Nortje & Hoffmann, 2018; Shafakhah et al., 2018), it is also essential that they feel compelled to further develop or change their behavior and feel

confident in their ability to do so (Glanz et al., 2008). Self-efficacy is important for the

success of behavioral change because it is the belief of an individual in their ability to

influence and perform behaviors that will produce desirable outcomes (Glanz et al.,

2008). Glanz et al. (2008) discussed how an individual's beliefs and confidence about

their own abilities may be more influential than outside influences when looking at

behavioral change and development. When considering how students perceive their

affective domain development during program coursework, it is of key importance to

consider how internal and external motivation to develop affective skills and behaviors

influence individual development. Incorporating Bandura's (1991) social cognitive

theory into the framework for this study laid the groundwork to investigate which factors

(environment, social, cognitive), activities, and experiences were valuable and useful in

supporting the affective development of students during the MLS program coursework.

There are limitations of social cognitive theory that need to be considered when

using it as part of the conceptual framework for a study in MLS. One limitation is the

assumption that changes in the environment will always lead to changes in the person or

their behavior, which may not necessarily be true (LaMorte, 2019). Another limitation is

that the theory is very broad, and it can be difficult to consider it to the fullest extent

(LaMorte, 2019). The final important limitation to recognize is the diminished focus on

emotion, other than in consideration of past experiences (LaMorte, 2019). To mitigate the

challenges associated with the limitations of social cognitive theory when exploring the

affective domain development of MLS students, Goleman's (1995) emotional

intelligence theory was integrated into the framework to provide a more thorough foundation for this study.

Emotional Intelligence Theory

The second theory that enriched the framework for the study was emotional intelligence theory. The concept of emotional intelligence (EI) was modernized by Mayer and Salovey (1997), who described it as the relation of emotion and cognition within actions. Developing on the work of other scholars, Goleman (1995) popularized EI through the lens of performance and leadership within employment settings. Goleman's theory of EI provides a framework that describes six skills: self-awareness, self-motivation, empathy, interpersonal skills (e.g., communication), leadership, and emotion management. According to Mayer and Salovey (1997), individuals with higher levels of EI may have greater self-awareness of their own emotions and the emotions of others. This awareness of emotion in self and others may contribute to improved regulation of emotions and affect (Mayer & Salovey, 1997). As part of the technical standards of the MLS program, demonstrating affective and professional skills, such as having situational awareness and maintaining professional composure, is expected of students throughout program coursework. Furthermore, the affective and professional skills described in the technical standards are emphasized to MLS students as important skills for their success as MLS professionals as they enter the workforce within the clinical laboratory.

The skills that Goleman (1995) described in EI theory are important and required skills for MLS students to demonstrate as part of program technical standards that will support their employability and delivery of quality patient care. Additionally, the

program technical standards required of students encompass the six skills described by Goleman. Price (2015) emphasized the significance and need for increased EI and affective skills within MLS by noting study findings showing agreement among medical laboratory administrators concerning the need for high EI and affective skills within the MLS professionals they employ. Goleman's model of EI theory was used in this study because of its relevance to the investigation of which activities and experiences support MLS students' affective development during program coursework.

When incorporating Goleman's (1995) EI theory into this study, there were assumptions and limitations that needed to be contemplated. One assumption of EI theory is that individuals are able to develop EI (Emmerling & Goleman, 2003). When considering whether EI should be assessed, there is some controversy among scholars due to the philosophical view that considers emotions as challenging to predict, irrational, or something that should be suppressed (Emmerling & Goleman, 2003). To minimize issues related to the assumptions and limitations of EI theory, I collected qualitative data from the perspective of the students to determine which activities and experiences were most effective in supporting their affective development in this study. Although I didn't directly measure EI development, I focused on the activities and experiences that students identified as contributing to their affective domain development during MLS program coursework in this study.

<div align="center">**Literature Review of Key Components**</div>

For a literature review on MLS students' affective development, I explored several areas, including affective domain development, performance and the affective

domain, graduate employability, teaching for affective domain development, as well as student perceptions of affective domain development. Each of these areas is investigated and discussed throughout the next several sections within the literature review.

Affective Domain Development

Students in health profession programs, such as MLS, demonstrate their cognitive and psychomotor skills through the application of their knowledge and skills. However, the affective domain skills and professionalism of students are just as important (Krause, 2016). Learning in the affective domain is closely related to the development of professionalism in health care professions (Rogers et al., 2018). One of the most prevalent and known taxonomies of the affective domain was developed by Krathwohl et al. (1964), who described the affective domain across a range of five levels that included receiving, responding, valuing, organization, and characterizing. The incorporation of affective domain components in health care programs is important to support the development of attitudes, values, and behaviors that are critical for professional practice.

A variety of learning experiences and curricular components may influence student affective domain development. Incorporation of affective domain components in coursework is described as positively influencing the development of communication, self-awareness, leadership, and professionalism (Chaieb et al., 2018; Maxwell et al., 2016), as well as empathy (Jones-Schenk, 2016) in future caregivers. Ratka (2018) found that empathy acts as a catalyst for affective skill and professional development in the discipline of pharmacy. Additionally, the empathy of health care providers is key to patient satisfaction (Ratka, 2018; Stephany, 2014). Price (2015) noted that even the

lowest rated skill needed for success as an MLS by laboratory administrators was empathy, which was still rated as highly important and a desirable quality for MLS employees. Researchers agree that further study is needed to identify activities that offer opportunity for the development of empathy and self-awareness (Foster et al., 2015; Larin et al., 2014). Illuminating what affective development learning experiences MLS students feel are most beneficial may provide insights for curricular changes to enrich students' affective development during program coursework, leading to improved graduate employability (Bandaranaike & Willison, 2015) and quality of patient care (Ratka, 2018). Successful affective domain learning comes when students are highly motivated (Donlan, 2018; Theall & Graham, 2017). Health professional programs, such as MLS, need to identify curricular components and experiences that help students develop their affective domain while also supporting their motivation through engagement and keeping their interest.

Several studies have identified activities and experiences that influence affective domain development, including interprofessional experiences, contemplative activities, and placing a focus on improving student self-awareness, self-perception, and self-confidence. Interprofessional experiences within the health care curriculum have been shown to influence affective domain development and improve collaboration between different members of the healthcare team (Donlan, 2018; Stephens & Ormandy, 2018; Varpio et al., 2017). Contemplative activities, such as reflective practices like journaling, present evidence of improved student awareness and are supportive of affective domain development (Fiske, 2017; Maxwell et al., 2016). In many health profession programs,

such as pharmacy and MLS, self-awareness is an important component that students are expected to develop in order to achieve programmatic outcomes. Maxwell et al. (2016) found that the use of one assessment tool called the Birkman Method Assessment provided a standard and validated mechanism to evaluate student self-awareness, self-perception, and self-confidence. This may be a beneficial approach for MLS programs to evaluate students' affective domain, specifically related to self-awareness, self-confidence, and self-perception.

The tools to evaluate affective domain development need to be considered during program evaluation or curriculum development. The clinical practicum or clinical rotations, typically occurring towards the end of health science programs, is where preceptors evaluate student performance related to their cognitive, psychomotor, and affective domains (Rusch et al., 2019). In a study of senior pre-licensure nursing students, the preceptors evaluated student readiness for practice during the clinical experience (Rusch et al., 2019). During this assessment, experienced nursing preceptors evaluated their student nurse on 33 total items based on a five-point Likert scale where 29 items were focused on the affective, psychomotor, and cognitive domains, while the final four items evaluated each student nurse's overall confidence, competence, safe care delivery, and readiness (Rusch et al., 2019). Rusch et al. (2019) revealed that the affective domain items had the highest mean rating in comparison to the cognitive and psychomotor domain items. The affective domain top five items rated by the nursing preceptors included: performs as a team player, professional and ethical behavior, taking responsibility for their practice, bedside presence, and delivering culturally competent

care (Rusch et al., 2019). MLS programs may utilize various evaluation tools to evaluate student affective domain development prior to, throughout, and following clinical experiences from multiple perspectives including a self, instructor, and preceptor assessments. However, there is no literature regarding the assessment of MLS students' affective development.

Performance and Affective Domain Development

Behaviors and skills within the affective domain are important for quality of patient care and performance of health care professionals, such as MLS professionals. Affective domain development in health programs, such as MLS programs, is comprised of the skills, behaviors, and values that are important for effective practice. Russell-Babin (2017) explained that following evidence-based practice is critical for effective patient care and begins with the internalization of professional values. Examples of these critical skills that have been correlated to the performance of healthcare workers are EI (Codier & Codier, 2017) and empathy (Ratke, 2018). Evidently, there are multiple skills and behaviors within the affective domain that are important for health science students to develop during their program and throughout their career that have a connection to performance.

One important component of affective domain development that has been shown to support the performance in health care workers is EI. Price (2015) emphasized the importance of emotional intelligence training and affective skill development required for successful performance of MLS professionals within the clinical laboratory. Medical laboratory administrators demonstrated a significant level of agreement of the importance

of MLS professionals they employ needing high levels of EI and affective skills to successfully work within the clinical laboratory (Price, 2015). In nursing, having higher EI has been shown to improve quality and patient-centered care (Codier & Codier, 2017). Ratka described (2018) a positive correlation between patient satisfaction and outcomes, and the empathy of their health care providers. In addition to the benefits to patient care, having higher EI may be a critical component of teamwork and collaboration, which is important in health care and providing quality patient-centered care (Codier & Codier, 2017). The Institute of Medicine (2000) provided several examples of how to reduce errors in health care, citing that improvement of teamwork including communication among the various members of the health care team is necessary. All of these abilities are important for the success of an MLS professional to provide quality patient care and having a higher level of EI may benefit health care workers who are at risk of burnout and stress.

Enns et al. (2018) revealed that EI is a correlate of stress. Health professionals face risk factors of stress and burnout due to the high demands in healthcare settings to improve the health or save the lives of their patients, which may lead to diminished quality of patient care (Kreitzer & Klatt, 2017). The Institute of Medicine (2000) studied conditions that create errors within health care and found that there are several approaches to reduce errors including having appropriate equipment, reasonable work schedules for health care workers, clear understanding of acceptable and unacceptable performance, and a competent workforce. As the third largest group of health care professionals, MLS professionals are facing several challenges including a workforce

shortage and increased demand of laboratory services. Because of these challenges, laboratory professionals are at risk of increased burnout and stress.

Within the literature, several studies explored how to reduce burnout and stress among health care workers. Two documented strategies for decreasing stress and burnout include having higher levels of EI (Enns et al., 2018) and cultivating resiliency (Kreitzer & Klatt, 2017). Higher levels of EI may reduce burnout and stress of health care professionals (Enns et al., 2018). It is recommended that an emphasis be placed on health care provider wellbeing and resiliency, along with the incorporation of EI training beginning in the college years (Kreitzer & Klatt, 2017; Price, 2015). Many of the skills and attributes that make an MLS professional successful, such as high levels of EI, are in the affective domain. Therefore, it is important that these skills and competencies are incorporated and assessed during the MLS program. Affective development of MLS students during program coursework is critical to prepare them to enter the workforce successfully, provide quality patient care, and prepare them to manage stress in the workplace.

Educating for Affective Domain Development

Affective skill and behavior development may begin or continue during MLS program coursework depending on the activities and experiences incorporated into the education program. Affective skills, or soft skills, are important for the future success of graduates (Donlan, 2018; Price, 2015; Rusch et al., 2019). Yet, they are challenging to incorporate into the curriculum and difficult to assess due to a variety of reasons (Chaieb et al., 2018; Hora et al., 2018; Listopad, 2018; Nortje & Hoffmann, 2018; Rogers et al.,

2017; Rogers et al., 2017; Santee et al., 2019; Varpio et al., 2017). There are a multitude of documented reasons why affective, or soft, skills are difficult to incorporate into the curriculum and evaluate including: ongoing development during and beyond education program training (Chaieb et al., 2018), varied perspectives on which skills or behaviors to incorporate and assess during the curricula (Hora et al., 2018; Santee et al., 2019), along with conflicting views on whether affective skills should be evaluated because of the deep connections to personality traits and values (Rogers et al., 2017). Educating for student affective domain development during higher education programs has been a developing topic in the literature.

My literature search revealed differing perspectives about the integration and assessment of affective domain in postsecondary programs. One of the reasons affective skill and behavior assessment may be challenging is because many affective skills and professional behaviors continue to develop throughout one's career (Chaieb et al., 2018). Because of this ongoing development, affective skills may be difficult to assess during an academic program when a student's professional development is just beginning (Chaieb et al., 2018). Many scholars recognize the complexity of educating and assessing affective domain development (Hora et al., 2018; Listopad, 2018; Santee et al., 2019). There are varying perspectives on which skills or behaviors should be incorporated and assessed in curriculum as they may vary by institution, program, or geographic location (Hora et al., 2018; Santee et al., 2019). Rogers et al. (2017) argued that it may be inappropriate to assess affective domain development because it is deeply rooted in a student's personal behavior and values. Despite these arguments, the further study of

affective skill development during health profession program coursework is important to understand how to improve graduate employability and ability to provide effective and quality patient care as part of the health care team.

Many researchers recognize the complexity of integrating and assessing affective domain development into program coursework for a variety of reasons. Listopad (2018) described the incorporation and assessment of affective skills as challenging because many of the affective skills and behaviors are considered 'innate' and may require behavioral changes that vary from student to student. Many scholars contended that affective domain development is arduous to incorporate and assess in the curriculum because there is a general lack of consensus and standardization of which skills should be included and how they should be assessed (Hora et al., 2018; Rogers et al., 2017; Santee et al., 2019; Varpio et al., 2017). Further research is critical to investigate the potential of standardizing which affective skills are relevant to laboratory professionals, which activities and experiences are beneficial to support affective domain development of MLS students, and to evaluate effective mechanisms for assessment of affective domain development among MLS students.

Throughout the literature, there are varied perspectives related to when and how programs should focus on affective domain development. Donlan (2018) contended that health profession programs should focus on the process of affective skills development versus the outcome to support meaningful learning in the affective domain. Recognizing the complexity of evaluating affective domain development, Wu et al. (2019) used a qualitative approach to examine student affective development by analyzing student

writing. Through interviews with students, the researchers found that course design had a significant impact on student affective development (Wu et al., 2019). This is an important consideration as it not only matters what activities and experiences are incorporated and the timing of those activities and experiences, but also how they are designed and delivered.

When considering the integration of affective domain competencies into health profession education programs, many factors need to be considered. Some of these factors include instructor approach, feedback provided to students, and teaching strategies employed (Donlan, 2018). Hora et al. (2019) suggested that affective domain or soft skills, such as communication, cannot be evaluated independent of other affective domain skills because they are related; and multiple skills may be employed depending on the situation. Incorporation of activities and experiences intended to support or influence student affective domain development need to be thoughtfully considered and planned to ensure the implementation and assessment are aligned and reliable.

When teaching for affective development, the intentions of activities or experiences to support affective and professional development need to be thoughtfully contemplated and clearly communicated to students. Keeping curricular intentions 'hidden' may diminish student development (Jones, Millar, & Chuck, 2019) or may have a negative impact on student development because of the lack of standardization of the hidden curriculum (Bandini et al., 2017). Integration of strategies throughout coursework is necessary to help students develop their affective domain in terms of professional values and attitudes into their practice, but it is often only incorporated towards the end of

a program (Theall & Graham, 2017). By waiting until the end of a program to integrate affective domain development, it limits the ability of students to practice these important skills throughout their program and reduces the period of time to evaluate student development in these areas.

