Perceptions of Mentoring from Fourth Year Medical Students

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Perceptions of Mentoring from Fourth Year Medical Students

by

Stephen C. Charles

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Curriculum and Instruction with an emphasis in Higher Education, Administration Department of Adult, Career and Higher Education College of Education University of South Florida


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Keywords: traditional mentoring, peer mentoring, group mentoring, mixed methods research, undergraduate medical students

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DEDICATION

This dissertation is dedicated to my family and many friends who have listened, supported, and encouraged me throughout the dissertation process. A special thanks and gratitude is extended to my parents Jeff and Gail Charles for their positive motivation and financial support of all of my education endeavors throughout the past three decades. I am thankful for my two sisters, Melissa and Christie, for their cheerleading throughout this process. This work is also dedicated to my grandparents who always believed that I can accomplish my dreams.

I also dedicate the work completed here to my numerous friends for their understanding and patience as I missed birthdays, excursions, and many other celebrations to complete this doctoral program. I appreciate all of my friends for listening, providing encouragement and making me laugh when I need it.
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ABSTRACT

This mixed-methods research study investigated medical students' perspectives of professional mentoring through a web-based survey/needs assessment. The participants are fourth year medical students from three large urban research institutions and two regional branch campuses. The web-based survey/needs assessment was created, peer reviewed, and validated. A strategic sampling of focus groups was conducted to gather additional information regarding the results from the web-based survey. The information and data obtained from the survey and focus groups was used to provide recommendations for administrators and faculty about the mentoring program for each campus. A new proposed model of mentoring was developed upon analysis of both quantitative and qualitative data. The significance of this study includes not only the findings about medical school students' perspectives of professional mentoring, but also the development of a validated assessment tool able to inform administrators about perceptions of their medical students.
CHAPTER ONE: INTRODUCTION TO THE PROBLEM

Introduction

During the transformation from layperson to physician, a physician has to learn specific science content, clinical content, and how to exhibit professional behavior. Many institutions and medical students realize there are numerous attitudes, values, and behaviors that need to be developed in their path to become a professional. It is difficult for many of these institutions to promote all of these attitudes, values, and behaviors, and many institutions have turned to mentors to provide this additional education to the formal curriculum. However, research has been limited as to what students perceive they need from their mentors. This dissertation seeks to identify students’ perceptions of mentoring to better inform institutions on how to maximize the impact of mentoring programs.

Background

In order to develop a deeper understanding of current trends in mentoring and medical education, a thorough search of the literature on these two fields was completed. In this background section, relevant history of medical education is described and critical issues in mentoring are analyzed. The last section of this portion is my personal perspective. This section describes why the researcher is interested in this research study.
Relevant history of medical education.

The current medical school design emerged from the Flexner Report of 1910. The Carnegie Foundation sponsored the Flexner report and selected Abraham Flexner, a former headmaster of a high school in Louisville, to visit all of the 155 medical schools existing at that time (Ludmerer, 1999). While visiting the medical schools Flexner focused on students, curriculum, faculty quality, laboratories, clinical training, clinical sites, finance, and governance (Arrieta, 2010). After his visits, Flexner released his report, which suggested that the following be adopted: high admission standards, two years of basic science coursework, two years of supervised clinical coursework, supervised immersion in laboratories and instruction by physician-scientists.

Within a decade of the 1910 Flexner report, accreditation standards and licensing procedures were implemented (Cooke, Irby, & O'Brien, 2010). Ludmerer (1999) stated as part of the licensing procedures, the National Board of Medical Examiners (NBME) was formed, which originally developed the Part exams. These Part exams were exams that medical students must pass to move onto the next level of their training and were divided into three parts. Part I tests the basic sciences at the end of the second year, Part II tests clinical subjects at the end of the fourth year, and Part III tests clinical competence at the end of the internship year. Eligibility for state licensure depended on a passing score on all three parts. A few states and international medical students did not utilize the part exams. These states and international medical students took the Federation Licensing Exam (FLEX). Therefore, there were two different exams that doctors
could potentially be required to take. In 1994, the United States Medical Licensing Examination (USMLE) replaced the NBME Part exams and FLEX exams. The USMLE exam was broken into three parts just like the NBME Part exam (Ludmerer, 1999).

The 1910 Flexner report brought about great changes in the number of medical schools in existence. In the 1920s, almost one third of the medical schools either merged or closed their doors due to the regulations brought about by the Flexner report. Many of the schools that closed offered access to medicine for women and African Americans (Ludmerer, 1999).

After the Flexner Report, the next biggest reform to medical school occurred in 1950s and 1960s. After World War II, medical schools expanded in size due to increased federal funding for research under the National Institute of Health (NIH). The majority of this funding went to research-intensive medical schools and their associated university teaching hospitals. Community based medical schools did not undergo this expansion. This created a secondary mission, research, for many medical schools.

Then, in 1965, Medicare and Medicaid were implemented. Medicare is health insurance for people 65 and older or for people under 65 with certain disabilities. Medicaid is health coverage for certain people and families who have limited income (Department of Health and Human Services, 2011). Prior to Medicare, medical schools were small organizations with few faculty members and clinical revenues accounting for 3% of the medical schools’ total revenue.
After Medicare, clinical revenue increased dramatically to 40% of the medical schools’ total revenue. This added a third mission to medical schools: patient care. These changes, over time, resulted in three primary missions for medical schools: competently educating trained physicians, research, and patient care. These three missions remain today (Cooke, et al., 2010).

In order to accomplish these three missions, medical schools and residencies must train their physicians for the roles in which they will find themselves occupying upon their successful transition from a citizen to physician. Providing scientific and medical knowledge is not enough; medical schools must teach students to demonstrate compassion, to communicate effectively, and to develop social responsibility. Cooke, Irby, and O’Brien have defined this transition as professional identity formation. Professional identity formation implies becoming a different person with a deep sense of commitment and responsibility to patients, colleagues, institutions, society, and self. Inherent in this transformation are the underlying habits of wanting to perform better and the willingness to invest time, energy, and efforts into developing and implementing strategic improvements (Cooke, et al., 2010).

**Current medical curriculum.**

Daloz (1999) stated that journeys have destinations, provide a sense of purpose, and help students understand that uncertainty, confusion, and fear are a valuable part of an educational journey. Three lasting phases of education were developed out of recommendations from the 1910 Flexner Report that are
part of the medical student’s journey today. The three phases of the medical educational journey are: pre-matriculation, doctor of medicine degree program, and residency programs.

Pre-matriculation programs occur during the summer on college campuses throughout the country. These programs focus on assisting underserved populations (minority, first time in college, and rural students) to increase higher order thinking skills, assist in test-taking strategies, and experience with specific science content (Charles, 2011). Students then apply to medical school by taking the Medical College Admission Test (MCAT) and completing applications, essays, and interviews with selected medical faculty (Ludmerer, 1999).

The students are then admitted to the doctor of medicine degree program. The curriculum in the traditional medical system stems from the 1910 Flexner Report. The students take two years of basic sciences and two years of clinical sciences, comprising Undergraduate Medical Education (UME). Along the path there are two ceremonies: white coat ceremony and student clinician ceremony. The white coat ceremony typically occurs during orientation, and serves as a symbol that the students are now entering a profession and should uphold the ideals of medical professionalism (Arnold P. Gold Foundation, 2010a). The student clinician ceremony marks the end of the basic sciences and the
During the fourth year of medical school, medical students begin the process of finding a residency program. The majority of medical students find out which residency program they have been selected to attend at the same time on the same day (Match Day). Upon graduation, the students enter the last phase of their formal education, commonly referred to as Graduate Medical Education (GME). The students are now called residents and gradually accept more responsibility for developing and acquiring skills within their chosen specialty. This training can last from 3-7 additional years. It is not until the completion of at least one year of the residency program and passing USMLE Step III that a resident can have unsupervised practice within their specialty. Some programs have subspecialty programs which last an additional 1-3 years of additional training. The formal educational journey does end after that, but doctors will continue to learn and are required to continuously update their knowledge and skills through Continuing Medical Education (CME) programs. Participation in CME programs is usually required for renewal of physicians’ licensure (Cooke, et al., 2010).
Defining mentoring.

Taherian and Shekarchian (2008) and Dunnington (1996) stated that “mentoring” originates from the Greek language and literally translated means “enduring.” According to Dunnington (1996), mentoring was first used in the Iliad and the Odyssey. Odysseus was leaving home to go to war. Odysseus’s return home was delayed many years. In Odysseus’s absence, a trusted friend, Mentor, assumed responsibility for raising Odysseus’s son as he matured from boy to manhood. It was from this relationship that the term mentoring was developed (Dunnington, 1996; Taherian & Shekarchian, 2008). For the purposes of this study, the mentoring roles were analyzed through literature and were described and utilized throughout the study as follows:

Table 1: Comparison of Mentoring Related Roles by Description and Length of Time

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Length of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preceptor</td>
<td>A preceptor is described as a professional practitioner who facilitates learning in a single setting such as clinical competence and rural needs (Marriott, Taylor, Simpson, Rosalind, Galbraith, Howarth, Leversha, Best, &amp; Rose, 2005)</td>
<td>The time of contact can range from 2 weeks to 8 months P. Parisian (personal communication, September 10th, 2011).</td>
</tr>
<tr>
<td>Traditional Mentor</td>
<td>A traditional mentor is described as a more experienced person who guides a younger inexperienced person for professional and personal growth and development (Zerzan, et al., 2009; Taherian &amp; Shekarchian, 2008)</td>
<td>These traditional relationships are usually are over an extended period of time (Morrison-Beedy, Aronowitz, Dyne, &amp; Mkandawire, 2001)</td>
</tr>
<tr>
<td>Coach</td>
<td>A coach is described as someone who provides customized instruction, training or guidance intervention designed to improve performance of a skill (ERIC, 2008)</td>
<td>A coach usually only involved in a relationship for a short duration of time and usually is paid (Merlevede &amp; Bridoux, 2004)</td>
</tr>
<tr>
<td>Role</td>
<td>Description</td>
<td>Length of Time</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Academic Advisor</td>
<td>An academic advisor is a person who focuses on providing information on degree requirements, technical guidance regarding requirements, and monitoring the students’ progress through an academic program (Weil, 2001). This relationship does not go beyond advising to cover topics such as enhancing, promoting, the professional development of the student (Cohen, 1995; Johnson, 2007; Kram, 1985)</td>
<td>This relationship can last from a semester to the entire length of the students’ involvement in the academic program.</td>
</tr>
<tr>
<td>Peer Mentor</td>
<td>A peer mentor is described as a person engaging in a helping relationship with another individual of similar age, knowledge, and experience, with the two people willing to assist each other in achieving career related and psychosocial functions (Terrion, &amp; Leonard, 2007)</td>
<td>This relationship can last from a few months to a few years.</td>
</tr>
<tr>
<td>Group Mentor</td>
<td>An individual who facilitates groups of mentees. The group shares experiences, challenges, and receive support from peers as well as the group mentor (Darwin &amp; Palmer, 2010)</td>
<td>This relationship can last from a few months to a few years (Darwin &amp; Palmer, 2009)</td>
</tr>
<tr>
<td>Role Model</td>
<td>“An individual (real or theoretical) that is selected for emulation in one or a selected few of their roles” (ERIC, paragraph 1, 1973)</td>
<td>Ranges from days to numerous years</td>
</tr>
</tbody>
</table>