There are varying perspectives regarding when and how affective domain development should be incorporated and assessed during program coursework. Many scholars recognized the complexity of incorporating and assessing affective domain development into the curriculum (Chaieb et al., 2018; Hora et al., 2018; Listopad, 2018; Nortje & Hoffmann, 2018; Price, 2015; Rogers, Mey, et al., 2017; Rogers, Thistelthwaite, et al., 2017; Varpio et al., 2017). Assimilating affective domain skills and practice throughout the curriculum, these skills can be associated to related cognitive skills (such as critical thinking and problem solving) and built upon as students' progress in their program. The integration of affective domain skill development into the curriculum may require consideration about how to improve students' situational awareness and their ability to read or interpret a situation so they can respond appropriately (Hora et al., 2019). It is important to note that the incorporation of EI training and affective skills development may be challenging within MLS programs due to a curriculum and program that is already very full (Price, 2015). Therefore, MLS programs need to be mindful and considerate of the most important skills for students to develop and which activities and experiences have evidence to support their use for effective affective skill development.

Throughout the literature from different health profession programs, there are several curricular components cited as having a positive influence on student affective

domain development (Donlan, 2018; Fiske, 2017; Hughes et al., 2019; Krautscheid,

2017; Maxwell et al., 2016; Nortje & Hoffmann, 2018; Rogers, Thistlethwaite, et al.,

2017; Varpio et al., 2017). These curricular components include simulation, reflective

journaling, and interprofessional learning activities. In the following sections, each of

these curricular activities will be explored further.

Simulation

Simulation is a role play activity utilized in many health care programs to allow

students to face practice problems in a safe environment. In one study, high-fidelity

simulation was used in a nursing program to provide a safe environment for students to

recognize and confront microethical dilemmas related to clinical practice and patient care

(Krautscheid, 2017). Following the simulation, students were invited to provide a written

reflection about their experience, which showed the benefits of this experience in

improving their ability to apply and employ their affective domain skills when

confronting ethical issues in the clinical environment (Krautscheid, 2017). In another

study utilizing simulation, students reflected on their experience in differing roles during

a simulation involving bullying in nursing practice and the data were coded and

categorized according to personal, nonverbal communication exhibited, actions taken by

participants, and the perceived impact of bullying (Ulrich et al., 2017). Ulrich et al.

(2017) confirmed that simulation and role play activities can mimic real-life events to a

great extent and do evoke authentic affective responses from student participants. Support

of the authenticity and value of the experience necessitates that educators present and

prepare the simulation to be based on a realistic and relevant scenario (Ulrich et al.,

2017). Simulation may be a valuable tool to incorporate into the MLS program to provide a safe environment for student affective domain development.

Reflective Journaling

Reflective journaling during higher education programs is described as an effective curricular component throughout the literature that is utilized by many health profession programs to support affective learning and professional development. As a curricular component, reflective journaling allows for student development and assessment of affective learning (Donlan, 2018; Fiske, 2017; Hughes et al., 2019; Maxwell et al., 2016; Nortje & Hoffmann, 2018; Rogers, Mey, et al., 2017). Nortje & Hoffmann (2018) recommended the incorporation of reflective practices into health science curricula to help students develop their professionalism instead of simply teaching a list of what students should or should not do to be considered a professional. Interprofessional learning activities allow health profession students from different programs to learn from one another and improve their communication and collaboration (Stephen & Ormandy, 2018). Being able to apply prior knowledge to new situations and problems is a quality many employers value; however, some may not have the confidence or skill to be able to do so (Sinclair, 2017). In their study to improve student confidence and apply prior knowledge to new challenges, Sinclair (2017) found that there was increase in the quantity of bioscience students reporting of a high confidence level with selected employability skills including communication, problem solving, demonstrating initiative, working under pressure, organization skills, teamwork skills, and the ability to learn and adapt (Sinclair, 2017). These skills and abilities align with the MLS program

technical standards and are important for MLS graduate success as they enter the workforce.

Interprofessional Learning Activities

There is growing literature related to increased effort to provide interprofessional learning experiences in health science higher education programs (Rogers, Thistlethwaite, et al., 2017; Varpio et al., 2017). According to Varpio et al. (2017), there are documented positive effects on patient care and safety from interprofessional learning experiences. Additionally, interprofessional learning experiences were shown to help build student capacity for teamwork, collaboration, and interprofessional communication (Varpio et al., 2017). However, there are varying perspectives on the best ways to deliver these activities and experiences and the complexities of assessing student performance in these situations (Rogers Thistlethwaite, et al., 2017; Varpio et al., 2017). In health professions education programs, Varpio et al. (2017) recognized that there was a lack of understanding or incorporation of student agency in the curriculum and assessment. Student agency, specifically in terms of student learning, cultivating the student's voice, and increasing engagement during educational activities, should be considered and developed as part of health profession program curriculum (Varpio et al., 2017). Additionally, Rogers, Thistlethwaite, et al. (2017) focused on the importance of interprofessional education and its correlation to affective domain development in health profession programs. Incorporating interprofessional activities to develop collaborative practice among health care students is beneficial in improving patient care and safety (Rogers, Thistlethwaite, et al., 2017). The university and MLS program used in this study

were involved in a course utilizing interprofessional learning experiences to foster

teamwork and collaboration skills in the hopes that they will continue beyond graduation

in the clinical setting.

While there is evidence in the literature that interprofessional learning experiences

are beneficial to patient care and affective development, there are a variety of methods

for integrating these activities within health care programs (Rogers, Thistlethwaite, et al.,

2017; West et al., 2016). Despite these differing views, there is consensus related to the

complexity and challenge of assessing student affective performance in these activities

and experiences (Rogers, Thistlethwaite, et al., 2017; Varpio et al., 2017). Consensus

about the processes and procedures related to student affective performance across

academic, professional, and regulatory bodies is needed (Rogers, Thistlethwaite, et al.,

2017). Further research is needed to determine whether standardization of assessment and

evaluation of activities and experiences for affective domain development is possible.

Student Perceptions of Affective Domain Development

In the literature, there are a variety of approaches for exploring student

perceptions related to affective domain development and the related area of employability

including analysis of reflective journals, self-reporting, as well as interviews and focus

groups. Nortje and Hoffmann (2018) explored radiography student perceptions of

professional development through a questionnaire that investigated student understanding

of professionalism, student perceptions of a professional in their field of study, student

perspective of the factors that influence professional development, as well as educational

components that could be integrated to support radiographer student professional

development. Through their study, Nortje and Hoffmann (2018) found that students had a strong understanding of the meaning of professionalism, the attributes of a professional in their field, as well as finding a clear distinction between the influence of formal and hidden curricular within their education program. In their investigation of student self-reporting following learning activities shown to stimulate affective domain development, Stephens and Ormandy (2019) demonstrated that Epstein's framework is an effective tool to measure the degree of affective domain development of nursing student values, attitudes, and beliefs based on their responses to open-ended interview questions relating to their engagement in activities and experiences known to stimulate affective domain development, such as attending a professional conference, clinical experience in an acute care setting, and working with other cultures. Exploring student perceptions may yield more meaningful recommendations of what curricular components and experiences have the greatest impact on student affective domain development during their health profession program.

Other mechanisms for exploring student perceptions in the literature include the use of focus groups and interviewing. Jorre de St Jorre and Oliver (2018) led focus groups to gain an understanding of student perceptions related to graduate outcomes. The study results revealed that students had many ideas on how to make graduate outcomes more meaningful to students, such as providing opportunities to hear from potential employers. Krautscheid (2017) invited students to complete a reflection writing exercise to gather their perceptions of the simulation experience in which they participated. In their analysis of the students' written reflections, Krautscheid (2017) discerned that after

the simulation experience, students had improved confidence about recognizing and confronting ethical dilemmas in the clinical setting. Investigating student perceptions is helpful to understand what is valued by the students and how to improve their learning and development. In addition to understanding student perceptions, it may be beneficial to also investigate faculty perceptions at the same time.

Some researchers have explored faculty and student perceptions simultaneously. One example is a study conducted by Pizanis and Pizanis (2019) where a triangulated approach was utilized to collect data through an electronic survey, one-on-one interviews, and focus groups. This allowed for strengthening of their study data to identify effective and ineffective traits of clinical instructors in dental hygiene education (Pizanis & Pizanis, 2019). In their study, Pizanis and Pizanis (2019) unearthed three core themes including affective, expertise-related, and pedagogical. Under each of these themes, multiple effective (26 total) and ineffective (23 total) qualities and characteristics of clinical instructors were categorized. The identified effective qualities and characteristics of clinical instructors that were categorized under the affective theme included: approachable, attentive, empathetic, good rapport with students, invested in student success, motivating, patient, positive personality characteristics, respectful, and sympathetic (Pizanis & Pizanis, 2019). The ineffective qualities and characteristics of clinical instructors categorized under the affective theme included: disrespectful, impatient, lack of empathy, lack of investment in teaching, lack of sympathy, negative personality characteristics, and unapproachable (Pizanis & Pizanis, 2019). While these qualities and characteristics are related to clinical instructors for dental hygiene

education, they are very similar to the affective domain skills as required as part of the technical standards in the MLS program.

Graduate Employability

To alleviate the workforce shortage, it is important that MLS students are employable and ready to enter the workforce following graduation from their accredited program. There has been an ongoing debate in higher education of whether the central mission of higher education should be graduates' employability (Wolff & Booth, 2017). Kinash et al. (2016) described 12 behaviors, actions, and experiences that are recommended to help improve graduate employability and readiness to enter the workforce including: capstone projects, career advice and employment skill development, engaging in extracurricular activities, international exchanges, mentoring, attending networking events, part-time employment, developing graduate portfolio, professional association membership and engagement, social media networking, volunteering and community engagement, as well as work experience through internships. In their study exploring student perceptions of graduate capabilities and outcomes, Jorre de St Jorre and Oliver (2018) found that many students were unaware of their potential for growth of their professional development and employability, and to combat this they suggested increasing student-focused communication and designing effective assessments. Creating opportunities for students to gain better self-awareness may help combat this.

Clear and effective communication is important to help students understand the skills and behaviors they will need to enter the workforce and be successful. In the study conducted by Jorre de St Jorre, et al. (2019), students lack of understanding of the skills

or behaviors that support their employability exposed a gap in the curriculum. To address this gap, they suggested that curriculum needs to incorporate discussion related to potential career paths, the skills and behaviors needed in those career pathways, as well as experiences and activities to help students develop those necessary skills and behaviors (Jorre de St Jorre et al., 2019). A critical skill that supports graduate employment prospects is communication. Hora et al. (2019) suggested that the forms of communication skills may vary based on the work environment or profession, such as empathy and situational awareness being considered more valuable communication skills in health care than engineering. There are many arguments within the literature that prescribe how employability should be approached and considered into higher education.

One such argument scholars articulated is that higher education should primarily focus on employability and preparing students to enter the workforce, others believed that the goals of higher education should help produce graduates that are prepared to succeed as citizens. Colby (2020) argued that higher education should focus on cultivating an individual's purpose and their success as a citizen, which may or may not be related to their profession. Hora et al. (2018) contended that students need to be at the focus of the arguments regarding employability and the purpose of higher education. They discussed that higher education can have a greater impact on the 'soft skill' development of students by taking teacher professionalism and development more seriously (Hora et al., 2018). Producing employable and graduates ready for success requires colleges and universities to recognize the complexity of incorporating affective domain development into their curriculum.

Summary and Conclusions

Throughout the literature review, I found general support for including affective domain and professional development for health science students during program coursework. However, there was a dearth of literature available that specifically discussed affective domain development in MLS students and professionals. Many considerations and support for this study were found including the importance of affective domain development of health care professionals to provide effective patient care (Kadar & Thompson, 2017; Krause, 2016). Another important finding to support the incorporation of affective domain components in the program curriculum is that when they are incorporated, the development of several important skills has been shown to be positively influenced including communication, self-awareness, leadership, and professionalism (Chaieb et al., 2018; Maxwell et al., 2016).

There is consensus among scholars regarding a finding closely related to affective domain development, which is the importance of EI development for health care professionals (Codier & Codier, 2017; Price, 2015). Goleman's (1995) theory of EI was selected as part of the theoretical foundation for this study because the skills described in Goleman's framework are some of the many skills and behaviors described by the technical standards required of MLS students throughout their program coursework. Affective domain skills and behaviors need to be incorporated during program coursework because they are important for desired performance of health care professionals and have an impact on their ability to provide effective patient care.

While there is agreement regarding the importance of affective domain development, varying perspectives on the methods and timing of affective domain development during academic programs were uncovered. Many scholars described the challenges involved when including affective, or soft, skills into program curriculum and the difficulty faced during assessment due to a multitude of reasons (Hora, Benbow, & Smolarek, 2018; Listopad, 2018; Santee et al., 2019). Despite these varying reasons, scholars are supportive of the incorporation of affective domain development and various studies describe methods to incorporate into the curriculum including simulation (Krautscheid, 2017; Ulrich et al., 2017), reflective journaling (Donlan, 2018; Fiske, 2017; Hughes et al., 2019; Maxwell et al., 2016; Nortje & Hoffmann, 2018; Rogers, Mey, et al., 2017), and interprofessional learning activities (Rogers, Thistlethwaite, et al., 2017; Varpio et al., 2017). Further research is needed to identify which program learning activities and experiences MLS students perceive as valuable and useful to support their affective development during program coursework.

To support the exploration of which program learning activities and experiences are valuable for the affective domain development of MLS students, it is important to consider how the various factors may affect student learning. Evaluating the behavioral, cognitive, and environmental factors will help determine how student learning is influenced (Bandura, 1991). Student learning, including in the affective domain, may be influenced by modeling of behaviors, motivation to learn, and self-efficacy. To provide a foundation to research the activities and experiences students perceive as supporting their affective domain development, the social cognitive theory helped lay the groundwork to

investigate which factors (environmental, social, cognitive), and program learning activities and experiences were supportive to student affective development during the MLS program coursework.

A clear gap in the literature was found related to which learning activities and experiences are valuable for student affective development during program coursework. Furthermore, I found no available studies on this research topic from the perspective of the MLS student. The findings of this study contribute to the literature and help fill the gap by exploring how MLS students perceive the value and usefulness of program learning activities and experiences to support their affective domain development during program coursework. The results from this study may help inform future MLS program curriculum and development that is supportive of student affective development, which may improve graduate employability and delivery of effective patient care. In Chapter 3, I will describe the study design as a basic qualitative study where recent MLS graduates will be interviewed to gather data in order to answer the research question. The interviews will be transcribed and manually coded, categorized, and analyzed for themes.

Chapter 3: Research Method

Introduction

The purpose of my qualitative study was to understand how MLS students perceive the value and usefulness of program learning activities and experiences for their affective development during program coursework. Although multiple studies have addressed affective domain development, including the complexities related to integration into the curriculum and assessment, there is a dearth of literature regarding affective domain development in MLS students during program coursework. Furthermore, there are no available studies in the literature that explored the value of coursework experiences and activities as supporting MLS student affective development during program coursework from the perspective of the student. Understanding which program learning experiences and activities MLS students perceive as the most valuable for their affective development during program coursework may provide insights for future curricular changes to enhance student affective domain development, which may lead to improved graduate employability and quality of patient care.

This chapter consists of five sections that describe the methodology used for this research study. The research design and rationale section includes the research question, central concepts, and the research approach. In the next section, in which I address my role as the researcher, I discuss my role related to data collection and analysis. The methodology section follows and details the data collection procedures, process of participant selection, and data analysis. In the fourth section, which covers issues of trustworthiness, I consider credibility, transferability, dependability, and confirmability.

The final section before the chapter summary addresses ethical procedures related to the study.

Research Design and Rationale

The research question that directed this study was developed based on my experience working within an MLS program, my interactions with other MLS program faculty across the country, the lack of literature on this topic in the discipline of MLS, as well as the foundational theories of EI and social cognition. The research question was the following:

RQ.   How do medical laboratory science students describe their experiences with program learning activities that support their affective development?

Exploring the perceptions of MLS students was integral to understanding the program learning activities and experiences that they found to be the most valuable in supporting their affective domain development. Exploring the students' individual experiences through their words provided information on which program learning activities and experiences were most meaningful to them and may shape future curricular changes to sustain or enhance those activities and experiences for upcoming students. The focus of the study approach was understanding the experiences of the students in terms of the activities and experiences that they identified and interpreted as supporting their individual affective domain development throughout the MLS program.

A basic qualitative study was used to address the gap in the research. This method was applied to collect data related to perceptions of recent graduates regarding the value of their coursework as supporting their affective development, and which learning

activities and experiences were most valuable for their affective domain development during their program coursework. Qualitative research is a method to understand the lived experiences of individuals (Ravitch & Carl, 2016). With this approach, the exploration of MLS student perceptions in the bounds of their affective development during MLS coursework was possible.

Role of the Researcher

My role as the researcher was to recruit participants and interview them to collect data related to their perceptions of their affective domain development while they were students in the MLS program, along with the activities and experiences that they found most valuable for their affective domain development during the MLS program. Additionally, my role as the researcher included analyzing the data for themes through manual open coding. Permission to conduct this study was sought from the Institutional Review Board (IRB) at Walden (05-12-21-0311916) and the university of the MLS program (STUDY00012509) prior to approaching participants. Prior to IRB submission, I received confirmation from the MLS program director that she would forward my invitation to participate in this study to the potential participants who graduated from the years 2018, 2019, or 2020 from the MLS program. Once IRB approval was received, I emailed my invitation to participate to the MLS program director, who then forwarded the invitation to potential participants via email. The participants recruited for this study included graduates from the MLS program who graduated in the year 2018, 2019, or 2020 at a university located in the Midwest. These graduates were previous students of the MLS program who graduated between the years 2018 and 2020 and started their

careers as MLS professionals. I had worked as the clinical experience coordinator for the

MLS program since 2015; in this capacity, I had worked with each potential participant

during their time in the MLS program. My interaction with each participant during their

time as a student in the MLS program involved scheduling their clinical experience

rotations and verifying their completion of the clinical experience course requirements

during their final semester in the MLS program. Because all of the participants had

graduated, I no longer had any relationship or contact with this group of potential

participants. Therefore, I had no power or authority dynamic with these MLS program

graduates. I collected the data for the study in the form of interviews and narratives from

the perspective of each participant and analyzed those data.

For this study, all recruited participants were graduates of the MLS program at the

university where I was currently employed. I had been employed by the university and

MLS program where I conducted this study since 2015. Because of my employment

history with the university and MLS program, I had previous contact with each

participant as an instructor and as the clinical coordinator during their time in the MLS

program. My role within the MLS program was as an instructor and clinical coordinator,

and my interactions with the students and potential participants for this study included

scheduling each student's clinical experience rotations and verifying their completion of

the clinical experience course requirements during their final semester in the MLS

program. Although I had previously worked with each potential participant during their

time in the MLS program during coursework, I had not had any contact or relationship

with them since they had graduated. Therefore, I had no authority or power over this group of participants.

During 2018, 2019, and 2020, I interacted with each MLS program student as I scheduled clinical experience rotations during their final semester prior to graduation, in addition to verifying their completion of the clinical experience course requirements during their final semester in the MLS program. As the instructor and clinical coordinator who oversaw the clinical experience courses during 2018, 2019, and 2020, I may have also interacted with potential participants if they required remediation due to performance issues during their clinical experience rotations. Because of the previous connection I had with potential participants during their final semester in the MLS program prior to graduation, I took extra measures to ensure that they were comfortable being open and honest during the interview process by providing information about how the data collected from the study would be used and stating that their participation, along with their responses and information, would remain anonymous. To help manage any power dynamics from my previous relationship as the faculty member who scheduled their clinical experience rotations and verified the clinical experience course requirements during their final semester in the program, I took measures to define my role as a researcher to each participant at the start of each interview. Additionally, I assured each participant that I was there to hear their honest and authentic experiences to learn from them.

In addition to creating an atmosphere that would help participants feel comfortable sharing their experiences with me, it was important for me to be aware of my

biases and assumptions, as well as take measures to ensure that they did not interfere with my data collection or analysis. Prior to the data collection and analysis, it was critical that I examine my own opinions and biases to ensure that they did not interfere with having open and nonjudgmental communication with each participant during the interview (Ravitch & Carl, 2016). One measure I took was to be aware of and examine my own opinions and biases regarding the activities and experiences that I felt best supported student affective domain development during program coursework based on my own experiences as a faculty member and past MLS student. Additionally, it was important to ensure that I did not impose my biases, judgements, or opinions during the interview through verbal or nonverbal communication.

Methodology

In this section, I discuss the participant selection logic, instrumentation, and the procedures for recruitment, participation, and data collection for this qualitative study. Additionally, this section addresses the data analysis plan that followed once data collection was complete. This section concludes with a discussion of issues of trustworthiness related to the study and how those issues were addressed to ensure credibility, transferability, dependability, and confirmability.

Participant Selection Logic

The study took place at a public university in the Midwest that had an MLS program. This MLS program consisted of undergraduate, certificate (postbaccalaureate), and graduate students. There were approximately 90 total students enrolled in the MLS program each year who were divided into two cohorts. The two cohorts were referred to

as junior (foundation and prerequisite coursework) and senior (professional MLS coursework) students. The sample from this study consisted of recent graduates of the MLS program who had completed the final year (senior) and graduated during the years 2018, 2019, or 2020, a group that consisted of approximately 40 students each year. The data were collected from interviews with 12 recent graduates who were recruited through purposive sampling.

Purposive sampling allowed for the intentional selection of participants who were graduates from the MLS program where the study took place. These participants had the experience and were able to provide narratives that were closely related to the context and subject of the research question (Ravitch & Carl, 2016). For my study, purposive sampling was the most appropriate and logical sampling strategy because it allowed for the selection of participants with experiences that would help to answer the research question (Patton, 2015). MLS graduates had the ability to refer back to their experiences to identify the program learning activities and experiences that they perceived as supportive of their affective domain development while they were students in the program.

There were two criteria that participants needed to have met to be selected for the study:

1. Participants needed to have graduated from the MLS program within the past 3 years (2018-2020).

2. Participants needed to have begun employment as an MLS in a laboratory following graduation.

Once IRB approval was received, I sent my email invitation, which included the participation criteria, to the MLS program director, who confirmed that she was willing to forward the invitation to participate in this research study to MLS program graduates who graduated during the years 2018, 2019, and 2020.

This was a basic qualitative study to explore perceptions related to affective domain development during program coursework among MLS students who had graduated. To gather varying perspectives from different graduates of the MLS program, 12 participants were recruited and interviewed to achieve saturation in the data. Saturation was defined by Ravitch and Carl (2016) as the point where there is a stop to any new or relevant information emerging during data collection procedures. For qualitative research, there are no defined guidelines or procedures for participant recruitment and the level where saturation is achieved (Guest et al., 2006). This may be due to the fact that saturation is dependent on the type and scope of each individual study. In their qualitative study, Guest et al. (2006) completed six participant interviews followed by immediate coding and repeated this process several more times to investigate how many interviews were enough to achieve saturation. For this exploratory basic qualitative study, my goal was to recruit and interview eight to 14 participants who met the defined criteria. Each year, the MLS graduating class consists of about 40 students; thus, by recruiting and interviewing eight to 14 participants, I achieved a sample size of approximately 20-35% of a graduating class and a solid representation of participant experiences to reach saturation.

Instrumentation

The primary instrument used in the study was semistructured interviews with a researcher-produced interview protocol (see Appendix) containing open-ended questions and follow-up questions that aligned with the research question and the framework for this study. Interviews in qualitative research allow for a view into someone's life and perspective, so that it is possible to understand the diversity of each participant's lived experiences (Patton, 2015). As the researcher, I developed the interview guide and sent it to my dissertation committee for review as a validity check prior to data collection. Additionally, the interview guide was practiced prior to data collection. The use of a researcher-produced interview guide provided a tool for consistency throughout the interviews, allowed for more systematic data collection, and helped to minimize any interviewer effects (Patton, 2015). This allowed for a conversational and semistructured interview approach to help with comparing responses between the different participants (Patton, 2015). Each interview was recorded and transcribed for data analysis.

Procedures for Recruitment, Participation, and Data Collection

After approval from the IRBs of both the university with the MLS program (STUDY00012509) from which participants were recruited and Walden University (05-12-21-0311916), the recruitment process was initiated. The interview protocol that I developed included details of the sequence of events from participant recruitment through data collection (see Appendix). My email invitation to participants was forwarded by the university to individuals who graduated from the MLS program between the years of 2018 and 2020 with a goal to recruit eight to 14 participants. The email to each

participant included a brief description of the purpose of the research study and two screening questions, along with my contact information. The screening questions were included in the email invitation to verify that the criteria to participate were met, including the following: The participant was a graduate of the MLS program from the years 2018-2020, and the participant had started an MLS professional role in a laboratory following graduation.

Once a response from a participant was received via email, I verified that they met the criteria to participate. If the potential participant did not meet the criteria, I acknowledged and indicated my gratitude for their willingness to participate, while notifying them that they did not qualify for the study based on the criteria. When a participant responded to the email and met the criteria, I confirmed their eligibility to participate in the study, requested their contact information, and answered any questions they had. I then sent the informed consent for the study to each participant and asked them to review and complete the form and then return it by email.

Once participants agreed to participate in the study, I provided a description of the scope of the study and obtained their informed consent. Once each participant completed the informed consent form and returned it by email, I worked with them to arrange an interview time that was convenient with their schedule. Interviews were conducted via Zoom web conferencing at a date and time that was convenient to the participant's schedule. Interviews were scheduled for 60 minutes to allow for enough time to ask the questions contained in the interview guide and allow for additional time for any follow-up questions. Participants were encouraged to complete the interview in a location that

was comfortable, quiet, and free of distractions. As the researcher, I conducted each interview in a locked, private, and quiet room that was free of distractions to ensure that I was able to dedicate my full attention to the interview of each participant and ensure privacy during the interview. The audio from each Zoom web conference interview session was recorded. After completion of each interview, the Zoom web conference audio file was uploaded to Microsoft 365 Word transcription software for a transcription that was used in data analysis. All data collected in each interview, including the participant's perceptions and experiences, were included without bias or discrimination.

At the start of each interview, I reiterated my role as a researcher and PhD student. I explained the purpose of the study, process for the interview, and that the participant's permission had been received to record the interview. I reviewed the privacy and confidentiality information of the study with each participant, along with the use of coded numbers. I then proceeded with my interview questions as outlined in my interview guide. At the conclusion of the interview, I notified each participant that their transcript will be sent to them for review via email and I asked that they review, clarify, and provide any additional information to ensure I understood their authentic experiences and perceptions. Finally, I expressed my verbal gratitude to each participant for their time and participation. I sent a follow-up email after the interview is complete to express my appreciation for their time and participation. Lastly, I contacted participants and stakeholders via email to share the findings of this study upon its completion.

Data Analysis Plan

Exploring recent MLS graduate perceptions of their affective development in program coursework through the thematic analysis of their interview responses is aligned with the qualitative nature and conceptual framework of this study. The collection of data from the perspective of the MLS student regarding their affective domain development during program coursework was expected to be informed by the social cognitive theory and EI theory.

The data collected through this study was analyzed through thematic coding to gain understanding of MLS students' perceptions related to their affective development. Data were analyzed using manual coding, followed by categorization of codes, then analyzing for themes. An unbiased position was prioritized when reviewing the students' interview responses and analyzing the data. Each interview transcript was reviewed and coded. Once each interview had been coded, I began to combine, group, and possibly delete, some codes to ensure alignment with my research question and theoretical foundation. Throughout the grouping of codes, themes were identified and defined. I took time to consider any similarities, overlaps, or disagreements and what that told me about the data. I frequently referred to the research question and theoretical foundation throughout the thematic analysis. I revisited the data and re-coded it using the themes identified, which helped identify what may be missing and allowed for the generation of any subthemes, as suggested by Ravitch and Carl (2016). Throughout the data analysis process of thematic coding, I wrote memos to help me keep record of themes and understand any emerging learning from the data.

Issues of Trustworthiness

There are several issues of trustworthiness that need to be addressed in qualitative research including the study's credibility, transferability, dependability, and confirmability. Trustworthiness, sometimes referred to as validity, needs to be addressed by researchers to ensure that the participants lived experiences and perceptions are accurately and authentically represented (Ravitch & Carl, 2016). To address issues of trustworthiness, several methods were employed in this study including credibility, transferability, dependability, and confirmability.

Credibility

To establish internal validity of the study, several methods were used including descriptive, interpretative, and theoretical validity. To ensure the accuracy of the data, a method of descriptive validity was employed to ensure the line of questioning was similar between participants by utilizing a prepared interview guide, as well as making certain that data were accurately recorded and transcribed to maintain the true and authentic experiences and perceptions of the participants are captured (Ravitch & Carl, 2016). The data collected during participant interviews was recorded using a web conferencing software called Zoom. The recording from each Zoom interview was uploaded to Microsoft 365 Word transcription software, which transcribed the audio recordings. I reviewed each participant interview audio recording transcription to verify every interview was transcribed accurately. This helped ensure descriptive validity and factual accuracy of the data collected.

To help ensure the participants' experiences and perceptions were authentically represented in the data and interpretation, a method of data verification was used. To ensure accuracy of the data, each participant was asked to review the transcript from their interview to verify their words were consistent with what they actually meant in relation to each question (Shenton, 2004). This was accomplished by sending each participant their transcript via email along with instructions asking them to review for accuracy and consistency with what they intended to communicate for each question. The language used in the data analysis stage of this study was emic and used participants' organic language whenever possible to limit language introduced by the researcher that was not used by the participants. This helped ensure the participants' narratives were genuinely represented during data analysis and interpretation.

The final step to ensure credibility of the study was to use theoretical validity. This was accomplished by exploring the relationship and interpretations from the data to the EI and social cognitive theory that provided the theoretical foundation for this study. The social cognitive and EI theories informed the data collection and analysis during this study. This supported the data interpretations by using the theoretical framework of the study to explain the findings.