**Critical issues in mentoring.**

According to Levinson’s classic 1978 volume, *The Seasons of a Man’s Life*, mentoring is defined as a stage in the life of all professionals. Older professionals have a personal need to give back to their profession and create a legacy. Levinson goes on to state that failure to have a mentor and serve as a mentor leads to psychological conflict (Levinson). Daloz (1999) stated that mentors are guides. Mentors lead their mentees along the journey of their life, both personally and professionally (Dunnington, 1996). According to Zerzan, Hess, Schur, Phillips, and Rigotti (2009), a mentor is defined as someone who is
of advanced rank that guides, teaches, and develops a novice. Taherian and Shekarchian (2008) stated that mentoring is a process where an experienced, highly regarded, empathetic person (mentor) guides a usually younger individual (mentee) in the development and reexamination of their own ideas, learning, and personal or professional development. Morrison-Beedy, Aronowitz, Dyne, and Mkandawire (2001) stated that mentoring is a relationship between two people in which one person with greater experience and/or expertise counsels and teaches the other person to develop professionally.

According to Scott (2005), professional mentoring relationships are for the purpose of career guidance and assistance with interpersonal challenges. Scott identifies 5 dimensions of mentoring:

- Mentoring relationship involves a more senior mentor and a less experienced mentee.
- Mentoring consists of 3 emotions: emotional support, career assistance, and role modeling.
- Both mentor and mentee will benefit from this process.
- Successful mentorship requires personal interaction and exchange between the two parties.
- A mentor has a more powerful position and broader experience within an organization (p. 52).

Over the years, a number of mentoring models have been developed and refined. This section reviews the most popular forms of mentoring currently practiced. The mentoring models that have been defined are traditional, peer, and groups/circles. Below is a description of these types of mentoring.

Traditional mentoring describes a relationship between two people in which the more experienced mentor helps guide the career of a younger, less
experienced mentee (Kram, 1985). Vance (1982) describes a traditional mentor as “someone who serves as a career role model and who actively advises, guides, and promotes another’s career and training” (Vance, 1982, p. 10). In the traditional mentoring construct, the mentoring relationship lasts over an extended period of time and is marked by an emotional commitment from both parties (Stewart & Krueger, 1996; Wocial, 1995; Yoder, 1990).

Terrion and Leonard (2007) stated that peer mentoring is an extension of the traditional dyad model. According to Kram (1983), peer mentoring is a helping relationship in which two similar aged or experienced students come together for pursuing career-related or psychological assistance. Terrion and Leonard (2007) stated that the prerequisites for student peer mentoring should be ability and willingness to commit time, experience at the university setting, and desire to achieve a level of academic success. The research supports that gender and race have different impacts at different institutions, depending on culture, student population, and structure of the mentor program. Terrion and Leonard (2007) described contextual factors such as culture of the institution, characteristics of the student population, and structure of the mentoring program may make the effectiveness of race and gender matching vary from each institution.

Peer mentoring has been used in both faculty-to-faculty and student-to-student models. The most common purpose of faculty-to-faculty mentoring is to increase research productivity and to increase retention rates among junior
faculty mentors (Santucci, 2008). Some limitations to faculty-to-faculty peer mentoring include competition among peers as well as a reduction in cumulative professional experiences. Bussey-Jones, Bernstein, Higgins, Malebrance, Paranjape, Genao, Lee and Branch (2006) stated that competition may occur amongst peer faculty members due to success rates of acquiring grant funding, number of publications, and relationships with institutional leaders. Secondly, a junior faculty member may not be able to introduce a peer member to a more senior faculty member. The lack of professional rank may decrease the professional experiences a peer mentee may be able to be exposed to (Bussey-Jones et al., 2006).

Group mentoring or mentoring circles move away from the traditional one-on-one model and move into groups of mentees in which the mentor and mentees mentor each other. These groups have facilitators to keep the conversations focused and on track. Kram (1985) stated that many times mentees think that one mentor, rather than a network of mentors, is the key to development. Darwin and Palmer’s (2009) research at the University of Adelaide suggests that mentoring networks can be beneficial. There were three mentoring circles of academic faculty members that were formed with faculty members from a variety of academic disciplines. Darwin’s research stated that mentor circles provided access to networks, reduced feelings of isolation, provided greater connectivity, increased confidence levels, increased knowledge acquisition, and increased career progression. Mentoring circles offer flexibility, diverse opinions,
knowledge creation, and the ability to depend on multiple people as opposed to just one (Darwin & Palmer, 2009).

There are numerous examples of mentoring programs: both formal and informal. Formalized mentoring programs are those in which mentoring is managed and sanctioned by an institution for the purposes of increasing access to mentors, fostering relationships, and to introducing mentees to the organizational climate (Morzinski, Simpson, Bower, & Diehr, 1994). In contrast, two individuals who create an alliance without the guidance or management of an institution engage in informal mentoring (Karkoulian, 2008).

While there has been significant research on mentoring programs and types of mentoring, few needs assessments of mentoring have been conducted and published. Needs assessments are systematic processes for collecting information and making decisions (Barbazette, 2006). They provide justification for decisions, models that can be applied and replicated, provide perspective for decision makers, and can lead to interdisciplinary solutions to complex problems.

**Personal perspective.**

I have been involved in medical education administration for the past eight years. Administrators commonly see the benefits of mentoring and jump right in with designing mentoring programs; however many of these programs have not conducted a needs assessment of their medical students. Many of these formal programs have challenges in regards to lack of resources for faculty time, mismatched students and faculty members, students receiving inadequate
advice in topics beyond the mentor’s expertise, numerous students unhappy with residency assignments, and students at the end of their medical training not fully prepared for their professional identity.

My purpose is to investigate the literature of developing mentor programs and describe the medical students’ perceptions of their needs to assist with their transition from citizen to physician. I wanted to take the time to plan a thorough mentoring program that would meet these needs of the students. This survey tool would be generic enough that each medical school could utilize it and have assistance in designing a mentoring program.

**Statement of the Problem**

Undergraduate Medical Education would benefit from further understanding the needs assessment results from the mentoring survey created in this study. Many medical education institutions would benefit from finding out the current needs of their medical students to help better inform, design, and implement mentoring programs. Currently, there has not been a validated needs assessment published surveying medical students about the experiences they have had with mentors or what they need as they prepare for residency.

**Significance of the Study**

This study seeks to conduct a new needs analysis for increased awareness and relative importance of the mentoring process as it relates to the needs and attitudes of fourth year undergraduate medical students. Considering the literature reviewed, there was not a well-defined set of components or survey
tools that revealed previous experience with mentoring and attitudes towards mentoring in undergraduate medical education. Such data would inform development and continued revision of this essential part of the medical education experience. This study helps fill this void in the literature.

**Purpose of the Study**

The central purpose of this study is to assess the needs of fourth year medical students in regards to mentoring. This study will collect data that will be used to design and implement a mentoring program for medical schools. The self-assessment inventory instrument to be utilized will examine attitudes and needs of medical school students to determine mentoring constructs. Focus group sessions will help further explain the needs of medical students as it relates to mentoring.

**Research Questions**

This study will examine the following research questions:

1. To what frequency have fourth year medical students had a mentoring experience?
2. If fourth year medical students have had a mentoring experience, in what types of mentoring did they participate?
3. What do fourth year medical students perceive as necessary for mentoring for preparing medical students during academic training (1st two years), their clinical training (2nd two years), and for a professional growth?
4. According to fourth year medical students, to what frequency did mentoring contribute to their preparation for their professional growth?
5. To what frequency do fourth year medical students indicate that they possess the characteristics to benefit from a mentoring program?

6. To what frequency do fourth year medical students understand the characteristics essential to successful mentoring?

7. To what frequency have fourth year medical students experienced and recognized the various characteristics of mentoring?

8. What are the demographics of mentees with respect to their preferred mentors (gender, age, nationality, specialty and sexuality)?

Assumptions

For the purpose of this research, the assumptions made were:

- The participants in the study would respond to the inventory and focus group sessions accurately and honestly.
- The participants in the study would be representative of the population of medical graduates at the multiple campuses participating in this study.

Definitions

Basic Science- This term describes the two years of classroom-based coursework that is designed to constitute the foundation of formal knowledge on which clinical practice is based (Cooke, et al., 2010).

Clinical Science- This term describes the two years of clinical practice that is organized into specialty block courses that run from 2 weeks to 8 weeks called clerkships (Cooke, et al., 2010).
**Coaching**: Coaching can be described as a “customized instructional, training, or guidance intervention designed to improve the performance of an individual or group. Coaching is characterized by intense, sustained, non-judgmental and non-evaluative assistance, support, and feedback from a knowledgeable professional who helps the client to set goals, identify obstacles, and develop plans and strategies to achieve goals. Coaching may occur in one-on-one or group setting” (ERIC, 2008).

**Federation License Exam (FLEX)** - A multiple part exam in which all international students and some United States medical students took to achieve a medical license. This exam is no longer administered (Ludmerer, 1999).

**Graduate Medical Education** - The period of didactic and clinical education in a medical specialty which follows the completion of undergraduate medical education and which prepares physicians for the independent practice of medicine in that specialty, also referred to as residency education (ACGME, 2011).

**Internship** - An internship is defined as a period of hospital training beyond undergraduate medical education. This internship year is usually one year in length (Ludmerer, 1999).

**Mentor** - A mentor is defined as someone of advanced rank or experience who guides, teaches, and develops a younger novice, typically found in professional occupations (Zerzan, et al., 2009).
**Mentoring Relationships** – Mentoring relationships are defined as dynamic, reciprocal relationships between a mentor and mentee aimed at promoting the career development of both parties (Healy & Welchert, 1990).