Transferability

Transferability in qualitative research was achieved by providing interpretations and information about the study in context and with thick description. When a study is thoroughly described including the study setting, participants, and related experiences, then others may determine if the study findings are transferable to their setting or

participants (Ravitch & Carl, 2016). During my study, I provided thick descriptions that thoroughly described the research setting, participants, and data collection procedures to provide an accurate picture and context of the study. From my thick description of the study, other MLS programs and possibly allied health programs may be able to apply the data collection and method of my study to their participants or setting.

Dependability

To achieve dependability of this study, an interview guide was drafted that created a line of questioning that helped collect data to answer the research question. Additionally, the data collection plan had been formed to ensure there was a reasonable argument for the purpose of the study and the research question. The processes of the study were reported in detail to ensure that the methods and procedures were clear and could be reproduced. Triangulation in the form of multiple data sources including interviews with each of multiple participants was also employed, which will further support the dependability of this study.

Confirmability

To help secure the confirmability of the study, reflexivity was structured throughout the study to systematically and critically assess my own biases, interpretations, reflections, and processes. This helped with ensuring the study was complex and ethical according to Ravitch and Carl (2016). To accomplish this, an audit trail was maintained to document the steps and decisions made during data analysis to allow for tracing (Shenton, 2004). Another method to help enhance the confirmability of this study was to acknowledge my position as the researcher and former instructor of the

participants. Lastly, I wrote a reflective memo following each participant interview to record my biases and assumptions, along with how they were controlled to not influence the data collected and my interpretations. As the researcher, I have a responsibility to represent the participants' experiences and perceptions authentically.

Ethical Procedures

The approval of the study was sought by two IRB including the institution of the MLS program (STUDY00012509) and Walden University (05-12-21-0311916). In my preliminary ethics review through Walden, I received confirmation from the university of the MLS program that they required I go through their IRB process in addition to Walden's IRB process. Once approval from both institutions was obtained, I began the recruitment of participants. Prior to IRB submission, I received written permission from the MLS program director that they will forward my email invitation to MLS program graduates that graduated during 2018-2020 once IRB approval was received. The participants were selected using purposive sampling and were recruited in an ethical manner. An email was sent to each potential participant with two screening questions, an explanation of the purpose of the study, and my contact information. The participants were notified that their participation in the study was voluntary and that they had the option to withdraw from the research or interview at any time free of penalties or consequences. Prior to interviewing each participant, an informed consent was obtained following the recommendations from the IRB of both Walden University and the university of the MLS program.

To ensure the confidentiality and privacy of research participants, all data were de-identified and coded numbers were be given to each participant during each interview session. Identifying details including name, institution, and details of participant's specific experiences were omitted at all times during the study. All items related to the data including my computer, transcription files, and video/audio interview recordings were password protected at all times and were only be accessible to me as the researcher. If needed, this information was made available to members of my dissertation committee. Following this study, the data will be stored for 5 years and then destroyed.

Summary

The approach for this study was a basic qualitative study with a focus on the exploration of MLS student perceptions of their affective domain development during program coursework. Following IRB approval from both Walden University and the university of the MLS program, potential participants were recruited through purposive sampling from a large Midwestern university that has an MLS program. There was no current contact or relationship with the MLS program graduates, therefore there were no concerns of any power or authority dynamic. For my study, 12 participants each participated in a private 60-minute semistructured interview to collect enough data to achieve saturation. A researcher-produced interview guide was used to collect data from participants. The interview transcripts and questionnaire data were analyzed for themes using manual open coding. Several measures were used to ensure the credibility, transferability, dependability, confirmability, and ethics of this study.

Chapter 4: Results

Introduction

The findings of this basic qualitative study on how MLS students perceive the

usefulness of program coursework activities and experiences that help their affective

domain development are presented in this chapter. The study addressed one research

question. The research question was developed based on the foundational theories of EI

and social cognition, as well as my experience working within an MLS program, my

interactions with other MLS program faculty across the country, and the lack of literature

on this topic in the discipline of MLS. The research question was the following:

RQ. How do medical laboratory science students describe their experiences

with program learning activities that support their affective development?

In Chapter 4, I discuss the setting, demographics, data collection, and data

analysis. Issues of trustworthiness are also addressed, and in the final sections of Chapter

4, the data analysis is described in detail and the results are provided, along with tables

and a figure that represent the results. A summary concludes Chapter 4, along with an

introduction to Chapter 5.

Setting

The study took place virtually due to the ongoing COVID-19 pandemic.

Participants were recent graduates from a public university in the Midwest that had an

MLS program with undergraduate, certificate (postbaccalaureate), and graduate students

who were recruited through purposive sampling. The research invitation was forwarded

to graduates of the university's MLS program who completed the program between the

years 2018 and 2020. There were two criteria that the participants needed to have met to participate in the study:

1. Participants needed to have graduated from the MLS program within the past 3 years (2018-2020).

2. Participants needed to have begun employment as an MLS professional in a laboratory following graduation.

Once each participant confirmed that they met the criteria for participation, agreed to participate, and completed the informed consent process, an interview was scheduled. Interviews were scheduled for 60 minutes using Zoom web conferencing at a day and time that was convenient to the participant. Participants were encouraged to complete the Zoom interview in a comfortable and quiet location. As the researcher, I conducted interviews from a private and secure location to maintain the privacy and confidentiality of each participant. Each participant completed the interview outside of their scheduled work hours. Throughout three of the 12 participant interviews, some internet connection difficulties were encountered by either the participant or myself for a brief period of time, usually lasting less than 3-5 minutes. The loss of connection did cause a minor disruption during each interview, but the issue was resolved in a timely manner, and the remainder of the interview was able to be completed within the scheduled time frame.

While the virtual interviews using Zoom were convenient for the participants in this study, they did feel different than face-to-face interviews might have. During the Zoom web interviews, I would pause and allow the participant to respond to each question. Because it was harder to read participants' nonverbal cues or gauge when they

had finished responding at times, there were some periods when the participants would ask if I was still able to hear them because I had not spoken up immediately when they were finished responding. The Zoom web conference setup was beneficial, as the participants appeared comfortable and were able to complete their interviews in the privacy of their own home at a date and time that worked best with their schedule. During the interviews, participants did not seem rushed for time. Using virtual web conferencing software allowed me to recruit participants who had relocated away from the Midwest following graduation who might not have been able to participate in a face-to-face interview setting. Overall, participants seemed eager to participate and interested in sharing their experiences, stories, thoughts, and perceptions related to their affective domain development during the interview process.

Interviews were scheduled via Zoom web conferencing due to the ongoing COVID-19 pandemic. It was clear that the COVID-19 pandemic had an impact on the lives of the participants because six of the participants brought it up at some point in the interview when discussing their affective domain development, or while discussing their current role as an MLS professional in a laboratory setting. It is important to note that the COVID-19 pandemic and related development and implementation of COVID-19 testing have been felt by MLS professionals across the country. Several participants noted the impact that the COVID-19 pandemic had had on the laboratory, from staffing issues to increased demands on their time and responsibilities.

Demographics

Twelve MLS program graduates from a large Midwestern university participated in this study. Four of the participants graduated during the year 2018, four of the participants graduated during the year 2019, and four participants graduated during the year 2020. All 12 participants started working as MLS professionals in a laboratory following their graduation from the MLS program. At the time of the interview, 10 of the 12 participants were working at a clinical laboratory, one of the 12 participants was working in a university research laboratory, and one of the 12 participants was working in research and development for a corporate healthcare organization. The participants of this study included 10 graduates who obtained a BS in MLS degree and two graduates who obtained a professional master's degree in MLS degree (MMLS). The data were collected from a total of 12 participant interviews that were completed over a period of 2 weeks. I believe that the data achieved a good representation of MLS professionals' education and work experience.

Table 1

Demographic Data of Sample

Participant	Graduation year	Degree obtained
1	2020	BS in MLS
2	2019	BS in MLS
3	2020	BS in MLS
4	2018	BS in MLS
5	2020	BS in MLS
6	2020	MMLS
7	2018	BS in MLS
8	2019	BS in MLS
9	2018	BS in MLS
10	2019	MMLS
11	2019	BS in MLS
12	2018	BS in MLS

Data Collection

The data collection followed the procedures described in Chapter 3. The recruiting process began immediately after the research request was approved and permission to proceed with the study was received from the IRB at the university of the MLS program (STUDY00012509) and by the IRB at Walden University (05-12-21-0311916). An email inviting the potential participants was provided to the MLS program director, who then forwarded the research invitation via email to MLS program graduates who had completed the program between the years of 2018 and 2020. The content of the email invitation included the purpose of the study, the role of the participants, my contact information, as well as two screening questions. A total of 13 MLS program graduates responded to the invitation email, but only 12 completed the informed consent process and participated in the study. All 13 participants met the inclusion criteria, and 12 of the

13 participants completed the informed consent process. A follow-up email was sent to each participant once the consent form was signed and received to schedule their 60-minute Zoom interview. The participant who responded to the email invitation but did not end up participating met the inclusion criteria but did not respond once the informed consent was sent via email. No participants were turned away because they did not meet the inclusion criteria. The recruitment period and interview sessions took a total of 5 weeks.

After verifying their participation in the study, the potential participants were contacted via email to schedule the Zoom web conferencing semistructured interviews. In this email, the participant was asked to provide a date and time for the 60-minute Zoom interview that would work best with their schedule. All interviews were conducted via Zoom web conferencing, and participants were encouraged to complete the interview in a comfortable and quiet location. I completed each interview in a private, secure, and quiet location to maintain participant privacy and confidentiality. Each interview session took between 40 and 60 minutes. A unique Zoom web conference meeting appointment was created for each participant to ensure the security of the web conferencing meeting for each interview session. I followed the interview protocol (see Appendix) and began each interview session with an introduction by reading each participant the introductory script found in the semistructured interview protocol. Once I read the introductory script from the semistructured interview protocol to each participant, I paused to allow the participant to ask any questions that they had.

None of the participants asked any questions following the reading of the introductory script. I then proceeded to the interview session by starting the recording on the Zoom web conference. An open-ended interview approach was used in the semistructured interview sessions. The interview questions from the semistructured interview protocol were asked of each participant. This approach was taken to bring the participant through the same series of questions. Probing questions were asked throughout each interview to gather deeper information or clarification from the participant. The first question of the interview was an opening question to help the participant feel more comfortable during the interview process and asked about where they were currently working. The next two questions were asked to collect some demographic information, including the year that the participant graduated from the MLS program and what degree path they completed (BS in MLS, Certificate in MLS, or Professional Master's in MLS). The fourth question asked was to establish an understanding of the participant's perceptions and what affective domain meant to them. Once the participant responded, if clarification was needed, I shared the definition found in my study for affective domain development with the participants. If further clarification was needed, I shared some examples of affective domain skills and behaviors. The subsequent interview questions were more complex and required time for the participants to reflect and describe their perceptions, experiences, and stories. Each interview question was developed to help answer the research question, as well as in consideration of the theoretical foundation for this study, which included the cognitive, social, and environmental factors that may influence student affective development

(Bandura, 1991) and the six skills within the theory of EI (Goleman, 1995) that are important for MLS students to develop to support their employability and the quality of care that they provide to patients. During each interview, some notes were taken to capture the experiences, perceptions, and thoughts of the participants that stood out to me. Following each interview, I wrote a reflection memo as part of the reflexivity structured throughout the study.

Following the completion of the interview, I provided a closing statement that included my expression of gratitude to each participant for their time and involvement in my study, in addition to introducing the transcript review component of the data analysis process. I also notified participants to contact me via email with questions or if they wished to share additional information. The Zoom web conference recording was stopped, and the audio file from each interview was immediately transferred to my personal password-protected computer. This computer requires my personal password to access it, and it is kept in my secure office within my place of residence.

Variation in the Data Collection

I made one variation in my data collection procedures from what was originally planned for the data collection process. Initially, I had planned to utilize Kaltura captioning for transcription of the audio file from each interview. However, this did not prove effective during my practice with the software prior to data collection. Instead, I used Microsoft 365 Word transcription software. This did not have any impact on my ability to collect data or perform data analysis.

Unusual Circumstances Encountered

During the data collection process, I encountered three unexpected situations. The first unexpected situation was related to one interview and the participant having difficulty responding to questions as it had been 3 years since they had graduated. I provided definitions from my study relevant to the interview questions and repeated the questions several times. A few times during the interview, the participant noted that they would have preferred that the questions were sent ahead of time so they could have been better prepared for the interview. I assured the participant that my goal was to capture their authentic perceptions and encouraged the participant to do the best they could to respond to my questions and provide their perceptions, experiences, stories, and thoughts for each question. This was the second interview that I had conducted, and I did not encounter this during my first participant interview. Following this interview, I consulted with my dissertation chair to verify whether it was permissible to provide examples of affective domain behaviors and skills to participants, and it was determined that it was. For future participant interviews, I provided examples of affective domain skills and behaviors to refresh participants' memory and ensure that they understood the types of behaviors and skills included in the affective domain. The other two situations were related to internet connectivity issues encountered by the participants. Each of these situations lasted less than 3-5 minutes and caused the participant's video during the Zoom conference to freeze or required them to log out of the Zoom web meeting and log back in. During both of these situations, I patiently waited for the participant to return to the conference, and we then proceeded with the interview.

Data Analysis

My approach for data analysis was to use manual coding to identify emergent themes. Data analysis was conducted simultaneously with data collection as recommended by Saldana (2016) and Patton (2015). Some descriptive coding was embedded in the interview questions due to the terminology used (i.e., self-awareness, communication, self-motivation, empathy, leadership, emotion management) and was present in the participant responses to these questions. The data analysis was started with the verbatim transcription of the recorded audio interviews. The initial transcript was completed by using Microsoft 365 Word processor transcription software. I then completed a quality check of each transcript by listening to each audio file and verifying the accuracy of each transcript.

Each interview transcript was deidentified, and a coded number was assigned to each participant to protect their identity and confidentiality in my study. I used an alphanumeric system with the letter "P" as an abbreviation for "participant" and an assigned number. The participant coded numbers ranged from P1-P12. To help ensure that the participants' experiences and perceptions were authentically represented and that the data were accurate, each participant was asked to complete a review of the transcript from their interview sent via email to verify that their words were consistent with what they actually meant in relation to each question (Shenton, 2004). Each participant completed the review, and three participants made minor revisions to their transcript. Throughout the data analysis phase, the language used was emic and used participants' organic language as much as possible to limit language introduced by me as the

researcher that was not used by the participants. This was done to help ensure that participants' narratives were genuinely represented during data analysis.

The determination of grouping, categories, patterns, and themes in qualitative analysis is a matter of judgment (Patton, 2015). Once the quality and transcript review steps were complete, I took time to read through the transcripts several times to become more familiar with the data. Following several reviews of the transcripts, the initial coding cycle was completed by hand on physical printed copies of each interview transcript. This included circling, highlighting, and underlining quotes or passages that stood out to me to document and reference throughout the coding process (Saldana, 2016). Saldana (2016) noted that the initial coding, also known as open coding, allows the researcher to have an open-ended approach to gain a deeper understanding of the nuances of the data. Following the initial coding session for each transcript, I handwrote an analytical memo with a summary of my findings, anything that stood out to me, and any patterns I began to see. Once the initial coding was completed by hand, I then returned on another day and reviewed my initial coding for each interview transcript. During the second cycle of coding, I employed splitting codes to generate a more detailed analysis from the initial phase of coding (Saldana, 2016). Once my codes were transcribed into my codebook within a Microsoft Excel spreadsheet, I went through to review the codes to ensure the codes authentically symbolized the participants' experiences, thoughts, perceptions, and stories shared with me during their interviews. Additionally, I extracted significant quotes that stood out to me from my initial coding

cycle that were highlighted on the hard copy of each transcript. I then transcribed those quotes into the Excel document in a separate spreadsheet within my codebook.

On a separate day, a third cycle of coding was completed to further review and refine the codes from the initial and second cycles of coding. At the end of the first and second cycles of coding, I identified 209 codes. Following the second phase of coding, pattern coding was employed as a third phase of coding to begin to categorize the codes. Through pattern coding, I was able to develop a category label that helped me group similarly coded data (Saldana, 2016). Using pattern coding, I initially developed 40 category labels. On a separate day, I further refined and combined the initial categories to 25 category labels. After further review, I refined the categories even more to 16 categories. To accomplish this, I created tree diagrams as I worked through each category label and the related codes to help visualize patterns to further arrange and combine the category labels while referring to the theoretical foundation of my study, which helped me streamline and create categories of categories (Saldana, 2016). I often referred back to my research question, as well as sections of data that I highlighted throughout the coding process that stood out to me as significant. This allowed me to inductively move from codes to categories. This further consolidation of categories helped me to begin the work to identify emergent themes.

To identify emergent themes, I created a table to review the categories and categories of categories for the data. This table helped me inductively look at the categorized codes and the category of categories I put together throughout the data analysis process. From this table, I was able to further refine my categories and identified

six emergent themes from the data as displayed in Table 2. I then went back through the

data to apply the emergent themes to determine if they were consistent with the data and

to determine if there was anything missed during data analysis.

Table 2

Themes, Categories, and Examples of Codes

Theme	Categories of categories	Category	Code examples
Sources of motivation	Motivation	Motivation	"Motivation," "Future," "GPA"
Opportunities to improve	Opportunities	Improvement	Setting "Goals," "Rotation," lab groups, "Calling out"
Awareness	Other-awareness	Empathy	"Empathy," Classmates struggling, "Difficult student"
	Self-awareness	Attitude Behavior Characteristic Feeling Self-awareness Value	"Attitude," "Mindset" "Improve," "Recognize" "Responsible," Accountable "Stress," "Hard" "Self-awareness" "Help," "Important"
Variety of settings	Environment	Environment Role Setting	"Diversity," "Structure" Faculty, "Friend," "Patient" "Lab," "Class," Different work environments
Interactions	Interactions	Interactions	Communicate, "Work together," "Ask questions"
Learning activities	Leadership	Leadership	"Leadership," "Organized," "Lead by example"
	Learning activities	Learning activity	Evaluation, Group project, Exam, "Mistake," "Studying"

Codes

Each cycle of coding was done manually on paper. During the first two cycles of coding, concepts and subsequent codes emerged from patterns of the participants' responses. The participant's own language was used for the codes as much as possible to reduce the amount of language introduced by the researcher and to honor the participant's own voice (Saldana, 2016). During the initial cycle of coding, a list of codes was created and each time the code or phrase appeared, it was tallied and the participant coded number was recorded. Through this process I was able to note an initial frequency of codes and begin to recognize patterns within the data by observing similarities and differences within the data. During the first and second cycles of coding, 209 codes were identified. These codes represent the perceptions, thoughts, experiences, and stories shared by participants in response to the interview questions. Through the interview questions, I was able to capture their thoughts, feelings, experiences, and perceptions about how they describe their experiences with program learning activities that were beneficial for their affective development. The 209 codes identified are shared in Figure 1.

Throughout the coding process, I focused on analyzing the data to understand how MLS graduates describe the learning activities that were beneficial for their affective domain development while they were students in the program. Many participants shared similar experiences or perceptions of the affective domain skills and behaviors they felt they developed during their time in the program, as well as the learning activities and experiences that supported their affective development. Some of the patterns that began

to emerge throughout the initial coding cycle describe interactions related to their affective domain development that all of the participants' had with various people during their time in the program including: faculty, classmates, "patient", and "friend". All participants also described various settings and environments when describing their perceptions and experiences related to their affective development including: "class", "lab", "clinical rotations", "simulation lab", and "student room". Throughout the interview, participants described their feelings during different points of time during the program including: "stress", "struggle", "fondly", "nerve-wracking", "tricky", "hard", "special", and "best time". Another aspect that had some similarities among different participants were their motivations throughout the program including: "future", fail, "GPA", "excited", "financial", "graduation", and "family". Lastly, some other similarities I noticed throughout the initial coding cycles from several of the participants were the learning activities that they experienced as beneficial for their affective development including: "poster", group project", "present", case studies, "venipuncture", evaluation, "responding to feedback", and exam.

While there were several similarities among different participants with how they described their experiences and perceptions related to their affective development, it was interesting to see the unique and different perceptions and experiences of each participant that were meaningful to them individually for their affective development. Many of those differences were found in the way students described the environment of the MLS program. Most of the participants described the environment in a unique way and this was captured in the codes including: "busy", "cliquey", "cohort", "competitive",

"conducive", "demanding", "friendly", "healthy", "immersive", "rigorous", and "adventure". In addition to differences in how participants described the environment of the MLS program, most participants described unique activities to improve student affective domain development from their perception including: "mental health", "mentor", "more check-ins", "not much follow-up", "outside curriculum", "repercussions", and "simulate".

Of the 209 codes in this study, 170 codes are emic and use the participants' organic language, while 39 were generated using my language as the researcher to capture the participants' account of their perception or experience in one word or a short phrase. It was important to utilize the participants' organic language throughout the coding as much as possible. Saldana (2016) refers to this as In Vivo coding where the actual language found in the data is used directly by the participants. Figure 1 includes all 209 codes and shows their frequency in the data with the larger codes representing higher frequency in the data. All of the codes identified symbolize how the participants' describe their experiences, feelings, perceptions, and thoughts related to their affective domain and affective development

Figure 1

Word Cloud of All Codes and Their Frequency

Categories

Following the second phase of coding, pattern coding was employed as a third phase of coding to begin to categorize the codes. Pattern coding helps to pull together codes into groups and assigned a category label to each group of similarly coded data for further analysis (Saldana, 2016). I grouped codes that were similar in terms of what the participants were describing into 16 category labels. This allowed me to inductively move from codes to categories. Initially, I identified 40 category labels. To support my work through this part of the data analysis stage and to review and refine my category labels, I created tree diagrams. For each tree diagram, I worked through each category label and the related codes to help visualize patterns to further arrange and combine the category labels while referring to the theoretical foundation of my study and research question. Throughout the third cycle of coding, I further refined my category and the final category included: attitude, awareness, behavior, characteristic, empathy, environment, feeling, improvement, interactions. Leadership, learning activity, motivation, role, self-awareness, setting, and value. In Table 2, the category labels and examples of the codes within each category can be found.

Refinement of Categories

The next stage of my data analysis was to review the 16 categories to begin to identify emergent themes. To accomplish this, I created categories of categories to further refine and identify relationships or similarities between the category labels (Saldana, 2016). This allowed me to further explore my analytical work to help me identify emerging themes (Saldana, 2016). Throughout creating categories of categories, I often

referred back to my research question and conceptual framework for my study. The overarching categories, or categories of categories I created included: environment, interactions, leadership, learning activities, motivation, opportunities, other-awareness, and self-awareness. In table 2, the categories can be seen grouped into categories of categories.

Emergent Themes

To identify emergent themes, I created a table to review the categories and categories of categories for the data (see Table 2). This table helped me inductively look at the categorized codes and the category of categories I put together throughout the data analysis process. From this table, I was able to further refine my categories and identify six emergent themes from the data (See Table 2). The themes identified include: (a) sources of motivation, (b) ideas to improve student affective development, (c) awareness of self and others, (d) experience in a variety of settings, (e) interacting with different types of people, and (f) feedback, group learning activities, and evaluation. Once the themes were identified and described, I then went back through the data to apply the emergent themes to determine if they were consistent with the data and to determine if there was anything missed during data analysis. These themes will be described further in the results section.

Discrepant Cases

Upon review of the data, I discovered that there were minor variations among a few participants regarding themes. Each participant shared their own perceptions, thoughts, and experiences. There were some participants that did not feel that they had

developed every affective skills that was discussed in the interview. Each of these minor variations are discussed in the themes section.

Evidence of Trustworthiness

Credibility

As previously stated in Chapter 3, I used a method of data verification. To ensure accuracy of the data, each participant was asked to review the transcript from their interview to verify their words were consistent with what they actually meant (Shenton, 2004). To accomplish this, I sent each participant their transcript via email and included instructions asking them to review their transcript for accuracy and consistent with what they intended to communicate for each interview question. Throughout data analysis, the language used was emic and utilized participants' organic language whenever possible to limit language that was not used by participants. By doing this, it helped to ensure the participants' narratives were authentically and genuinely represented during data analysis and interpretation. The final step to ensure credibility was to use theoretical validity by exploring the relationship and interpretation from the data to the EI and social cognitive theory that provided the theoretical foundation for this study. Both the social cognitive and EI theories informed the data collection and analysis during the study.

Transferability

To achieve transferability in my study and as stated in chapter 3, interpretations and information about the study in context with thick description was provided. When a study is thoroughly described including the setting, participants, and related experiences, then others may determine if the findings are transferable to their setting or participants

(Ravitch & Carl, 2016). During my study, I provided thick descriptions that thoroughly described the research setting, participants, and data collection procedures to provide an accurate picture and context of the research study. Through this thick description, other MLS programs and possibly other health science programs may be able to apply the data collection and method of my study to their participants or setting.

Dependability

Consistent with Chapter 3, an interview guide was created to achieve dependability and created a line of questioning that helped collect data to answer the research question. The use of a researcher-produced interview guide provided a tool for consistency throughout the interviews, allowed for more systematic data collection, and helped minimize any effects of the interviewer (Patton, 2015). The data collection plan was formed to ensure there was a reasonable argument for the purpose of the study and research question. The processes of the study were reported in detail to ensure the methods and procedures employed were clear and could be reproduced. Triangulation was used in the form of multiple data sources from interviews with each of the multiple participants to further support the dependability of this study.

Confirmability

Throughout the study, reflexivity was structured to secure the confirmability. This provided an opportunity to systematically and critically assess my own biases, interpretations, reflections, and processes throughout the study, helping to ensure the study was complex and ethical (Ravitch & Carl, 2016). An audit trail was maintained to document the steps and decisions made during data analysis to allow for tracing

(Shenton, 20014). To help enhance the confirmability of this study, I acknowledged my position as the researcher and former instructor of the participants. Finally, I wrote a reflective memo following each participant interview to record my biases, perceptions, and assumptions, along with how they were controlled to not influence the data collected and my interpretations.

Results

In this basic qualitative study, I developed one research question based on the foundational theories of EI and social cognition, as well as my experience working within an MLS program, my interactions with other MLS program faculty across the country, and the lack of literature for this topic in the discipline of MLS. When analyzing the participant interview data, I posted the research question in my workspace to ensure alignment throughout the data analysis process. Saldana's (2016) manual multiple cycle coding methods were employed including In Vivo coding, pattern coding, categorization, and thematic analysis. The codes identified were arranged into categories, then categories of categories were created. From the categories of categories, the themes emerged and were described. The emergent themes provide the answers to the research question, which was the following:

RQ.   How do medical laboratory science students describe their experiences with program learning activities that support their affective development?

Theme 1: Sources of Motivation

Self-motivation was described as a component of EI theory (Goleman, 1995) and is important to consider how internal and external motivation influenced their individual

development. A descriptive code of motivation was used as it was embedded in the interview questions and each participant elaborated about their sources of motivation for their individual development during their time in the program by sharing their perceptions and experiences from when they were a student in the MLS program. Through the data analysis, similarities in the data between participants emerged and each participant mentioned at least one of the following when describing their experience with motivation as a student in the MLS program: avoiding failure and future goals. When describing their perceptions and experiences with motivation during their time as a student in the MLS program, many participants mentioned a source of motivation related to avoiding failure. P6 said "…it felt like that was all I have because I can't go back… I don't have a plan B." P5 mentioned maintaining a certain GPA as motivation. When considering their motivation, P10 said "Because the consequences was very clear for me" and "…essentially my graduation on time was at stake." When describing their motivation as an MLS student, P3 shared,

> the second test of the semester was always a really rough test for me and then it was kind of that I had literally no choice but to, but to do better so that I didn't, you know, have to take a whole other year of this program, those that's very self-motivating.

When referring to their motivation as a student in the program, P7 shared, "I didn't want to have to repeat any classes." P1 mentioned avoiding failure and the relationships that motivated them and said,

the failing part definitely motivated… And I feel like having friends in the program really helps you 'cause that really helps motivation too. 'cause we did like say like oh, have you started studying yet and like oh we should form a study group and that stuff too. And also partially family you know your family also checks up on you.

Other participants discussed their experiences with self-motivation during their time in the program being related to future goals. P11 mentioned that after graduation they would "buy a house" and "start a family". P2 said they were motivated because the MLS program "…is really good program" and "…knowing that whatever I'm taught here I know I'm going to be able to pass the BOC and get a good job afterwards." Similarly when discussing their motivation during the program, P9 said,

So like, thinking about you know once I graduate I'll be able to get into a job right away because I know that this field is pretty good. That was really helpful for motivating myself and especially once I got into rotations and really like was in the lab and enjoyed being in the lab that was a huge motivation to push through that last semester and get that board exam done.

P4 talked about their "goal of going to postgraduate school" as self-motivation as a student in the program.

For P8 and P12, their perceptions and experiences with self-motivation during the program had some slight discrepancies with the emergent theme of avoiding failure and future goals. P12 talked about their passion for the topic area and "… that actually help me through that program and success in the program." P8 talked more specifically about

how they were motivated in the program and said they "So I kind of learned that I had to be the one motivating myself to do those because it wasn't enough to just go to class and learn." For P12, it is possible that as they moved through the program their passion would grow as they learned more, which may relate to future goals. P8 talked about the need to do more for learning other than attending classes, which could be related to their motivation to avoid failure.

Theme 2: Ideas to Improve Student Affective Development

The purpose of this basic qualitative study was to understand how MLS students perceive the usefulness of program coursework activities and experiences as supporting their affective development. During the interview, participants were asked for their opinions regarding how student affective domain development could be improved during program coursework. In their response, almost all participants discussed an improvement for student affective development in the program that directly related to an experience or perception they had during their time in the program that was shared during the interview.

In terms of activities to improve student affective development during program coursework, four participants including P3, P5, P7, and P11 discussed related ideas for improvement including more checkpoints, feedback, self-evaluation, and goal setting. P3 said "So for me, the checkpoints were really helpful" and goes on to mention an area for improvement is to include "…just more like self-assessment checkpoints I think would... would be more helpful 'cause that's the kind of stuff that really makes you sit down and think about it." According to P5, more opportunities for feedback would be helpful to

improve student affective domain development. P5 said "I mean as much as much as I hated it, more feedback would be great." Offering another idea for improvement of student affective development, P5 also mentioned that the program should "… just making sure to keep emphasizing that we work on our own." Expanding further, P5 goes on to offer a specific example when they discussed working independently and said "If you have a question you try and answer it by using the information provided to you or the resources before you go to your peer or your supervisor or professor." Earlier in the interview, P5 talks about problem solving and handling different situations and says "you grow to realize that you know more than you think you do." Similar to what P3 mentioned regarding more check-ins about affective development, P7 also talked about having "…it would be kind of nice I think to have more regular check-ins" and "Setting goals… like I set goals for myself, but I know that not everyone does that and you know, just being able to have that routine." When describing their experiences during the time in the program earlier during the interview, referred to an area they focused on and said "One of them that I made a conscious effort to work on was the responding to feedback." Another participant talked about having more opportunities for self-evaluation to improve student affective domain development. P6 discussed their ideas for improvement to include "…allowing students to just evaluate themselves" and to add a "discussion" about the affective domain, as well as "goal setting." Earlier in the interview, P6 mentioned twice that they "…cherished every feedback."