**National Board of Medical Examiners**- The National Board of Medical Examiners (NBME) is the dominant organization that develops and administers medical licensure exams (Ludmerer, 1999).

**NBME Part Exams**- A series of three exams required by most states during from 1950-1990 as a requirement to obtain a medical licensure. The National Board of Medical Examiners created these exams. The NBME part exams are not currently administered (Ludmerer, 1999).

**Needs Assessment**- Needs assessments are systematic processes for collecting information and making justifiable decisions (Barbazette, 2006).

**Professional Identity Formation**- Personal identity formation is defined as an ongoing, self-reflective process involving habits of thinking, feeling, and acting (Cooke, et al., 2010).

**Resident**- Any physician in an accredited graduate medical education program, including interns, residents, and fellows (ACGME, 2011).

**Residency**- A program accredited to provide a structured educational experience designed to conform to the program requirements of a particular specialty (ACGME, 2011).
**Undergraduate Medical Education** - Undergraduate Medical Education (UME) is described as the education of medical students after an earned bachelors or master’s degree. This period is prior to internship and residency training (Ludmerer, 1999).

**United States Medical Licensing Exam (USMLE)** - The USMLE exams are a series of three exams required by all states from 1990 to the present (Ludmerer, 1999).

**Summary**

Mentoring has become a buzzword in the field of education, and many studies have examined students and their mentoring experiences. These studies helped clarify the process of mentoring and produced common terminology that is being used to describe these relationships for this study. Mentoring has been predominantly studied in the fields of business and nursing, with little attention devoted to needs assessments in any field. The significance of this study is to determine what mentoring experiences the medical students participate in currently and the medical students’ perceptions of their needs in mentoring to better prepare them for career success.
CHAPTER TWO: REVIEW OF RELATED LITERATURE

Introduction

The purpose of this study is to assess the mentoring attitudes, knowledge, and needs of medical students who are graduating in May 2013 from five schools of medicine. There are three large urban schools of medicine participating in this study. One large urban campus has two branch campuses and another campus has one branch campus. Chapter 1 described the problem in some detail and discussed associated areas of importance of the study. In this chapter, literature related to the study is reviewed.

The literature review presented is divided into three parts, 1) Mentoring in Medical Education, 2) Mentoring Program Development, and 3) Professional Identity Formation. These three parts will relate to this study by showing current literature regarding mentoring and needs assessments as it relates to medical education.

Mentoring in Medical Education

Over the past decades, medical educators have focused on developing more professional physicians. Research mentoring, clinical mentoring, and role-modeling have typically accomplished the development of the professional physician. Currently, mentoring and role modeling utilize a select group of master teachers in which they provide most of the education a student receives. These
master teachers spend a significant amount of time with students providing professional knowledge, skills, and behaviors. These master teachers are usually informally connected with students based upon the student’s research interests (Smith, 2010).

Based on this literature, one may discern two major types of mentoring: informal and formal mentoring. The first section will continue to differentiate among these two types as well as the subdivision of formal mentoring as illustrated in Table 2.

Table 2: Types of Mentoring and Subdivisions of these Types

<table>
<thead>
<tr>
<th>Type of mentoring</th>
<th>Subdivisions of type</th>
</tr>
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<tbody>
<tr>
<td>Informal</td>
<td>None</td>
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<tr>
<td>Formal</td>
<td>Traditional</td>
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<tr>
<td></td>
<td>Peer</td>
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<td>Group/Circle Mentoring</td>
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**Informal mentoring.**

An informal mentoring relationship exists whenever one person explains to another the how or why of something (Heller & Sindelar, 1991). Noe (1988) states that informal mentoring relationships are considered to be more beneficial
than formal mentoring relationships, because they yield less interpersonal conflicts and greater commitment from both the mentor and the mentee. This relationship usually lasts from three to six years (Noe, 1988). Another major benefit to informal mentoring is the connection that can be made to both the psychosocial and career-related domains. The informal mentoring relationship enhances both domains as opposed to formal mentoring which tends to enhance only the psychosocial domain (Kram & Isabella, 1985).

There are limitations to informal mentoring. Informal mentoring is hard to advertise, standardize, monitor, and evaluate (Taherian & Shekarchian, 2008). According to Frey and Noller (1986), these limitations are enhanced when heterogeneous (cross-sex) mentoring pairs occur and when supervisors' perceptions of mentees may change. This article discussed that cross-sex mentoring may lead to sexual feelings between male and female participants. When researchers discuss informal mentoring, they state it becomes limited if heterogeneous pairs match up. The limitations to heterogeneous pairs lead to role modeling difficulties (Frey & Noller, 1986), fears of sexual attraction (Bowen, 1985), and sensitivity to others' impressions of the relationship (Zey, 1984). The assumption by these researchers is that heterogeneous mentoring pairs are heterosexual; this is a dated concept. This assumption needs to be further investigated in the present day, as more people are living their lives as openly gay, lesbian, bisexual, or transgendered. Russell has stated the need for this research, as there been limited empirical attention to the topic of mentoring relationships with one of more gay, lesbian, bisexual, and transgendered (GLBT)
members. Russell stated today's society is the first diverse multigenerational community of GLBT and GLBT affirmative students and professionals (Russell & Horne, 2009).

Other researchers have tested same sex mentors and mentees without regard to sexual orientation. Terri Scandura surveyed 365 respondents who were employed students in a Master of Business Administration program in the southeastern United States. She found that mentees benefit more from same-sex relationships with respect to role modeling (Scandura & Williams, 2001).

Some studies have attempted to disprove these purported limitations of informal mentoring. A series of three experiments performed by Olian, Carroll, Giannantonio, and Feren (1988) found that there was no evidence of mentee-preferences for same-sex or cross-sex mentoring. The first experiment consisted of 166 students participating in a business course, as juniors or seniors in the School of Business at the University of Maryland. The participants filled out two six-item scales based on the interaction between a manager and a subordinate. The first scale focused on interpersonal competence and the second scale focused on mentoring attraction. The results of the first study conclusively indicated that attraction to a manager as a potential mentor is significantly affected by the perceptions of the managers’ interpersonal skills. This experiment provided no evidence of preferences for same-sex or cross-sex mentoring.

The second experiment that Olin completed was using 271 students at the University of Maryland. The students were randomly assigned to 1 of 12 research
conditions. Students provided information on background variables such as age and previous work experience, then the same two scales from experiment one were used. This study stated that background features did not have a significant effect on mentee attraction to a potential mentor, nor did previous work.

The third study from Olian used 238 students. Students were given a situation of a manager and subordinate. Then they answered questions regarding gender, perceptions of manipulations, and attraction to the mentor in the script. This study showed that interpersonal competence of the mentor was the key in determining mentees’ attraction to the mentor. In Olian’s experiment, data collected did not provide evidence for same-sex or cross-sex mentoring. (Olian, et al., 1988).

There are numerous benefits with implementing an informal mentoring program. However, as with all mentoring programs, there are barriers as well as benefits. If appropriate data is collected prior to implementing a program, strategic decisions can be made to address the barriers and limitations of informal mentoring programs.

Cook et. All (2010) describes this informal model of mentoring in medical education as suboptimal due to the current state of medical education. Healthcare is an industry worth $2.1 trillion in the United States annually. As of 2010, 47 million Americans are uninsured and many of the hospitals and medical school clinics carry a disproportionate share of care for the uninsured while also constructing a learning environment for the next generation of physicians.
Academic physicians are balancing multiple missions—they must provide patient care, care for the poor, and engage in both teaching and research. Each mission vies for the same extremely limited resources. In this context, medical students and residents learn in environments that are suboptimal (Cooke, et al., 2010).

In the current structure of medical education, the triple missions of patient care, research, and education have been difficult to balance. Medicare and Medicaid cutbacks require physicians to see more patients to generate the same income. Many basic scientists are being asked to spend more time writing and securing grants for research to fund portions of their salaries. The emphasis over the past decade on this triple mission has led to faculty members sharing responsibilities for education of the medical students. This would allow for the students to acquire knowledge while minimizing the amount of time a faculty member is not devoting to patient care and research. This situation results in some courses or modules in the medical school having numerous faculty members (ranging from as few as a dozen to as many as 100) participating in a single course. The course will have many faculty members providing only a single or very few lectures. This current model leaves very little time for faculty members to mentor, develop longitudinal relationships with students, and develop continuity with other courses in the medical school curriculum (Smith, 2010).
A study of 174 students conducted by Moskowitz revealed that as of 2008, 37.13% of all seniors who graduated from medical school stated they were either very dissatisfied, dissatisfied, or neutral about their experiences with faculty mentoring. These data are displaying a problem facing medical education: how do the medical schools improve student mentoring experiences? In order to address this situation, many schools have abandoned the informal way students select mentors and are now considering formal mentoring programs (Moskowitz, Smith, Zia, & Wipf, 2010). With these formal mentoring programs, all medical students are assigned a mentor that could be a traditional (one-on-one) mentor, peer mentor, or a group mentor.

**Formal mentoring.**

Formal mentoring programs are programs that provide a systematic mentoring relationship in which students can receive assistance and insight from an experienced mentor (Heller & Sindelar, 1991). This relationship usually results from an assignment or matching process. Noe (1988) stated that assigning mentors is a successful way to integrate mentees into an organization (Noe, 1988). London and Mone (1987) stated formal mentoring programs provide easy access to mentors, legitimization of developmental activities, ongoing monitoring of the quality of career-enhancing relationships, and increasing competence and motivation among those who participate.

While formal mentoring has numerous benefits, it does have unintended consequences which can be costly to the mentee and the organization (London
Sometimes matches between mentor and mentee can cause anxiety about the mentor and mentee’s ability to carry out the expectations of the formal role. This anxiety can undermine the performance of both individuals. Most formal mentoring programs emphasize a single match or pairing of mentor and mentees. This means the mentor is expected to be able to provide all of the necessary support for the mentee. For many mentees, one mentor is not sufficient to provide all of the support needed in a formalized mentoring program (Bettemann, 2009).

Kram (1983) stated that there are two major functions of mentoring: career-related (sponsorship, coaching, exposure, and visibility) and psychosocial (role modeling, friendship, and acceptance). Formal mentors tend to fulfill the psychosocial role more than career-related functions (Kram, 1983). Chao, Walz, & Gardner (1992) stated that career-related functions require more active participation outside of the dyad and therefore may not be provided to the same extent in formal mentoring. It should also be noted that formal mentoring programs may be shorter in length than an informal mentoring program. Formal mentoring programs may be as short as 6 months to a year (Murray, 1991).