Interacting with others were a common thread in the ideas for improvement by P8 and P9. When discussing their ideas for improvement, P8 proposed "…rotating lab

groups" and "Integrating more collaborative stuff." When elaborating about including more collaborative work during the program to improve student affective development, P8 said "But I think that sometimes if you have to work together then you learn from each other a lot more." Another area that could be improved that P8 mentioned was "So I think maybe they could do better with more like socialization events." When further describing why this would be an improvement, P8 said it would be "…nice… if we could all get to know each other." Another participant talked about interactions when discussing ideas for improvement of student affective development. When referring to their idea, P9 said "…but I think doing as much kind of in-person, especially for the labs really kind of helps understand what it's like to work with other people, which I think is just like a lot of what this is." Throughout their interview, P9 touched on interactions with others and talked about working with different types of people when discussing their perceptions and experiences related to their affective domain development as a student in the MLS program.

Focusing on who they will be caring for and the impact they will have on patient care, P10 and P12 shared related ideas for improvement. During their interview, P10 talked about incorporating "…emotional stories." In the continuation of their discussion, P10 said,

But then you put it in the perspective and OK, well what you're studying for and who you're going to be caring for and yes, that's all needed. Just you know, just sometimes a reminder about this. At least for me that's always is and maybe I'm a little bit of invested in stories, but for me it was a, you know, a good reminder.

Throughout their interview, P10 referred to their future role as an MLS professional and shared,

I remember in blood bank the lectures was, one of the lectures was reading about medical mistakes [that] have happened. So for some reason it's that lecture, like even now I remember it. So reading about those medical mistakes (and that's just one example), so reading about medical mistakes makes me want to be better.

Throughout the interview, P12 seemed to have a patient-centered mindset and always thinking about how their work and role as an MLS professional would impact others. P12 said,

Professor and the instructors keep telling us that this is the patient and their safety and just put yourself into their shoes and that's the part that I start like consciously aware that my work and my work quality going to affect someone's life. And that's the point that I developed during my MLS program and keep continue to like keep it while working as an MLS.

When P12 discussed their idea for improvement, they referred to reminding students the importance of their role in patient care. For their idea, P12 said,

So I think for the MLS student in general, the biggest point is that they have to know that they're working, but they actually dealing with someone's life and this is serious and it has to involve their own responsibility.

Directly related to their personal experiences during the MLS program, P1 and P2 shared their ideas to enhance student affective development for future students. When talking about holding students accountable for their unprofessional behavior during

courses, P1 said "…I think professors maybe could do a bit better job of like calling out certain things. I don't know if they do or don't, or like if people are taking a side and talked to… like I didn't notice that." Earlier in their interview, P1 mentioned a fellow student that "wasn't held up to certain standards that I feel like [they] should have been." During the MLS program, P2 talked about being "…a student parent". Throughout their interview, P2 mentioned being "…stressed" twice and that they would always "…push it to the side." The idea for improvement that P2 discussed was a "…reminder of mental health." This seemed directly related to their own experience in the program. P2 continued and said "…I feel like that's part of affective domain. That kind of goes with that. But initially I think it just comes down to students whether they're going to take that approach to improve or not".

Another participant, P11, discussed a variety of ideas for how to improve student affective domain development. To improve student affective development, P11 said they would like to have "…outside of the curriculum opportunities for working with personal goals" and "…finding a mentor in the program". Throughout their interview session, P11 talked about setting and achieving goals as a student in the program.

While there wasn't any significantly discrepant data, P4 at first did not have any ideas for how to improve student affective development. P4 shared "they all tie into each other, so if you if we can if we can develop one of these skills, you're going to develop probably four or five simultaneously." After a probing question, P4 said "I guess the easiest way to would be to simply just explicitly talk about their affective domain skills. Maybe we did, maybe we didn't, and I don't remember." At the time of the interview, it

had been almost 3 years since P4 had graduated from the MLS program and they did not

recall whether affective domain skills and behaviors were discussed or not during their

time in the program. Other participants that graduated the same year as P4, however,

recalled these being discussed while they were a student in the program.

Theme 3: Awareness of Self and Others Is Helpful

Self-awareness and empathy are described as skills within the EI theory

(Goleman, 1995). Both of these skills are important for the employability of MLS

graduates and quality patient care. The descriptive codes of "self-awareness" and

"empathy" were used as both were embedded in the interview questions and each

participant elaborated about their self-awareness and empathy during their time in the

program by sharing their perceptions and experiences from when they were a student in

the MLS program. This emergent theme was formed from the two overarching categories

including: self-awareness and other-awareness. Throughout their interview, participants

shared their thoughts, perceptions, and experiences related to their awareness of their own

feelings, behaviors, values, attitudes, characteristics, as well as their awareness of others

during their time as a student in the MLS program.

Participants were asked to share about their self-awareness during their time in the

MLS program and students had varied responses. Three of the participants including P4,

P9, and P10 talked about their self-awareness during their time as a student in the MLS

program before the interview question inquiring about self-awareness was asked. Once

the question about self-awareness was asked, each of these four participants shared more

about their experiences and perceptions from their time in the program. P4 said "I try to

stay self-aware" and mentioned their confidence in their knowledge in terms of self-awareness. P4 shared "I wasn't confident in for a long time and I knew that. So I did a lot of personal work in that area." Other participants also referred to their confidence when discussing their self-awareness as a student in the MLS program. One participant (P9) said "…I came in feeling pretty like unsure of myself and I think part of the self-awareness that I developed was just kind of an appreciation for like I can do this." Related to discussing confidence, one participant talked about their awareness of their weakness as an MLS student. P10 said that "…verbal communication was always my weakness." During their time in the MLS program, P10 said they would "…try to present well when I talk when I write."

Four of the participants (P1, P11, P12, P5) talked about their self-awareness when working with other students in the MLS program during class or group projects. When talking about their self-awareness during lab class, P1 shared,

> You have to be self-aware like, just kind of what you're doing in general and also like this space that you're taking up and like how you are affecting the students around you while you are working on your own stuff.

When referring to being in lab classes or working on group projects, P11 said,

> I think about being in the lab a lot and working directly with other MLS students and knowing my role in group projects and also any kind of partnership that you have or where you are working with someone else, you have to… I think you have to exhibit a lot of self-awareness because you're directly contributing to something that someone else is also contributing to.

When also referring to being in lab class, P12 shared about their self-awareness related to identifying a weakness and how that played a role in their work during lab classes. P12 said "…my English communication is having a big barrier there and sometimes I just cannot communicate with my bench mates." P12 continued and discussed how they went to talk with one of the faculty about their difficulty communicating with their classmates in lab. P12 talked about persevering to improve their weakness and shared,

> … as time went by in the lab as I practice in the lab, study in the lecture, and keep myself saying that I can, I can do this. My communication skill has to improve a lot based on that self-awareness that I had to be better for a better future.

P5 shared that "Definitely in the labs I think helped with self-awareness the best." P5 went on and talked about assessing their progress during student labs and that "you can just like measure yourself along the way on whether or not you're doing it correctly." Another aspect of P5's self-awareness during their time in the program was related to being reminded of it and how that allowed for self-evaluation. They said,

> I guess the affective domain list was offered to you pretty much all over. You know we were reminded of the affective domains throughout the program, unfailingly. So just having the list there… having the affective domain assessments. I think it all they all allowed receiving the constructive feedback to all allowed for self-reflection on you know what you're what you're getting done and what you're achieving. It allowed for an evaluation of your own work.

Other participants talked about their self-awareness during the program and how they focused on how they presented or carried themselves. P3 said "I think MLS was a unique degree path because and like and for the affective domain and carrying myself because the lab work was just as important as the theory." Similarly to P3, another participant (P7) referred to their self-awareness and said for them it was about "…how aware I am of what my body is doing, how where I am of, how I am around other people." P8 said their time in the program "….taught me how I carry myself because we had to do a lot of professional stuff." When probed further about what they meant in terms of 'professional stuff', P8 said "…we talked a lot with professors and especially in the rotations that I felt like I had to be professional at all times." While they knew they had to be professional at all times, P8 went on to mention that they were not aware of how they were viewed by others and said "…I wasn't sure how I was viewed by them."

During the interview, in addition to being asked about their self-awareness participants were also questioned about their empathy during their time as a student in the MLS program. Many participants talked about their empathy, or awareness of others, at several points during the interview, in addition to the question specifically asking about empathy. There were three types of experiences that participants referred to when asked about their empathy as a student in the MLS program including seeing others struggle, clinical rotations, and reading about medical mistakes.

The majority of participants discussed their empathy development as a student in the MLS program was attributed to observing their classmates or friends in the program dealing with difficulties or struggling with something. P2 said "I do recognize when

like… I guess colleague is not having a good day, you know. You know in the program, because it's so stressful with exams back to back." When dealing with another student in class, P3 said that they developed empathy when they "…sat across from a really difficult student and there was a lot of negativity." P3 expanded further and shared,

I kind of had this mindset change where it's like, OK, I could... It's either this or we get through it together. So what do I do? Encourage or do I just like you know, let myself get frustrated. And I think that helped me to be so much more empathetic. You know, kind of understanding, like the different frustrations that people bring to the table. You know other people deal with stressful work environments and realizing that like I don't just have to be affected by this, I can, you know, be a positive part of the experience here, you know, make sure that they're getting the help they need.

Other participants also talked about developing empathy by observing their classmates. P4 talked about being in the MLS program and said "… we were diverse students… but at the end of the day, we're still students and we can still understand each other on an empathetic level because we're all the same." P5 shared,

I guess my empathy was developed in a way of mutual suffering. You know, when we had five exams coming up or a thousand assignments due, we were definitely all in a place of stress and discomfort and so that mutual misery, I think helped develop a little bit of empathy for each other.

P7 mentioned that they are 'an empath' and that they would often "…notice other people." When discussing a specific example, P7 shared,

I very often would notice other people, notice one of my co-students breaking

down at a microscope and starting to cry because she just couldn't figure things

out that day and she was having a rough day. And of course I would start crying

for her because I felt so bad I had no idea what was going on, but I just noticed

that she was having a tough time of it. And you know, just being able to talk to

people about how they're doing, how classes were going. I think a lot of us joked

around just in general about how difficult things were, but it was pretty difficult

and so being able to, you know, understand the plight of those around me was

pretty invaluable, I think.

Similar to other participants, P8 talked about recognizing when others were

having a difficult time. P8 said,

I feel like we I had to work as a team a lot in our groups and so if somebody

wasn't feeling well or if somebody wasn't doing great that day then you pick up

the slack for the day and vice versa, which is very reflective with the work

environment as well. So I think it's really important to recognize the emotions of

the people around you and see how they're feeling for the day, so that work can be

done effectively.

Another participant (P9) discussed observing their classmates when responding to

the interview question about empathy. P9 said they had "…empathy like in the lab" and

"…there were definitely days where, like some of my classmates were struggling with

whatever we were working on that day." In those situations, P9 mentioned they were

"…more gentle and just like coming from a place of understanding" and "…recognizing

that there are other factors at play there." When referring to their empathy as a student in the MLS program, P12 talked about having empathy for one of their friends because "…she's been dealing with the same learning difficulty."

Other participants talked about their time as a student during clinical rotations and how that supported their development of empathy while in the program. The participants who discussed clinical rotations in relation to empathy development all referred to having 'real' experiences. P1 said that "…once we started our clinical experiences. Like you kind of had a different perception of like these are real patients." P1 went on to say "I feel like empathy is a huge part of the job because you have to be human in order to treat people well." P6 shared,

> I think that was where I really developed empathy was just the fact that being in the clinical setting, seeing things for yourself, seeing that this is a real patient, seeing that this, this incident the patient is going through is real.

Elaborating further, P6 shared an experience they had during clinicals that was significant to them and it involved observing a 'bone marrow procedure' and that "…the patient wasn't responding. And so it was literally a code blue right away." While P11 mentioned that empathy came "…pretty naturally to me anyway", they shared how the clinical rotations changed their perspective. P11 shared,

> Just because all the stuff that you're learning and you're working on kind of seems like, it seems a little disconnected when you're in the program, because you're not actually working with the patient sample. But the second that you're doing clinicals and you're in the hospital lab, then that changes.

One of the participants (P10) discussed that reading about real medical errors had an impact on their empathy development as a student in the MLS program and said "…one of the lectures was reading about medical mistakes [that] have happened… reading about medical mistakes makes me want to be better."

There was only one discrepant case identified in terms of self-awareness and zero discrepant cases related to other-awareness. When asked about self-awareness, P6 shared that they "…didn't necessarily focus on that being a student" and that they "….wasn't necessarily too aware of what was my environment." P6 shared that self-awareness is important in their current role as an MLS professional. Despite this discrepancy, P6 shared about how they were feeling and their abilities throughout the program during their interview. This would require self-awareness to be able to recognize how they were feeling and to describe those emotions and their different abilities during their time in the program.

Theme 4: Experience in a Variety of Settings

Throughout the interviews, each participant described their experiences in variety of settings related to their affective development while they were a student. The variety in settings that participants described includes: clinical rotations, lab [course], class [lecture], multiple clinical sites [different work environments], recitation, sim lab [simulation lab], recitation, and online. Each participant described the experience they gained in at least two different settings. Table 3 provides insights into the variety of settings each participant referred to in relation to their affective development during their time in the MLS program.

Table 3

Variety of Settings Described by Participants

	Clinical rotations	Lab class	Lecture class	Student room	Sim lab	Online	Multiple clinical sites	Recitation
P1	X	X	X					
P2	X		X					
P3	X	X	X	X	X	X		
P4		X	X					
P5	X	X	X					
P6	X	X	X					
P7	X	X	X	X				X
P8	X	X	X			X	X	
P9	X	X	X					
P10		X	X			X		
P11	X	X	X					
P12	X	X	X				X	

The most frequently mentioned settings by the participants included clinical rotations, lab class, and lecture class. P1 talked about their development of empathy during clinical rotations and said "…this person may have cancer or like this person has like some serious disease wrong with them and you kind of, you know, I kind of like stopped for a moment and like almost pay them respect." P2 shared about their experience during clinical rotations and said,

> The clinical for sure. Clinical times, I think that really helped developed the communication skill. I mean, I think that's an area that I could… I see improvement on every day, but clinical because like you're actually putting like you know one of the real world kind of stuff.

When referring to clinical rotations, P12 said "And the clinical rotation also helps a lot too because that's when I actually exposed to different labs, to different MLS

professional in different lab setting and system. Because you work side by side with them." When discussing their experience going to different clinical sites, P8 said,

I think that within each [clinical] rotation site because you go to so many of them, there are very different work environments and a lot of different kinds of people. So you have to learn how to work within each team, even if the atmosphere within each team is a little different.