Moore’s (1982) research on formal mentoring relationship between the mentor and mentee stated that there are three stages a mentor-mentee relationship evolves through. The first stage is initiation. This stage involves the mentee completing tasks that are observable by the mentor. The second stage is where the mentor deliberately gives mentees tasks that will assist the mentee to
develop academically or socially. The third stage is when the mentor and mentee work together on a specific project and spend significant time together. This stage will often involve the mentor bringing the mentee into an inner circle of friends (Moore, 1982). Each stage of development allows for the relationship in a formal mentoring program to grow, evolve, and flourish over time.

**Types of formal mentoring programs.**

There have been three types of formal mentoring programs documented in the literature. These include traditional mentoring programs, peer mentoring programs, and group mentoring programs. Each of these types of programs has their own unique characteristics and help to foster the relationship between the faculty and student. The next section will explore each of these types of mentoring.

*Traditional mentoring.*

In the traditional mentoring model, mentoring is a process where an "experienced, highly regarded, empathetic person (mentor) guides a usually younger individual (mentee) in the development and reexamination of their own ideas, learning, and personal or professional development" (Taherian & Shekarchian, 2008). The mentor develops a professional relationship with their mentee over an extended period of time and this relationship is distinguished by the emotional commitment of both parties (Morrison-Beedy, et al., 2001). The professional mentoring relationships are for the purposes of career guidance and assistance with interpersonal challenges. According to Scott (2005), there are
five dimensions common to the traditional mentoring relationships. The first dimension is the transfer of knowledge and skills from the mentor to the mentee. The second dimension requires that each mentor provide emotional support, career assistance, and role-modeling to their mentee. The third dimension describes a relationship where the mentor benefits from the relationship as well as the mentee. The fourth dimension is the ability to have frequent interactions, communication, and exchanges between the mentor and mentee. The final dimension is that the mentor needs to have more experience within the organization or environment than the mentee.

There are some barriers that should be considered with the traditional model of mentoring. Barriers for mentors include lack of available time to mentor, the number of quality mentors available, and lack of clear goals and objectives for the mentee (Pfund, Pribbenow, Branchaw, Lauffer, & Handelsman, 2006). Barriers for the mentee include concerns around cultural differences, overprotection, cloning, and conformation (Morrison-Beedy, et al., 2001). These barriers can be addressed by having mentor and mentee training sessions to address concerns of effective communication, issues of human diversity, mentoring approaches and philosophies, and goal setting strategies (Pfund, et al., 2006).

*Peer mentoring.*

The peer mentoring model is an extension of the traditional mentoring model. The main difference in the peer mentoring model is that the mentor and
mentee are similar in age, power, and experience. Characteristics of student peer mentors include the ability and willingness to commit time, experience at the university setting, and achievement of a level of academic success (Terrion & Leonard, 2007).

Peer mentoring has been used in faculty-to-faculty models as well as student-to-student models. The most common purpose of faculty-to-faculty peer mentoring is to increase research productivity and to increase retention rates among junior faculty mentors (Santucci, et al., 2008). In comparison, student-to-student models aim to increase academic knowledge and provide psychosocial support (Loots, 2009). Some limitations to peer mentoring include competition among peers and the potential for a reduction in cumulative professional experiences. While individuals in peer mentoring may be equal in rank, they may not be equal in knowledge and skills. Therefore, this may create an environment where the peers try to compete against each other to show that one colleague is better than the other. Also, because these colleagues are equal in rank, they may not have the professional connections and networks that a more senior level mentor may have, thus reducing the professional opportunities available to these individuals (Bussey-Jones, et al., 2006).

*Mentoring groups/circles.*

Group mentoring or mentoring circles move away from the traditional and peer mentoring models that involve a one-on-one model of mentoring. The group mentoring model involves groups of mentees working with one mentor in which
the mentor and the mentees mentor each other. The mentor serves as a facilitator to keep the conversations and discussions focused and on track (Darwin & Palmer, 2009). Recent research indicates that people benefit from networks of people in their professional lives such as their peers, bosses, managers, and direct reports rather than only one mentor (Kram, 2004). Dansky conducted a survey of 88 Ohio Council for Home Health Care participants and found that a professional organization can provide mentoring functions in groups. That study found the following group mentoring behaviors present in this professional organization: role modeling, inclusion, networking, and psychosocial support (Dansky, 1996).

Meister and Willyerd (2010) described two organizations using group mentoring, one at AT&T and another at British Telecommunications. At AT&T, group mentoring is facilitated through leadership circles. These leadership circles are self-organized and allow for the group to reach more employees than if the groups were organized by Human Resources. The leadership circles use an online format, where one mentor can work with several mentees at once or one on one. This allows for the mentees to be in different locations but still receive the professional formation they need. Managers will frequently share mentoring responsibilities within circles. Face-to-face interaction, conference calls, and webcasts all supplement these leadership circles.

British Telecommunications (Meister & Willyerd, 2010) utilizes mentoring circles as well. They call their program Dare2Share. In this program, employees
pass on knowledge gained in 5-10 minute audio and video podcasts, RSS feeds, and discussion threads. The employees here can view the 5-10 minute podcasts and rate them on quality and relevance. Some outcomes of this program are that new employees get up to speed more quickly and training costs have decreased.

Mentor groups allow for access to networks, reduction in feelings of isolation, greater connectivity, increased confidence, increased knowledge acquisition, and increased career progression. Mentoring groups offer flexibility, diverse opinions, knowledge creation, and the ability to depend on multiple people as opposed to just one.

There are a few barriers for implementing group mentoring strategies in higher education. Higher education is typically based on competition; whether that competition is for research grants and publications as a faculty member or for grades and class rank as a student. Therefore, many faculty, students, and administrators may not see the immediate value of collaborations. Another barrier that may be present is the effect of individual personalities. Some personalities may be overbearing and try to take over the group while other personalities may not feel comfortable sharing in a group setting (Darwin & Palmer, 2009). Training for the mentors and mentees can reduce these barriers, and can make this method of mentoring more advantageous. Collecting appropriate data prior to implementing a program also can assist in making, strategic decisions to address the barriers and limitations of formal mentoring programs.
Mentoring research through surveys.

Pololi and Knight (2005) identified four domains of mentoring. The domains of mentoring were personal exploration, identification of core values, practical guidance-structured career planning and growth, mentor support-close, collaborative relationships, and mentor advice-skill development. A study by (Rogers, Monteiro, & Nora, 2008) used a modified version of Pololi’s Principles of Adult Mentoring Inventory, distributing it to 96 faculty members, and confirmed that these same four factors measure dimensions that can be meaningful to medical school faculty. However, it should be noted that this instrument has been used by surveying faculty in both studies to measure the domains of mentoring experiences. At this time, there has not been an inventory that surveys medical students to obtain what they perceive their needs to be in regards to mentoring.

Mentoring Program Development

A significant planning period is required before a mentoring program can be implemented. There are three steps to developing a mentoring program: conduct a needs assessment; develop mission, visions, and goals; and develop a mentoring strategy (Garringer, 2003). Caffarella adds two additional steps to the beginning of this process. Caffarella (2002, p. 23) stated in planning programs the individual should first “discern the context,” which includes knowledge of the institution, individuals, and power dynamics. This step of the planning ensures that the actions and beliefs of the individual are ethical.
The second additional step that Caffarella included in this stage is "building a solid base of support" (Caffarella, 2002, p. 83). The program planner needs to ensure support from key stakeholders and build collaborative partnerships with the other organizations and groups. Additionally, the program planner will need to cultivate a supportive environment by creating standard operating procedures.

A needs assessment (the process of collecting information about an expressed or implied institutional need that can be addressed (Laxdal, 1982)) is another crucial part of developing a mentoring program. According to Caffarella (2002, p. 114), a need is defined “as a discrepancy or gap—the perception that because there is a need, something is missing or wrong with a person, an organization, or society and has to be fixed.” There are two types of learning needs, perceived and true. Perceived learning needs represent the perspective of the learners, while true needs are determined by standardized or independent assessment (Laxdal, 1982). The needs assessment is a general term for a three-phase process to collect information, analyze the information, and create a plan to remedy the deficiencies identified. Needs assessments often use multiple needs analysis which are different types of assessments such as performance analysis and task analysis.

A needs assessment seeks to answer multiple questions. The questions that are addressed in needs assessment are:

- What is the best way to perform? Is there a better way to perform to get better results?
How can the performance deficiency be fixed?  
Who is involved?  
Why try to eliminate or close the gap?  
When will the training or remediation take place?  

(Leigh, Watkins, Platt, & Kaufman, 2000, p. 92)

A needs assessment provides a strategic way to determine what is occurring and what should be occurring in an institution by collecting information, analyzing the information, and creating a plan to remedy the deficiencies identified (Leigh, et al., 2000). The researcher in this study has chosen a needs assessment to determine what is currently being done in mentoring at different institutions and to see if there are deficiencies that can be identified and addressed.

Developing a needs assessment involves five stages:

Stage 1: Survey Design and Preliminary Planning  
Stage 2: Pre-testing  
Stage 3: Final Survey Design and Planning  
Stage 4: Data Collection  
Stage 5: Data coding, Analysis, and Final Report  

(Czaja & Blair, 2002, p. 11)

According to Czaja and Blair, these stages allow a thorough development of needs assessment.

In stage 1 of the five-stage process identified by Czaja and Blair (2002), the sampling type is determined. The researcher needs to determine the population that has the most knowledge of the subject being studied. Next, the sampling frame (the source from where the population study will be derived) needs to be determined, as well as the type of survey (mailed questionnaires, Internet surveys, telephone interviews, and face-to-face interviews). Depending
on the sampling frame, size of the sample, and geographic location of the sample size, different survey methods may be more appropriate than others (Czaja & Blair, 2002). Shih and Fan (2008) completed a meta-analysis of 39 study results published between 1998 and 2008 that directly compared Web and mail surveys and discovered that during those years college students who were surveyed appeared to be more responsive to Internet surveys. Additionally, the researchers learned that follow-up reminders appear to be less effective for Web surveys than for mail surveys at that time. (Shih & Fan, 2008).

Stage 1 of the five-stage process identified by Czaja and Blair (2002) also includes survey design. The researcher must determine the type of questions that would be needed to gather the information required for the program. Survey questions can be open-ended, closed-ended, or both. Open-ended questions ask the survey participants to respond in their own words. Closed-ended questions expect the participant to choose one of a pre-determined response. Time and the amount of money for conducting the survey should be considered at this point. For example, web surveys are the fastest and cheapest, followed by mail and then telephone surveys. Face-to-face surveys are the most expensive.

The survey questions should be written in stage 2. Once the survey questions are written, pretesting of the survey is needed. One common strategy to pre-test a survey is to use a panel of experts. Panels of experts are small groups of people that discuss the quality of the questions used or how to conduct the survey more efficiently. These experts are in the field of survey design and
the specific field of study. In some expert panels, the participants are asked to complete the survey individually and then discuss the survey as a group.

Once the changes have been made to the survey based upon the panel of experts, a pilot test of the survey should be done. A pilot test will use the survey tool on respondents. The respondents will take the survey and then debrief afterwards. Changes to the survey will be made based upon the debrief of these respondents.

In stage 3, the survey is edited based upon the feedback from the pre-test and the pilot test. Any recommendations for distribution or implementation of the survey during these tests, the changes should be made at this point. Some changes that may be recommended involve whether to use multiple ways of surveying to increase response rate, changes for analyzing data, whether questions were clear and understood by respondents, and when and how best to send out reminders for those not completing the survey at given time intervals.

In stage 4, the survey is distributed to participants. The researcher needs to monitor the process to make sure there are not any issues or concerns with the type of survey utilized. The researcher needs to ensure that the participants receive reminders to complete the survey at the specific time intervals that were predetermined. It is best to only send reminders to those participants who have not completed the survey.

In stage 5, data from the survey are checked to correct any errors. Then the data are analyzed using appropriate statistical or qualitative measures. Once
these measures are complete, the researcher can analyze the results and make conclusions based upon the data. The results of this survey then need to be communicated in some fashion such as a report, article, poster, or presentation. (Czaja & Blair, 2005).

Once the results from the needs assessment have been collected and analyzed about the current mentoring program, Caffarella (2002, p. 133) stated the next step is to discuss “sorting and prioritizing program ideas.” In many stages of the planning process, numerous stakeholders have program ideas. The program planner will need to be knowledgeable about how priorities are determined, use a systematic way to prioritize program ideas, and be familiar with how these program ideas will be implemented (Caffarella, 2002).

Caffarella (2002) then notes that program objectives will need to be precisely written so that they are measureable. Fulop (2003) stated that a committee should be involved in developing the mission, vision, goal, and objectives for the program. These objectives should be used to make sure that the program is being consistent and meeting the expectations of the participants. This stage would include making sure all of the needs identified in the needs assessment are being addressed in the program. Caffarella (2002) also reminds researchers that these objectives should be revised over time as the program changes.

The next step in developing a mentoring program is to develop your program’s strategy. In this step, the type of program as well as the selection,
training, and matching of mentors is determined. Furthermore, evaluation methods of the mentoring program will also need to be determined (Garringer, 2003).

The first step in developing the strategy for the mentoring program is to determine which design will fit the stakeholders for the best outcome. This means determining whether to use a formal or informal mentoring program. If a formal mentoring program is selected, then a decision on which type of formal mentoring (traditional, peer, group, virtual) strategy is best for your stakeholders needs to be made (Garringer, 2003). During this step, Caffarella (2002) stated that budgets and marketing plans should be designed to address how the program is financed, contingency plans for if the budget is scaled back or cancelled, as well as selection and promotional materials for the program.

Once the strategy is determined, mentor selection is crucial. (Ramani, Gruppen, & Kachur, 2006) stated that there are six characteristics of effective mentors in academic medicine. These characteristics include the following:

- Being knowledgeable
- Being responsive and available
- Showing interest in the mentoring relationship
- Understanding the mentee capabilities and potential
- Motivating mentee to challenge themselves
- Acting as advocates for mentee

(Ramani, Gruppen, & Kachur, 2006, pp. 404-408)

In addition to these qualities, an effective mentor will be able to set clear expectations, be comfortable with mentees' lack of knowledge, and foster student
ownership (Humphrey, 2010). In addition, Rose (2003) stated that mentors with high integrity had higher student satisfaction rates.

It has been demonstrated in the literature that mentee characteristics will help maximize the learning opportunities from mentor. According to Zerzan, et al., (2009), mentees should have the following characteristics:

- Realistic expectations of mentor
- Able to receive constructive criticism
- Accepting of mentor's imperfections
- Demonstrative of honesty and appreciation
- Ownership in managing the relationships
- Aware of knowledge and skill gaps (p. 140)

These characteristics will help the mentee foster the growth and development of the mentoring relationship (Humphrey, 2010). Bettmann (2009) states that a mentee needs to realize that one person may not be able to meet all of mentoring needs for a mentee and that the mentee’s needs will change over time.

Selecting the right mentor or mentors for the mentoring program is necessary, but even a mentor with all of the right qualities will still need to receive professional development. Pfund (2006), stated the more aware of the students’ needs and how to address these needs, the better the mentor will be able to assist the students. At the University of Wisconsin-Madison, a mentor-training seminar was developed. These mentors were given training in communication skills, assessing and proving feedback to the mentee, cultural biases, and developing a personal mentoring philosophy in eight different sessions. The outcome of this study showed that the mentors who went through this training
were more likely to discuss time management and expectations of the mentee than untrained mentors. Trained mentors were also more likely to discuss issues involving diversity with their mentees than the untrained mentors (Pfund, 2006).

Once mentors have been selected and trained, then mentors must be matched or assigned to a mentee. This is where the decision for a formal mentoring program or informal mentoring program must be made. If it is an informal mentoring program, the student and faculty will match up on their own based upon common interests. If the program is a formal mentoring program, then an institution usually facilitates the match. According to Chao (1991), institutionally assigned mentor and mentee matches may not be the best method of creating matches. Chao’s research found that there was a disconnect between the goals of mentees and the goals of the mentor when they were simply assigned together. Chao’s article suggested that mentors and mentees should self-select for greater mentor-mentee benefits. However, self-selecting mentor-mentee relationships can be problematic because mentors and mentees do not know each other.

One idea to match mentor and mentees together utilized at the University of South Florida has been to have a round robin event. The medical students sit with each mentor for 5-7 minutes and rotate through for about 10 mentors to see if the mentors’ areas of research interest them. The students at this event are encouraged to follow up with the mentors and ultimately select a mentor from those that were present.
According to Meinel, Dimitriadis, von der Borch, Stormann, Niedermaier, and Fisher (2011), German medical schools use a variety of methods to match students with mentors. Ten programs (45%) of German medical schools allowed students to choose their mentors. The remaining 12 programs assigned the students mentors. Six of these programs were assigned randomly and six of these programs utilized specific criteria to match students. One program offered matching events to acquaint mentees with potential mentors.

Now that the mentor and mentee have matched, Caffarella (2002) stated that a schedule will need to be determined: any additional support staff will need to be planned for at this time. Once the mentors and mentees have clear expectations, the program will need to be implemented. While the program is in progress, evaluation of the program will need to occur. Evaluation can be formative or summative. Formative evaluation occurs while the program is in progress and can help refine and improve services. Summative evaluation describes the story of a mentoring program after the fact. Further evaluation can provide statistics that can be used in marketing and demonstrate the success of your program (Fulop, 2003).

Caffarella (2002) suggested that once evaluation has occurred, there should be recommendations on how to improve the program and the results of the evaluation should be documented. This pattern results in continuous improvement of programs to address new and changing needs. Once the results
are documented, then the individual leader can follow up with key stakeholders and interested groups to report the value of program.

**Professional Identity Formation**

Through planned curriculum, the mission of most medical schools is to transform laypersons into physicians. This transition requires medical students to develop a professional identity, which includes professional development, contributing to society, and obtaining the knowledge, credibility, and professional standing of their predecessors. Rabow, Remen, Parmelee, and Inui (2010), add to this list that professional identity formation includes commitments of professionalism. According to Wear and Castellani (2000, p. 603), professional formation is defined as “an ongoing, self-reflective process involving habits of thinking, feeling, and acting.” Wear and Castellani (2000, p. 604) also state that thought, feeling and action allow medical students to show “compassionate, communicative, and socially responsible physicianhood.”

Professional identity formation is an important aspect of medical education. According to Rabow, et al., (2010), without professional identity formation, future doctors could learn to live a divided life of competence in the medical office but demonstrate unprofessional behavior outside the medical office. These actions would seriously disrupt the doctor-patient interaction and the relationship with the doctor and profession of medicine. The doctor may begin to reduce the level of relationship with a patient and begin to lose empathy for the ailing patient. Values and virtues make doctors trustworthy to their
patients. Therefore, if the medical student does not maintain or have culturally appropriate values and virtues, they may lose empathy, decline in ethical morality, become dissatisfied, and become burned out or depressed (Rabow, et al., 2010). The article by Rabow, et al., (2010) documents the need for professional identity formation.

Upon further review of the literature, there are several additional parts of professional identity formation including professionalism, humanism, and critical reflection. According to Cohen (2007, p. 1029) professionalism “is a way of acting” and patients, staff, community members, colleagues, and the profession itself can observe these actions.

Swick describes these observable behaviors as follows:

- Physicians subordinate their own interests to the interests of others.
- Physicians adhere to high ethical and moral standards.
- Physicians respond to societal needs, and their behaviors reflect a social contract with the communities served.
- Physicians evince core humanistic values, including honesty, integrity, caring and compassion, altruism and empathy, respect for others, and trustworthiness.
- Physicians exercise accountability for themselves and for their colleagues.
- Physicians demonstrate a continuing commitment to excellence.
- Physicians exhibit a commitment to scholarship and to advancing their field.
- Physicians deal with high levels of complexity and uncertainty.
- Physicians reflect upon their actions and decisions.

(Swick, 2000, pp. 614-615)

These behaviors encompass individual professional behaviors. Serious negative effects can occur if a physician refuses to exemplify medical professionalism, leading to the loss of patient trust, loss of medical license, and loss of practice
(Swick, 2000). Sometimes such transgressions include review by the state licensing board.

The second aspect of professional identity formation is humanism. Cohen stated humanism is a way of being and entails a “set of deep-seated personal convictions about one’s obligations to others, especially others in need” (Cohen, 2007, p. 1029). The Arnold P. Gold Foundation states that a doctor using the following attributes can demonstrate humanism:

- Integrity - the congruence between expressed values and behavior
- Excellence - clinical expertise
- Compassion - the awareness and acknowledgement of the suffering of another and the desire to relieve it.
- Altruism - the capacity to put the needs and interests of another before your own.
- Respect - the regard for the autonomy and values of another person.
- Empathy - the ability to put oneself in another’s situation, e.g., physician as patient.
- Service - the sharing of one’s talent, time and resources with those in need; giving beyond what is required.