Other participants discussed the experiences they gained in the lab or lecture classroom setting. P5 said "…when we were in class or when we were in lab, we had to work with each other and that was something new to me because I usually did everything on my own." When talking about being in lecture class, P4 shared "…we'd be in groups and there's a lot of different opinions coming in. I thought, I guess I thought there was more collaborative work in the program." When talking about their communication development during the program, P9 identified the lab class setting and said "Communicating with both, like other students in like a collaboration kind of environment and also communicating with professors with, you know, people in the lab." P10 shared "…my experience in classes at MLS program was completely different. It was a wake up call for me, but that's exactly what I see in a professional environment." When working on a group project during a lecture class, P11 said "…everybody worked together and it worked pretty fluidly, I think that kind of demonstrates that each of us individually and myself were able to sort of recognize what we should do to contribute."

Two participants shared about the benefits and significance to them of having a dedicated student room while in the MLS program where they could go to study or

interact with their classmates or friends in the program. P3 shared "I liked having the student room a lot." P3 elaborated further "…having a place where I could go and then having other students in there helped me be motivated to do my work and to do better then, you know, it felt very like safe and comfortable there." P7 also mentioned the student room and shared,

> I guess because it it's like you belong in this place and you know you have your student room where you go and hang out and the people who are there with you know that you belong there. You know you're one of us. Which is just kind of... calming you know even in even in a stressful environment you can go and study with your other friends and learn more stuff and just be calm.

In addition to the student room, P7 also mentioned recitation as a setting related to their affective development and described it as "a smaller group than just a class or a lab." P7 then shared,

> It was a great area to be able to ask questions and to maybe show your vulnerability a little bit of I don't understand this thing that it seems like everyone else is understanding. But just being able to ask questions and talk in that small group space was really nice.

There were no discrepant cases or nonconforming data found for this emergent theme. There was a variety of settings that each participant described related to their affective development during their time in the program. However, there were similarities among the participants related to the settings they identified where they described affective development took place.

Theme 5: Interacting With Different Types of People

During the interview, all twelve participants talked about interactions with different types of people when describing their affective development when they were a student in the MLS program. This was an early pattern that emerged during the initial stages of data analysis and became more apparent through the various cycles of coding, categorization, and thematic analysis. The different types of people that participants talked about interacting with while describing their affective domain development during program coursework included: faculty, classmates, and friends. These interactions varied and included: communication, working together, asking questions, teamwork, discussion, encouragement, interactions, relationships, interprofessional work, collaboration, phone calls, study groups, small groups, and being a charge tech.

Several participants talked about interactions with faculty when discussing their affective development during the MLS program. P1 said "I think just like professor-student interactions really helped with that. I mean also like student to student interactions as well." P3 shared,

> You know, just kind of having the teachers' room right next to the student room
> so we could go ask questions if somebody was in there, you know, like. I just felt
> like there was a pretty open door policy.

When discussing their communication development, P4 talked about interactions with program faculty. P4 shared,

> I think my communication skills really developed with [microbiology professor]
> and I was pretty close with [microbiology professor] in the MLS program. I

wasn't, you know, I didn't hesitate to talk to her while I was struggling or if I wanted her opinion on something.

Multiple participants referred to group work or working with their classmates during their time in the program. When talking about working on a group project, P2 shared "but it was a big project too where there was like four of us working on it together. So I initiated and organized and see like who's doing what." P5 said "One would just be working in in the labs together very much gave you an opportunity for leadership." P6 said "I believe most of the in-person lecture were like group work, where you had to do things with other people and work and being able to work with other class... you know other classmates and things like that." P7 said "You know just the interactions between people while learning I think were really important for building those affective skills." P8 shared,

And we also had like an interprofessionalism class where we had to work with like I think doctors and nurses and such. And that's also very reflective, because currently you still have to talk with them and figure out things between different professions.

P9 said "Because I think really like doing the in person labs and like doing the internship [clinical rotations], interacting with other people is kind of where I learned the most and developed the most in those areas." During their time in the MLS program, P10 said "…I learned a lot about communication" and "…how you talk to your students and teachers." When discussing their interactions with faculty in the program, P11 shared,

Communication with instructors or professors I think, took a little bit more effort

just because I needed, I felt personally that I needed to clarify exactly what I

needed in order to get the questions that I had answered and to get the best

experience.

When referring to their final year in the MLS program, P12 said,

…once I moved to the second year for the MLS program a lot of this is lab work

and I got a chance to work with my benchmate and communicate with them

what's actually going on if we do a group project.

There were no discrepant cases or nonconforming data. All participants described

interactions with different types of people when describing their affective development as

a student in the MLS program.

Theme 6: Feedback, Group Activities, and Evaluation

Throughout each interview, most participants mentioned at least one of these

areas when describing their affective development during their time as a student. Table 4

shows the activities participants mentioned including feedback, group activities,

evaluation, and/or self-evaluation.

Table 4

Learning Activities Described by Participants

	Feedback	Group activities	Evaluation	Self-evaluation
P1	X	X		
P2		X		
P3		X	X	X
P4	X	X		
P5	X		X	X
P6	X	X	X	X
P7	X	X	X	
P8	X	X		
P9	X			
P10	X			
P11	X	X		
P12	X	X		

Ten of the 12 participants mentioned receiving feedback at least once when talking about their affective development as a student in the program, and several participants talked about feedback multiple times during their interview. P5 shared "But the MLS program definitely helped me with that and understand that not everything is personal and the feedback that we're receiving is given to help us improve." Recalling their experience with receiving feedback during the program, P11 said "I remember there being sort of, some feedback from instructors over the course of the program." One participant (P1) shared "…just asking the professors questions about the material really helped because they were professional as well and would even give you like feedback if your affective like wasn't good." Two participants seemed appreciative for the feedback they received. P7 said "…my feedback was nice to see". While P6 shared "The feedback was also something that I cherished because I felt like for every feedback was a chance to

improve on something." Recalling their experience interacting with a faculty member during the MLS program, P4 shared,

> [hematology professor] was helpful in that when I whenever I asked some
> questions and so when [they] gave me feedback that was a pretty big, I guess that
> was significant in terms of affective domain for me because I needed some extra
> help.

> Sharing the benefits of receiving feedback as an MLS student in the program, P5 said "receiving the constructive feedback too all allowed for self-reflection on you know what you're what you're getting done and what you're achieving. It allowed for an evaluation of your own work." One participant (P9) mentioned their openness to feedback progressing as they moved through the program and mentioned "I definitely, as I got, went through the program I like was more and more accepting and even to the point where I like was seeking out feedback where I never might have done that before."

Nine of the 12 participants referred to group learning activities when describing their affective domain development during their time in the MLS program. P8 said "I mean, we have always had to work as groups within all of our labs. And they were always randomly chosen, so I felt like that was very reflective of how it is in the workplace." Also mentioning group work during the MLS program coursework, P2 shared "…it was a big project too where there was like four of us working on it together." Another participant (P12) said "…a lot of time we do discussion or a case study that we group up in like 5 or 6 people for hematology classes" then elaborated further "So the lab

and the lecture part, that encouraged a lot of communication between classmates is one of the place that I can improve my communication."

One participant (P3) talked about evaluation related to their affective development during their time in the program. P3 said "One thing that I really liked was the midterm affective evaluations that the professors did in the courses." Another participant (P10) mentioned interprofessional interactions and the impact those had on their affective development as an MLS student. P10 shared,

> For me it is because getting interprofessional, medical laboratory science being an interprofessional field, just that opportunity to work with other professions was interesting and… It was very interesting for me personally, but also helped me to grow as a professional and that was a big leadership role for me simply because I had to get out of my comfort, you know, get this bit out of my comfort zone and maybe talk to more people than I felt comfortable with.

For this theme, there were some participants that also mentioned working individually as being beneficial while they were a student in the MLS program. However, those participants also talked about working in groups or together with other students during their time in the program when describing their affective domain development as an MLS student.

Summary

Throughout the sections of this chapter, I analyzed the data using manual open coding that I categorized based on similarities and patterns within the data, and identified emergent themes. The purpose of this basic qualitative study was to understand how MLS

students perceive the usefulness of program learning activities and experiences as valuable for their affective domain development. The research question of this study was the following:

RQ.   How do medical laboratory science students describe their experiences with program learning activities that support their affective development?

This research question was developed based on the purpose of this study, the foundational theories of EI and social cognition, as well as on my experience working within an MLS program, interactions with other MLS program faculty across the country, and the lack of literature for this topic in the discipline of MLS.

After analyzing the data through manual coding, categorization based on similarities and patterns, creating categories of categories, and thematic analysis, I identified six emerging themes. These themes include: (a) sources of motivation, (b) ideas to improve student affective development, (c) awareness of self and others, (d) experience in a variety of settings, (e) interacting with different types of people, and (f) feedback, group learning activities, and evaluation.

All six themes together describe the participants' perceptions of their experiences and affective development during program coursework. Additionally, the six emergent themes identified provide a greater understanding of the learning activities and experiences that were valuable for affective development to students while they were in the MLS program. Evidence of how the MLS program graduates were aware of their emotions, values, motivations, preferences, and abilities during the program was revealed by the data analysis. Although there was variation amongst the participants regarding the

learning activities and experiences they valued for their affective domain development, there were many similarities between the participants which is revealed by the results of the data analysis and emergent themes.

The interpretation of the findings, explanation of the limitations of the study, recommendations for future research, and implications for positive social change are discussed in Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Within this basic qualitative study, I explored MLS graduates' perceptions about the usefulness of program coursework activities and experiences as supporting their affective development. Through this study, I sought to explore the lived experiences of individuals related to their affective domain development through semistructured interviews (Ravitch & Carl, 2016). The setting of this study was a public university with an MLS program in the Midwest. Data from interviews with 12 recent MLS program graduates were analyzed using manual coding, which was then categorized and analyzed for themes. Through the analysis, I gained an understanding of how MLS students described their experiences with program learning activities and experiences that were beneficial for their affective development. An unbiased position was prioritized when reviewing the graduates' interview responses.

To strengthen the results of this study, I took several measures, including review of the interview questions by an expert panel, verification of the interview transcript by each participant as a member check, and maintaining an audit trail during the data analysis phase of this study. Saldana's (2016) approach to manual open coding and thematic analysis was used in this study. From the data analysis, I identified six emergent themes. The themes provided insights into how students described their experiences and perceptions of their affective development as MLS students, the activities and experiences that students valued for their affective development during MLS program coursework, what motivated students during their time in the program, as well as ideas to

improve MLS students' affective development in the future.

Interpretation of the Findings

From the data analysis, I identified a total of six emergent themes. These themes helped in answering the research question and extended understanding of the MLS program learning activities and experiences that are valuable to students for their affective development during program coursework. Most participants described their experience with some level of affective domain development during their time in the program and indicated that a variety of learning activities and experiences, as well as learning settings, played a role in this development.

During the interviews, participants described their development of various important affective skills and behaviors during program coursework, including communication, self-awareness, empathy, responding to feedback, responsibility, motivation, adaptability, working with others, respect, leadership, integrity, emotion management, and confidence. Many of these skills are important components of EI as defined by Goleman (1995), including self-awareness, communication, empathy, motivation, leadership, and emotion management. EI has been shown to support the performance of healthcare workers (Price, 2015). Furthermore, having higher EI has been shown to improve quality and patient-centered care in nursing (Codier & Codier, 2017). In one study, nursing preceptors rated affective domain skills higher than cognitive and psychomotor domain items, and the top-rated affective domain skills and behaviors included the following: performs as a team player, professional and ethical behavior, taking responsibility, bedside presence, and delivering culturally competent care (Rusch

et al., 2019). Similarities were seen between the study by Rusch et al. (2019) consisting of affective skills in nursing and in what the MLS graduates reported in terms of the affective skills and behaviors that they perceived themselves as developing during their time in the program as a student, including self-awareness, empathy, responsibility, integrity, and working with others. Chaieb et al. (2018) discussed the challenges related to assessing affective development because it continues to develop throughout one's career. Half of the participants mentioned having previous work experience during their interviews when discussing their affective development as a student in the MLS program. Despite this, the participants who described their previous work experience still discussed learning activities and experiences during their time as students in the MLS program and how they still experienced some level of development of the various affective skills.

During their interviews, participants shared notable experiences and learning activities from when they were MLS students in relation to the affective skills and behaviors that they perceived themselves as developing during their time in the MLS program. Participants referenced a variety of program learning activities and experiences throughout their interview when describing their affective development while they were MLS students, including feedback, group activities, interprofessionalism, and evaluation including self-evaluation. Previously conducted studies provided evidence of various activities that are beneficial to influence affective domain development in health science students, including interprofessional experiences (Donlan, 2018; Stephens & Ormandy, 2018; Varpio et al., 2017) and contemplative activities (Fiske, 2017; Maxwell et al., 2016). The previous study findings were similar to what the participants in this study

reported. Throughout the interview, participants also talked about the various settings in which those learning activities and experiences took place, including lab class, lecture class, student room, clinical rotations, recitation, and different clinical rotation sites during clinical rotations. However, there was no available evidence in the literature that addressed the types of settings where affective domain development took place.

Participants shared various sources of their motivation while they were students in the MLS program. Successful affective domain learning comes when students are highly motivated (Donlan, 2018; Theall & Graham, 2017). During the interviews, participants described their sources of motivation, including avoiding failure and future goals. Many participants mentioned that they were aware that they were being evaluated or graded, or that they had expectations about the affective domain requirements during their time in the MLS program.

When considering the activities and experiences that could be incorporated into an MLS program to support students' affective domain development, it is important to consider the activities and experiences that students found valuable. During the interviews, participants were asked how student affective domain development could be improved during the program. Each participant offered ideas closely related to the experiences and learning activities that they shared throughout the interview while discussing their own affective development. Their ideas for improvement of student affective development involved continuing to discuss it as part of the program, increasing self-evaluation and evaluations of students' affective domain, improving the follow-up

process, as well as incorporating goal setting or matching students up with mentors to work on goal-setting practices.

Other ideas that participants shared were related to keeping learning activities and experiences in the program in-person, rotating who students work with in the MLS courses, and having more opportunities to socialize. P9 summed up their ideas to improve affective development as follows: "doing as much kind of in-person, especially for the labs really kind of helps understand what it's like to work with other people, which I think is just like a lot of what this is." A few participants mentioned that they felt that the affective domain was a challenging thing to teach. P9 said, "it's kind of a hard thing to teach," and P13 said that it would be difficult to "pinpoint" how to improve a student's affective domain development and that these affective domain skills and behaviors "all tie into each other." This aligns with many researchers commenting on how educating and assessment in the affective domain are challenging (Chaieb et al., 2018; Hora et al., 2018; Listopad, 2018; Nortje & Hoffmann, 2018; Rogers, Mey, et al., 2017; Rogers, Thistlethwaite, et al., 2017; Santee et al., 2019; Varpio et al., 2017) and that affective domain skills cannot be evaluated independent of other affective domain skills because they are related (Hora et al., 2019). Despite this challenge, each participant expressed how they recognized affective domain skills and behaviors as very important and valuable in their current role as an MLS professional.