(Arnold P. Gold Foundation, 2010 c paragraph 1)

These attributes of humanism are looked for and evaluated by medical school admission committees throughout the country; however, in medical school, these attributes are not emphasized as much as scientific content. It was the Arnold P. Gold Foundation in 1988 that started the White Coat Ceremony, mainly completed during the first week of medical school orientation, and the Student Clinician Ceremony that begins at the start of the third year. These ceremonies, along with the Gold Humanism Honor Society (which is at every medical school in the United States), reinforce that humanism is a necessary component of the doctor-patient relationship (Arnold P. Gold Foundation, 2010 a, b).
The last part of professional identity formation is critical reflection.

According to (Schon, 1983),

“through reflection, [practitioners] can surface and criticize the tacit understandings that have grown up around the repetitive experiences of a specialized practice, and can make new sense of the situations of uncertainty or uniqueness, which he may allow himself to experience” (p. 61).

According to Stern, Cohen, Bruder, Packer, and Sole (2008), “reflection leads to self-awareness and an enhanced understanding of others; as a learning tool it provides opportunities to analyze, assess, and interpret experiences from multiple perspectives and to explore beliefs, opinions, and values” (p. 503).

Reflection has been identified as important in the medical profession because “evidence-based practice and client-centered care require the physician to analyze best evidence while considering his or her values and assumptions vis-à-vis the values, beliefs, and goals of each patient” (Plack & Greenberg, 2005, p. 1546).

When considering reflective practice, Cooke, Irby, and O’Brien (2010) stated there are three steps to train learners. The first step is learning by doing, which involves practicing routine tasks in a simulated, controlled, and low stakes environment. The second step is coaching by teachers and peers, which typically involves advising, critiquing, questioning, and role modeling. The third step is reflective dialogue. This strategy allows the student to consider, understand, or develop an alternative strategy. This allows for the medical students to practice
making sense of new, uncertain, or conflicting types of practice (Cooke, et al., 2010).

Another type of reflection mentioned in the literature is critical reflection. According to Brookfield, there are four critically reflective lenses that allow for the mentor to see how they are being perceived: autobiographies, students’ eyes, colleagues’ experiences, and theoretical literature. The autobiography details the mentor’s perspective of themselves, the student’s eyes provide how the student perceives the mentor, the colleagues’ experiences show how the mentor’s peers perceive the mentor, and the theoretical literature shows how theory can be used to solve issues identified in the reflection (Brookfield, 1995).

It is this process of self-reflection that “the literature on self-assessment and self-regulated learning in the health professions suggests that these may be unreliable motivators for continuous learning and improvement” (Cooke, Irby, & O’Brien, 2010, p. 54). Early on in the medical students’ careers, students rely heavily on appropriate guidance and feedback from faculty, staff, administrators, and nurses to notice opportunities for improvement. Through this process, they gradually become more responsible for assessing their own learning, performance, and managing their own growth. These students will have to be able to self-regulate and self-direct enough to know when their routine practices are no longer sufficient (Cooke, et al., 2010). Self-regulation and self-direction are important qualities to teach and demonstrate to students early in their careers.
Reflection is an important part of the professional identity formation for a medical student. However, a mentor is needed for reflection to work successfully. Without a mentor, students are left to reflect, process, and analyze complex experiences on their own. “Mentors help organize, guide and facilitate discussions about formative experiences” (Stern, et al., 2008, p. 504).

One struggle for medical schools is how to teach professional identity formation. In many medical schools, curriculum, instructional practices, and assessments tend not to focus on the nature of medical practice. Therefore, over the past three decades, institutions have added ethics courses to try to detect and remediate lack of ethical and moral knowledge. These ethics courses attempt to develop students to be more compassionate, altruistic, and humane. Students rarely enter medical school with a deep understanding of the values underpinning the medical profession and how these values inform every step of the educational process. In most medical schools, students are expected to learn these values through direct instruction, modeling, socialization, although their practical application may not seem immediate.

The lack of professional identity formation being taught in medical schools was noted in the 1910 Flexner report. The report stated the following challenges:

- Lack of clarity and focus on professional values
- Failure to access, acknowledge, and advance professional behaviors.
- Inadequate expectations for progressively higher levels of professional commitment
- Erosion of professional values because of pace and commercial nature of health care.

(Cooke, et al., 2010, p. 26).
One hundred years later, professional identity formation is still an issue for medical schools to address. Cooke, Irby and O'Brien (2010) released a follow up report to the 1910 Flexner report that stated their recommendations:

- To promote formal ethics instruction, storytelling, and symbols
- To offer feedback, opportunities for reflection, and assessment of professionalism in the context of longitudinal mentoring and advising.
- To promote relationships with faculty who simultaneously support learners and hold them to high standards (Cooke, et al., 2010, p. 26).

In order to address the recommendations in the 2010 follow up report, ethics, storytelling, and symbols should be used throughout the four years of undergraduate medical education process and throughout the residency process. This report encourages the teaching of ethics not as a one-time class but instead integrated throughout the curriculum.

More research is needed to address the second recommendation of feedback, reflection, and mentoring. According to Holly Humphrey (2010, p. 36), “the mentoring literature is built on the scholarship of developmental psychologists Erik Erikson, Daniel Levinson, and Laurent Daloz." Erikson was one of the first psychologists that stated people continue to develop into adulthood. In his works, he describes a middle stage of adult life where creative and meaningful work is produced. It is at this stage that there is a need to perpetuate culture by transmitting values. Erikson’s works highlight the value of the mentor from the mentor's perspective.

Levinson’s work found that in midlife a person’s work and career gains in relevance. Levinson’s work focuses on the impact of mentoring for the mentee.
Levinson also mentions gender discrepancies in mentoring. Levinson describes gender discrepancies in mentoring with the availability of mentors and their impact on mentees.

Daloz (1999) emphasized that mentoring is important during the mentee’s transformation because of the amount of change the mentee faces. These mentors are needed to provide support, challenge, and visions. Daloz’s work articulates well the outcomes of mentoring relationships.

Figure 2: Mentoring Support and Challenge Diagram (Humphrey, 2010, p. 40)

This figure demonstrates the interaction of support and challenge.

According to Daloz, support consists of listening and mirroring the mentee’s
emotions and behaviors so the mentee can see how others interpret their actions. Setting high expectations can establish the challenge portion of the relationship. Daloz states that vision can be developed through modeling, traditions, and guidance (Humphrey, 2010). Daloz gives an example of how vision can be developed from Dante’s epic poem of a transformational journey, the *Divine Comedy*. The poem describes the journey through Hell and then Heavenward. Dante is accompanied on this journey by Virgil, an ideal mentor, who begins the relationship with trust, issuing a challenge, providing encouragement, and offering a vision (Daloz, 1999). Daloz described a balance of challenge, support and vision must be kept for optimal mentoring experiences. In order for the mentor to know if this balance is being kept, reflection must occur (Humphrey, 2010). Therefore, Daloz’s work is primarily focused on reflection and action by the mentor.

There can be two types of reflection: reflection-in-action and critical reflection. Reflection-in-action occurs when you are reflecting on your actions as you are completing them. Reflection-in-action helps determine the immediate next step a mentor should take (Schon, 1991). Schon stated,

“the cases of problematic diagnosis in which practitioners not only follow rules of inquiry, but also sometimes respond to surprising findings by to the artistry with which a practitioners sometimes make new sense of uncertain, unique, or conflicted situations.” (Schon, 1987, p. 35).

In practice, a physician might do this in response to a subtle clue from a patient that will lead the doctor to deviate from their normal exam.
Professional identity formation occurs both formally and informally just as mentoring does. Cooke, Irby, and O'Brien (2010) stated that there are 3 aspects of professional identity formation warranting more attention. According to Cooke, Irby, and O'Brien, the three aspects of professional identity formation needing the most attention in medical schools are self-awareness, interpersonal relationships, and acculturation.

Self-awareness occurs as medical students begin to see perspectives that are different from their own. The medical students therefore reflect upon these differences and examine their own beliefs, assumptions, and emotions. Self-awareness will involve the individual and their ability to recognize their own strengths and weaknesses. Medical students should seek out feedback to guide their learning and engage in self-development exercises and activities (Cooke, et al., 2010).

Professional identity formation can occur through relationships with patients, other physicians, and health professionals (Cook, et al., 2010). According to Forsythe (2005), the process of collaborating with others develops and expands the professional identity. As participants in the same professional community, the groups serve as guides, mentors, and role models, calling for increased performance from the individual, inspiring other individuals in the community to improve, and developing resilience for when times are difficult (Cook, et al., 2010).
The profession of medicine has a significant number of norms and values that the medical students must learn. For example, health professionals may often find themselves encountering conflict among demands from administration, institution policy, and laws. Most medical students will adapt to and internalize the dominant values of the clinical environment in which they are immersed. Many students become acculturated to their environment by role modeling and advice from more experienced staff and physicians. It becomes important to make sure that with the stressors that clinicians face, mentors strive to use these difficulties to assist in this transformation from layperson to professional. Mentors are needed to assist in acculturation of medical students to provide an attitude of looking do things better and seeking knowledge throughout a lifetime (Cooke, et al., 2010).

**Summary**

As there exists a broad range of topics in the literature about mentoring, not all elements were identified. This literature review reveals a comprehensive representation of the mentoring literature as of 2011. This literature review described three main parts of the current literature on mentoring: mentoring in medical education, mentoring program design, and professional formation. These individual parts describe the current research as it relates to mentoring and medical education. After a thorough review of the literature, it is clear gaps still remain. For example, there has not been a documented needs assessment of mentoring programs for medical schools at large research institutions or small
regional campuses. Instead, many mentoring programs are developed without completing a needs assessment. This research study aims to develop a needs assessment of medical students and recent graduates of medical school to find out what the students’ perceptions of needs are as it relates to mentoring programs. This will in turn hope to increase the satisfaction of the mentoring that medical students receive.
CHAPTER THREE: METHODOLOGY

Introduction

The selection of a research methodology is crucial to the quality of the study. The previous chapters highlighted the importance and need of the research problem; this chapter presents the rationale for selecting the research methodology in addition to the details of the methodology. The research methodology selected for this study determined the methods used to collect, analyze, and interpret data. This chapter provides the rationale for the research methodology chosen and describes how the research will be conducted, including data collection and analysis.

Study Design

Social science researchers largely agree that there are three types of research designs. Qualitative research is a “means for exploring and understanding the meaning of individuals or groups” (Creswell, 2009, p. 4). Quantitative research is a “means for testing objective theories by examining the relationship among variables” (p.4). The mixed method approach combines both forms of qualitative and quantitative research. Creswell indicated that a mixed method study provides greater merit by combining the strengths of both qualitative and quantitative research (Creswell, 2009). For this study, a mixed methods research design was chosen. This approach allows the researcher to
broaden the understanding of mentoring in medical education by incorporating both qualitative and quantitative research.

**Choosing a mixed method study.**

Creswell (2009) described six types of mixed method strategies: sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent embedded, and concurrent transformative. However, Creswell states that before a method can be chosen, there are four aspects to a mixed method study that should be considered: timing, weighting, mixing, and theorizing.

One of the timing concerns that should be considered is whether the data will be collected in phases (sequentially) or gathered at the same time (concurrently). If data are collected sequentially, one must decide whether qualitative or quantitative research should come first. When qualitative data is collected first, the purpose of the research is to explore the problem with the participants on site. Then the researcher will develop a second phase in which quantitative data is collected to generalize to a larger population. When quantitative data is collected first, the intent is to gather information regarding the problem and then to investigate the data with the participants through open-ended questions at a later time to expand upon the information for a few cases or individuals. For this dissertation, quantitative data was collected first and qualitative data was collected second. This order allowed for information
regarding mentoring to be collected first and then more deeply explored the data collected with the participants through the qualitative phase.

The second factor that needs to be considered is weighting. Depending on the research study, more weight might be given to the qualitative or quantitative research. Creswell (2009) stated that the priority of the weighting should be dependent on the researcher’s interest, the audience, and emphasis of the study. For this study, the emphasis was on the quantitative phase. The quantitative phase influenced the questions asked to the focus groups during the qualitative phase.

The third factor that needs to be considered when designing a research study is mixing. Creswell described mixing as the data from the qualitative and quantitative data are merged together on a continuum on one end of the continuum or combined in some way in the middle of the continuum. For this study, quantitative data influenced the qualitative portion of this study. At the end of the qualitative phase, an analysis of both portions was completed.

The fourth factor is theorizing or transforming perspectives. Creswell (2009) stated that researchers bring theories, expectations, and hunches to their study. It is these theories, expectations, and hunches that shape the type of questions asked, who participates in the study, how the data will be collected, and how interpretations of the data are presented. As an administrator in medical education over the past seven years, the researcher had seen many mentoring programs implemented across numerous campuses and had not seen students’
perceptions influence how these programs are designed and implemented. The researcher chose to use fourth year medical students for this process because they have been through the curricula at their institution and would have the longest mentoring opportunities at their campus. Because there has not been significant research on medical students’ perceptions of mentoring, the researcher chose to collect both quantitative and qualitative data.

Creswell states that these four factors can help determine the sequence of a mixed method study. Creswell states there are two types of research models for mixed method studies. These two types of research models are sequential and concurrent. Sequential studies have the research areas divided up into two phases: qualitative and quantitative. Concurrent studies conduct both the qualitative and quantitative at the same time (Creswell, 2009).

For this research study, I used the sequential explanatory method. The sequential explanatory strategy has the research divided into two stages. The first stage is the quantitative stage followed by the qualitative stage. According to Tashakkori and Teddlie (2003), the quantitative stage usually receives the priority and then the two stages are integrated during analysis. The strategy of following up the quantitative data with qualitative data assists in examining surprising results. Creswell states these strategies are easy to implement because the steps are separate (Creswell, 2009).
Mixed method research design.

For this research study, the researcher chose to use a mixed method approach because there is a need to gather both quantitative and qualitative data regarding mentoring from medical students. The quantitative portion of the study was collected using a web-based survey and the qualitative portion of the study was collected using focus groups at each of the three institutions and the regional campuses. The researcher has seen many administrators unsuccessfully administer mentoring programs. In this research study, the researcher decided to use a sequential explanatory design to collect quantitative data and then analyze this data. The researcher used the quantitative results to inform and guide the qualitative portion of this research study. This allowed for clear steps to be implemented and made it easier to describe and report. Because this research strategy requires two separate stages, the length of time to collect data will be increased. To see a list of strengths and weaknesses of qualitative and quantitative data, see the Table 3. and 4.

Table 3: Comparison of Quantitative, Qualitative, and Mixed Methods Strengths

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Mixed Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests hypothesis that are constructed prior to data being collected</td>
<td>Responsive to changes that occur during the study and may shift focus of their studies as a result</td>
<td>Can use the strengths of each method to overcome the weaknesses in another method</td>
</tr>
<tr>
<td>Can generalize research findings when the data are based on random samples of sufficient size</td>
<td>Explain how and why phenomena occur in the participants own words</td>
<td>Can generate and test a grounded theory</td>
</tr>
</tbody>
</table>
Table 3 (continued)

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Mixed Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminate or reduce confounding variables</td>
<td>Describes complex phenomena</td>
<td>Answers broader and more complete range of research questions</td>
</tr>
<tr>
<td>Provides precise, numerical data</td>
<td>Provides a tentative but explanatory theory about phenomenon</td>
<td>Can provide stronger evidence for a conclusion (triangulation)</td>
</tr>
<tr>
<td>Data collection time is less time consuming</td>
<td>Data collection is in naturalistic settings</td>
<td>Adds insights that might be missed by utilizing only one method</td>
</tr>
<tr>
<td>May have higher credibility with administrators, politicians, and funding agencies</td>
<td>Identifies contextual and setting factors as they relate to the phenomena of interest</td>
<td>Increases the generalizability of the results</td>
</tr>
<tr>
<td>Useful to study large numbers of people</td>
<td>Useful to study a small number of people</td>
<td>Produces a more complete knowledge necessary to inform theory and practice</td>
</tr>
</tbody>
</table>

(Johnson & Christensen, 2004, p. 411-414)

Table 4: A Comparison of Quantitative, Qualitative, and Mixed Methods

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Mixed Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher may miss out on phenomena occurring because of the focus on theory or hypothesis testing rather than hypothesis generation (confirmation bias)</td>
<td>Knowledge produced may not generalize to other people or other settings</td>
<td>Researcher has to learn multiple methods and approaches and understand how to appropriately mix them.</td>
<td></td>
</tr>
<tr>
<td>Quantitative</td>
<td>Qualitative</td>
<td>Mixed Methods</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Knowledge produced may be too abstract and general for direct application to specific local situations, contexts, and individuals</td>
<td>It may have lower credibility with administrators, politicians, and funding agencies.</td>
<td>It is more expensive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It takes more time to collect data than quantitative research</td>
<td>It is more time consuming than other methods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data analysis is time consuming</td>
<td>Newer type of research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Results can be more influenced by researcher’s personal biases and idiosyncrasies</td>
<td></td>
<td></td>
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</tbody>
</table>


**Participant Selection**

The participants for this study were selected as fourth year medical students. These students would have been through 3.5 years of a 4-year medical school curriculum at the time of the survey. The participants had been through the majority of their curriculum at their specific institution and would have completed multiple residency interviews for placement for their residency. This questionnaire was sent out via email to the specific fourth year individuals to complete the survey. According to Dillman, Smyth, and Christian (2009), web surveys administered through the Internet are useful in conducting very targeted and specific populations such as college students and professionals. Each participant was given login information, including a username and password, to restrict who had access to the survey. The survey was able to be saved and
finished at another time, if so required. Login information had to be reentered to finish the survey. After the participants had submitted their survey, the participants had the opportunity to provide their email address whether they wish to participate in the focus group session. All the participants in the survey completed the survey prior to Match Day. The students did not know where they had been selected to complete a residency and were still worried about whether they had all the resources and opportunities to obtain the residency of their choice. They had also seen other medical students interviewing for the same residencies and were be able to compare their experiences to other students.

During the qualitative portion of this research study, participants who stated they would be interested in participating in focus groups were contacted. The participants were given a link to a Doodle website to show their availability to meet when the moderator is available. The moderator selected the date with a minimum of four participants at each campus being available. According to Krueger and Casey (2009), focus groups should have a minimum of four participants and should not exceed twelve participants. The participants were be notified via email as soon as possible when a date was set, and received a reminder of the date a week in advance and the day prior to the focus group session. Because these fourth year medical students were giving up their time to meet during breakfast, lunch or dinner, a meal was be provided to them. Krueger and Casey (2009) stated that food can be an effective incentive to increase participation. Another incentive used was the ability to shape and influence the future of the mentoring programs at each campus. Krueger and Casey (2009)
stated that participant participation will likely increase if they know their opinions will be valued and will have an impact on the future. There was a $25 gift card as an incentive for participation in the focus groups for this study.

Each focus group was held on the individual institution where the students attended class. Krueger and Casey (2009) stated comfortable, convenient, and easy to find meeting locations may increase participation. Also, Krueger and Casey (2009) stated there should be three to four focus groups of each type of participant. This study is only looking at fourth year medical students and therefore will conduct focus group sessions at each urban campus and regional campus.

**Web-based Survey Instrument**

At the time of this dissertation there was not a survey that focused on medical students’ perceptions of mentoring. At the time of this study, there were numerous surveys found that pertained to senior faculty mentoring junior faculty. These surveys included the Mentee Need Inventory (Lewellen-Williams, Johnson, Deloney, Thomas, Goyle, & Henry-Tillman, 2006), Mentorship Effectiveness Scale (Luckhaupt, Chin, Mangione, Phillips, Bell, Leonard, & Tsevat, 2005), and Berk Mentoring Effectiveness Scale (Berk, Berg, Mortimer, Walton-Moss, & Yeo, 2005). Since these mentoring surveys did not address medical students, a survey was created by the researcher, reviewed by experts, and checked for feasibility for this study. The researcher followed steps mentioned in Chapter 2 of this dissertation to create the survey.
Survey design.

In summary, according to Czaja and Blair (2002) there are several essential steps in survey development in order to develop an effective survey. Their approach includes the following steps:

Stage 1: Survey Design and Planning  
Stage 2: Pretesting  
Stage 3: Final Survey Design and Planning  
Stage 4: Data Collection  
Stage 5: Data Coding, Analysis and Final Report  
(Czaja & Blair, 2002, p. 11)

These survey development stages were followed in the development of the survey to be used in this study’s research. Czaja and Blair (2002) stated that open ended questions and closed ended questions could be asked in a survey. The researcher determined that both open-ended and closed ended questions should be asked in order to gather the information required to answer the research questions of this study. A web-based survey was implemented due to the time constraints. According to Bethlehem & Biffignandi (2012), web surveys provide a shortened data collection period, can be tailored to the individual respondent, and are useful to cover large geographic distances. The fourth year medical students were determined to be the best participants for this survey due to their stage in the medical school curriculum: they had been through almost the entire curriculum at the time of this web-based survey.