The participants' ideas for improvement of the affective domain development of students during program coursework were similar to what was found in the literature, where researchers' data showed that interprofessional activities were beneficial for

student affective development where students from various health science programs were able to interact and work together (Donlan, 2018; Stephens & Ormandy, 2018; Varpio et al., 2017). This is similar to what participants talked about over and over throughout their interviews, and it became an emergent theme in this study, because all participants talked about their interactions with faculty, classmates, and friends, and at clinical rotation sites when discussing their affective domain development. While every participant did not specifically mention interprofessional activities, all participants discussed their interactions with different people during their time in the program in relation to their affective domain development.

The majority of participants discussed development of their self-awareness and empathy, or awareness of others, while they were students in the MLS program. Incorporation of affective domain components into coursework has been shown to positively influence the development of communication, self-awareness, leadership, and professionalism (Chaieb et al., 2018; Maxwell et al., 2016), as well as empathy (Jones-Schenk, 2016) in future caregivers. Throughout the interview, participants described their emotions, values, abilities, weaknesses, and characteristics while discussing their affective domain development. Participants demonstrated that they experienced some level of self-awareness during their time as a student in the MLS program and shared insights into the learning activities and experiences that were beneficial for their development in this area. Participants referred to being aware that they were being graded and evaluated on their affective domain. The learning activities and experiences that were beneficial for their self-awareness were self-assessment, evaluation and receiving

feedback, and reflection of their affective domain skills and behaviors. This is consistent with the findings in the literature that present evidence of improved student awareness and affective domain development with the use of contemplative activities, such as reflection (Fiske, 2017; Maxwell et al., 2016). Integrating activities that create space for contemplative activities, such as reflection, will improve student awareness. Learning activities and experiences that MLS students recognized as opportunities where they engaged in reflection included completing a self-evaluation of their affective domain skills and behaviors, being evaluated by faculty or clinical preceptors on their affective domain skills and behaviors, and receiving and responding to feedback.

In relation to their awareness, participants also discussed their awareness of others and development of empathy, along with which program coursework learning activities and experiences were valuable in that development. When discussing empathy, participants often described experiences with "real" components that made an impact on their empathy and awareness of others. One participant discussed reading about medical mistakes that had happened and the impact that had on their empathy. Other participants referred to their experiences in real-world settings, primarily during their clinical rotations, and being able to see real patients, real patient samples, and the real world for themselves, which played an important role in their empathy development. Other participants discussed seeing their classmates struggle or go through a hard time as having an impact on their empathy development. The importance of empathy development in health science students has been evidenced in the literature (Ratka, 2018), which indicates that incorporating affective components into the curriculum will help

with the development of empathy (Jones-Schenk, 2016). However, researchers have agreed that further study is needed to identify activities that offer opportunities for the development of empathy and self-awareness (Foster et al., 2015; Larin et al., 2014). In this study, the results show that maintaining real experiences during the program, including clinical rotations and reading about medical mistakes as well as allowing students to interact and get to know one another, are valuable experiences and learning activities for MLS students in helping develop their empathy during program coursework.

Along with incorporating feedback and evaluation into program coursework, another learning experience and activity that students found valuable during the MLS program was the opportunity to engage in group activities in a variety of settings. Throughout each interview, participants talked about their interactions with faculty, classmates, friends, patients, colleagues, and preceptors. These interactions were discussed in relation to their affective domain development while they were a student and in their current role as an MLS professional. Participants talked about working on group activities in courses and how working in groups during the program coursework helped them develop their communication, collaboration, leadership, empathy, understanding, awareness, and learning how to work with different types of people. Participants evidenced the value of group activities and specifically named several group activities that they engaged in that were beneficial for their affective domain development, including case study discussions during class, group poster projects, research capstone projects, working together in lab classes, discussions with classmates during class, being the charge tech in a simulation laboratory, asking questions, discussion boards, group

presentations during class, volunteering at an interprofessional student-run university

clinic, and participating in study groups. Participants discussed the various group

activities taking place at several different points in the program. The literature provides

evidence of different educational experiences and activities that are beneficial for

affective domain development, including reflective journaling, simulation, and

interprofessional experiences (Donlan, 2018; Fiske, 2017; Hughes et al., 2019;

Krautscheid, 2017; Maxwell et al., 2016; Nortje & Hoffmann, 2018; Rogers,

Thistlethwaite, et al., 2017; Varpio et al., 2017). While a small number of participants

discussed interprofessional and simulation activities in relation to their affective domain

development, there were many other activities described by participants as contributing to

their affective domain development while they were MLS students. Almost all activities

and learning experiences described by participants were centered around activities as a

group or where there were interactions with others as part of the learning activity or

experience.

Conceptual Framework and Findings

The conceptual framework of this study was developed based on Bandura's social

cognitive theory (1991) and Goleman's EI theory (1995). When considering the

conceptual framework of the study and interpretation of the results, it was important to

consider the factors (environmental, social, and cognitive), along with the activities and

experiences that were valuable and useful in supporting the affective development of

students during the MLS program coursework. It was also important to consider the

specific affective skills that are essential for MLS students to develop that will enhance

their employability and the quality of patient care that they provide in health care settings (Bandaranaike & Willison, 2015; Shafakhah et al., 2018). The evidence of this study demonstrates that MLS students' affective domain development is influenced by various factors, including cognitive and especially environmental and social factors. Additionally, MLS students described their awareness of and experiences developing the six skills in Goleman's EI theory, including self-awareness, empathy, communication, emotion management, leadership, and self-motivation.

With the intention to answer the research question, participants were interviewed and asked to share their perceptions, thoughts, and experiences related to their affective domain development during MLS program coursework. It was evident that all participants were familiar with learning about the affective domain during their time in the MLS program and that there were expectations and evaluations related to their affective domain that contributed to their awareness of their own abilities within the affective domain. During the interviews, participants expressed several factors in relation to their affective domain development, including environmental, cognitive, and social factors. Participants described the environment of the MLS program while they were a student in a variety of ways, using descriptions that included the following: supportive, collaborative, friendly, inclusive, cliquey, conducive, healthy, immersive, safe, comfortable, cohort, belong, tolerance, structured, calm, and adventure. Additionally, participants described various settings within the MLS program where their affective domain development took place including class (lab and lecture), clinical rotations, recitation, the student room, simulation lab, online, and different clinical rotation

environments. When describing their affective domain development throughout the interviews, many participants noted the intensity and pace of the program and discussed the amount of material that they needed to know, indicating that it was rigorous, busy, full, high stakes, and fast. Throughout the interviews, all participants described an assortment of interactions and social factors that influenced their affective development, including their interactions with different types of people in the program and participation in group learning activities and experiences. Additionally, participants described varying levels of development of the six skills described in Goleman's EI theory (1995) and the learning activities and experiences that were helpful in their affective development.

Through their descriptions of the activities and experiences in relation to their affective domain development while they were a student in the program, it became evident that participants had a variety of motivations as a student, that their affective development took place in a variety of settings, their empathy was developed through real experiences or observing classmates struggle, and that social interactions with different types of people during program coursework were valuable and integral for their affective domain development during the MLS program. Participants also described their observations of others throughout their interviews in relation to their own affective domain development during their time in the program. These observations included recognizing the affective domain skills and behaviors of others including classmates and faculty. Their observations of the affective domain skills and behaviors they recognized in others had an impact on their awareness of the expectations related to their affective domain skills and behaviors.

Limitations of the Study

There were several limitations recognized which include the generalizability and timeframe of this study. The generalizability of this study was a limitation because of the small sample size of 12 participants and only recruiting participants from one school and MLS program. This may impact the ability of other MLS and laboratory science programs from generalizing the findings of this study in the context of their program and school. Time was another recognized limitation of this study. The time span where data were collected was shortened due to this being an exploratory basic qualitative study and because this was for a dissertation project. The timing and the window of data collection was selected to align with the nature and design of this study.

Recommendations

The purpose of this basic qualitative exploratory study was to understand the program learning activities and experiences MLS students' valued for their affective development. Twelve participants qualified for and participated in this study. Based on the findings and scope of this study, there were some recommendations to be considered for future research. A recommendation to expand this study to include additional higher education institutions with MLS programs may be beneficial in improving the generalizability of this study. Another recommendation would be to explore how affective domain development changes among students throughout the program from the time of admission to graduation and beyond. This is would help identify the specific areas of the affective domain that students develop throughout the program, as well as tracking their development of skills beyond graduation as they enter the workforce and

being their professional careers. Another recommendation is to further explore self-awareness of students throughout the MLS program. A final recommendation is to compare MLS student affective domain development in simulation experiences versus real world experiences. Since there continue to be challenges related to securing clinical rotations in real world settings due to the ongoing workforce shortage, it may be beneficial to evaluate if simulation experiences provide the same value in affective development of MLS students as real world experiences, like clinical rotations, do.

Implications

This qualitative study focused on exploring how students describe the learning activities and experiences related to their affective domain development during the MLS program. The findings of this study may help educators improve their courses to integrate learning activities and experiences that are valuable and beneficial to students for their affective domain development. By integrating learning activities and experiences that are supportive of student affective domain development, this may promote positive social change by providing opportunities for students to develop their affective domain during program coursework, which will increase graduate employability to help reduce the ongoing workforce shortage of MLS professionals, as well as promoting the quality of patient care in healthcare settings. Additionally, by integrating learning activities and experiences that MLS students perceive as valuable for their affective domain development during program coursework, they are more likely to experience some level of affective domain development which will help increase their employability upon graduation, leading to positive social change by helping to reduce the ongoing workforce

shortage of MLS professionals and promoting the quality of patient care in healthcare settings.

This study contributed to the literature by adding the perspective of the MLS student in relation to affective domain development during program coursework, as well as providing insights into the types of activities and experiences that are beneficial for student affective domain development. The findings of this study validate that environmental, social, and cognitive factors influence student learning, including in the affective domain skills defined by Goleman (1995) in the EI theory.

It is recommended that MLS programs integrate group activities, affective domain assessments (self and faculty/preceptor), and provide feedback to students to support and promote their affective domain development as a student. Also, it is recommended that MLS programs provide students the opportunity to interact with different types of people and roles in a variety of settings including class (lab and lecture), clinical rotations, and simulation.

<h3 style="text-align:center">Conclusion</h3>

The role of MLS professionals in healthcare is important to provide quality laboratory data for the diagnosis, treatment, and monitoring of patients. The laboratory is facing a significant workforce shortage due to the faster than average growth rate and a decreasing number of accredited MLS programs (NAACLS, n.d.-b). It is important that MLS programs graduate students that are employable, professional, and provide quality patient care. Affective skills are important for the future success of graduates and have been shown to increase employability and the quality of patient care provided.

A total of 12 MLS program graduates from one large Midwestern university participated in this basic qualitative study. The conceptual framework of the study was based on Bandura's (1991) social cognitive theory and Goleman's (1995) EI theory. Through semistructured interviews, participants were asked to describe their experiences, thoughts, and perceptions related to their affective domain development while they were a student in the MLS program. The data revealed that their affective domain development was influenced by interactions with a different types of people through a variety of learning experiences and activities in diverse settings integrated during the program coursework. By integrating affective domain components into program coursework, MLS programs may provide opportunities that are supportive of student affective domain development that will be beneficial to their employability and the quality of care they provide to patients.

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Appendix: Semistructured Interview Protocol

Sequence of Events

After a participant is recruited and agrees to participate in my study, I will follow

this sequence of events to complete the interview:

- Send a thank you email to the participant to express my gratitude for their

  participation, description of the research study, and the informed consent

  document.

- Schedule the interview for 60 minutes at a date and time convenient for the

  participant. Send participant a calendar invitation for the selected date/time and

  the Zoom web link.

- Conduct the interview via Zoom and record the audio. Transcribe interview using

  Microsoft 365 Word transcription software captioning. Complete a quality check

  by listening to each interview audio recording while reviewing the corresponding

  participant's interview transcript.

- Send the interview transcript to each participant via email along with instructions

  asking them to review for accuracy and consistency with what they intended to

  communicate for each question.

Interview Description

Each participant interview will be scheduled for 60 minutes and will take place

during a Zoom web conference. I will conduct each interview in a private and quiet

location that is free of distractions. When scheduling each interview, I will encourage

participants to complete their interview in a comfortable and quiet location. The audio of

the conference will be recorded and transcribed for data analysis. The interview questions focus on participant perceptions of their affective domain development when they were a student in the MLS program.

Introductory script

Thank you for your participation in this study. I want to remind you that this study is part of my doctoral work at Walden University. Our interview process will be recorded, with access limited to the researcher. Additionally, all participants will receive a pseudonym name for usage within my study to keep your identity confidential. During this interview, I will be recording the audio that I will transcribe following this interview. All recordings will be erased following the transcription process. Do you have any questions?

This study seeks to understand the perceptions of graduates about their affective domain development while they were a student in the MLS program. I am going to ask you a series of questions about your experiences, perceptions, and feelings about your affective domain development during the MLS program. I am hoping you will share your stories, thoughts, feelings, and perceptions that are relevant to the questions.

Let us begin with a little bit of information about where you are working right now. Please tell me about your current position and any positions you have held between graduation from the MLS program and now.

Interview Questions

1. When I say affective domain, what does that mean to you?

2. Tell me about the affective skills and behaviors you developed during the MLS program that have been beneficial to you in your current role as a MLS.

3. How did being a student in the MLS program help you develop your:

    a. Self-awareness

    b. Self-motivation

    c. Empathy

    d. Communication

    e. Leadership

    f. Emotion management

4. Share with me the activities and experiences during the MLS program that you feel were most valuable for your affective development as a MLS student.

5. How would you describe the environment in the MLS program?

6. How did you meet expectations in the affective domain during the MLS program?

7. How do you think the MLS program could improve student affective domain development?

8. Before we finish the interview, is there anything else you'd like to share with me?

Conclusion

It is important for me to ensure the information is recorded truthfully and accurately reflects your statements today. In order to achieve this, I will be following up with you by email to have you review the transcript from your interview today to ensure I documented your statements accurately and consistent with what you intended to state for your response to each question.

Thank you for your time today and for sharing your perceptions, experiences, and stories with me today. At the conclusion of this study, I will be happy to provide you a copy of the completed dissertation for your review.

If you have any questions or concerns about what we have discussed today, you can contact me via email XXXXXXXX or by phone XXX-XXX-XXXX.

Interview Questions

9. Demographic questions:

    a. What year did you graduate from the MLS program?

    b. What degree plan did you complete: BS in MLS, MLS Certificate, Professional master's in MLS?

10. When I say affective domain, what does that mean to you?

11. What affective skills and behaviors do you feel are important for Medical Laboratory professionals?

12. Tell me about the affective skills and behaviors you developed during the MLS program that have been beneficial to you in your current role as a Medical Laboratory professional.

13. Which affective skills or behaviors do you find yourself using the most in your role as a Medical Laboratory professional?

14. Please share some examples of how being a student in the MLS program help you develop your:

a. Self-awareness

b. Self-motivation

c. Empathy

d. Communication

e. Leadership

f. Emotion management

15. Which activities and experiences during the MLS program do you feel were most

    valuable for your affective development as a MLS student?

16. How would you describe the environment in the MLS program?

17. How did you meet expectations in the affective domain during the MLS program?

18. How do you think the MLS program could improve student affective domain

    development?

19. Before we finish the interview, is there anything else you'd like to share with me?