According to Dillman, Smyth, and Christian (2009), there are four errors in survey design. These errors are as follows: coverage, sampling, nonresponse,
and measurement. Table 5 lists the four types of survey errors, the definitions of these errors and modifications necessary for this study to avoid these errors (Dillman, et al., 2009).

Table 5: Survey Errors Summary Table

<table>
<thead>
<tr>
<th>Survey Error</th>
<th>Definition</th>
<th>Modifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coverage</strong></td>
<td>Occurs when not all members of the population are given the chance to respond (Dillman, Smyth, Christian, 2009).</td>
<td>All 4th year medical students have access to internet and email through their institution.</td>
</tr>
<tr>
<td><strong>Sampling</strong></td>
<td>Occurs when not every member of the population is surveyed (Dillman, Smyth, Christian, 2009).</td>
<td>Sampling size calculations are made and multiple institutions were surveyed.</td>
</tr>
<tr>
<td><strong>Nonresponse rate</strong></td>
<td>Occurs when survey participants do not respond and they are different than those who do respond (Dillman, Smyth, Christian, 2009).</td>
<td>Personalized emails are sent out to only those who have not completed the survey at the 2 and 4 week intervals in addition to the day before the survey closes. Also, information about survey, appealing to student’s helping tendencies, social validation, and making the questionnaire appealing and interesting. Furthermore, letters of support from each school’s Associate Dean of Student Affairs and confidentiality will be maintained.</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td>Occurs when the respondent’s answer is inaccurate (Dillman, Smyth, Christian, 2009).</td>
<td>Question wording has been carefully scrutinized and guidelines followed in creating the questions.</td>
</tr>
</tbody>
</table>
Based on the need to control for many types of errors, the following explanation describes how errors were controlled specifically in this study. In order to control for coverage error, the list of participants would be coming from the registrar’s office at each institution. The registrar’s list of 4th year medical students was accurate for the fall semester of 2012. This list is updated each fall semester at the time of registration for medical students. The list of 4th year medical students did not include any other members such as staff or administrators.

In order to avoid a sampling error, all of the participants selected were 4th year medical students. These students would have completed 3.5 years of medical school by the time of the survey. The participants had been through the majority of their curriculum at their specific institution and had completed multiple residency interviews for placement in their residency programs.

This questionnaire will be sent out via email to the specific individuals who were to complete the survey. Each participant was provided with login information including a username and password to restrict who had access to the survey. The survey was able to be saved and finished at another time if so required. Login information would have to be reentered to finish the survey if it was not completed in one sitting.

In order to avoid non-response rate error, this survey was confidential. Respondents’ email addresses were tracked automatically by the survey software system without human intervention. The respondents who had not
completed the survey by 1 week, 2 weeks, and the day before the survey is closed received an automated email reminder addressed to them specifically (Dillman, et al., 2009). The sample size for this survey was as follows:

- Campus A- 101 4th year medical students
- Campus B- 131 4th year medical students
- Campus C- 28 4th year medical students
- Campus D- 115 4th year medical students
- Campus E- 57 4th year medical students

This was a grand total of 432 students to be surveyed. The response rate for medical student surveys is typically around 33% (Sivamalai, Murthy, Gupta, & Woolley, 2011). With additional incentives ($5 gift cards to Chipotle, Starbuck, or Amazon) and individually weekly reminders, participation rated could increase to above 50%. According to the Raosoft sample size calculator (Raosoft, Inc., 2004), to achieve a confidence level of 95% with a population of 16,838 (AAMC, 2010), a total sample size needed is 376 fourth year medical students. To achieve a confidence level of 90%, with a population of 16,838 (AAMC, 2010), a total sample size of 267 is needed.

According to Dillman, Smyth, and Christian (2009), when designing the questions for the web-based survey, multiple guidelines should be implemented. Table 6 lists the guidelines that Dillman, Smyth, and Christian recommended and how they were implemented in this study.
Table 6: List of Guidelines Used in Writing the Survey Questions for this Study

<table>
<thead>
<tr>
<th>Type of Guidelines</th>
<th>Guidelines</th>
<th>How guidelines are implemented in this survey</th>
</tr>
</thead>
</table>
| Open-ended Questions | • Provide motivation to respond  
• Provide adequate space to respond  
• Include scrollable boxes (Dillman, et al., 2009) | • Interest in topic, how topic can affect the future students in program.  
• Adequate space will be provided.  
• Scrollable response boxes will be used and allow for enough space to respond. |
| Closed-ended Questions | • State both the positive and negative side in the question stem  
• Develop list of answer categories that include all reasonable possible answers and that are mutually exclusive.  
• Avoid bias from unequal comparisons  
• Choose an appropriate scale length.  
• Provide balanced scales where categories are relatively equal distances apart  
• Consider how displaying all response categories may influence your answers.  
• Separate the Non-substantive options at the end of the scale (Dillman, et al., 2009). | • Appropriate scales were chosen such as Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree.  
• Considerations were made as to how displaying all characteristics would influence the participants’ response. |
| Ordering of questions | • Group related questions  
• Choose the first question carefully  
• Place sensitive questions at the end of the questionnaire.  
• Ask questions about events in the order the events occurred (Dillman, et al., 2009). | • Related questions were grouped.  
• The first question was chosen to entice the respondent to complete the survey.  
• Sensitive questions were placed at the end of the survey. |
<table>
<thead>
<tr>
<th>Type of Guidelines</th>
<th>Guidelines</th>
<th>How guidelines are implemented in this survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web Questionnaires</td>
<td>• Choose how the survey will be programmed</td>
<td>• This survey will be administered through Survey Monkey. A professional membership was acquired.</td>
</tr>
<tr>
<td></td>
<td>• Evaluate the technological capabilities of the survey population</td>
<td>• The number of screens and questions for each screen was considered when developing the survey.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the survey displays similarly across browser and user settings</td>
<td>• Accommodations for students to stop and restart the survey have been made.</td>
</tr>
<tr>
<td></td>
<td>• Decide how questions will be presented on each screen</td>
<td>• Screen shots have been taken for each survey.</td>
</tr>
<tr>
<td></td>
<td>• Do not require responses unless absolutely necessary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design any error messages to help respondents troubleshoot concerns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Allow respondents to stop and start the survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Take screen shots of each page of the questionnaire for testing and documentation (Dillman, et al., 2009).</td>
<td></td>
</tr>
<tr>
<td>Web-survey</td>
<td>• Personalize all contacts to respondents</td>
<td>• Because this is a confidential survey, the survey monkey system will generate personalized emails.</td>
</tr>
<tr>
<td>implementation</td>
<td>• Use multiple contacts</td>
<td>• The reminder emails to complete the survey will only go out to participants who have not completed the survey and they will be personalized.</td>
</tr>
<tr>
<td></td>
<td>• Strategically time all contacts</td>
<td>• Each participant will have a unique access code to the survey.</td>
</tr>
<tr>
<td></td>
<td>• Email contacts short and to the point</td>
<td>• There should not be any bounced emails as all emails will be institutional emails with current registered students.</td>
</tr>
<tr>
<td></td>
<td>• Take steps to ensure that Email is not flagged as spam</td>
<td>• Each week an analysis of which participants have completed the survey will be done.</td>
</tr>
<tr>
<td></td>
<td>• Provide clear instructions for how to access the survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Assign each sample member a unique ID number</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Establish a procedure for dealing with bounced emails.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Implement a system for monitoring and evaluating early completes (Dillman, et al., 2009).</td>
<td></td>
</tr>
</tbody>
</table>
Once the survey questions were drafted; the researcher went back and checked to make sure that all research questions listed could be addressed by the survey. In Table 3.5, a table is presented where the researcher compared the research questions to both the research method and the data collection tool. This made sure that all of the research questions are addressed in this study.

Table 7: Aligning the Survey and Interview Questions with the Research Questions

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Research Question</th>
<th>Research Method</th>
<th>Data Collection Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To what frequency have fourth year medical students had a mentoring experience?</td>
<td>Quantitative</td>
<td>Survey Questions # 3, 9, and 15</td>
</tr>
<tr>
<td>2</td>
<td>If fourth year medical students have had a mentoring experience, within what type of mentoring did they participate?</td>
<td>Quantitative</td>
<td>Survey Questions # 3, 4, 5, 9, 10, 11, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31</td>
</tr>
<tr>
<td>3</td>
<td>What do fourth year medical students perceive as the needs related to mentoring for preparing the medical student during their academic training (first two years), their clinical training (last two years), for their professional growth?</td>
<td>Quantitative</td>
<td>Survey Question #8, 14, and 20</td>
</tr>
<tr>
<td>4</td>
<td>According to fourth year medical students, to what frequency did mentoring contribute to their preparation for their professional growth?</td>
<td>Quantitative</td>
<td>Survey Questions # 6, 7, 12, 13, 18, and 19</td>
</tr>
<tr>
<td>5</td>
<td>To what frequency have fourth year medical students indicate that they possess the characteristics to benefit from a mentoring program?</td>
<td>Quantitative</td>
<td>Survey Question #39</td>
</tr>
</tbody>
</table>
Table 7 (continued)

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Research Question</th>
<th>Research Method</th>
<th>Data Collection Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>To what frequency do fourth year medical students understand characteristics of mentoring as essential for successful mentoring?</td>
<td>Quantitative</td>
<td>Survey Questions # 2 and 46 Focus Group Questions # 1 and 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>To what frequency have fourth year medical students experienced characteristics of mentoring?</td>
<td>Quantitative</td>
<td>Survey Question # 38</td>
</tr>
<tr>
<td>8</td>
<td>What are mentee preferences in regards to demographic information (gender, age, nationality, specialty and sexuality)?</td>
<td>Quantitative</td>
<td>Survey Questions #32, 33, 34, 35, 36, 37, 40, 41, 42, 43, 44, and 45 Focus Group Question # 5 &amp; 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td></td>
</tr>
</tbody>
</table>

In order to establish validity of the content, the researcher used both a panel of experts and checked the feasibility of the study. According to Presser and Blair (1994), utilizing a panel of experts provided a very effective way to identify problems with a survey. Cazja and Blair (2002) recommended that participants in this panel be survey professionals and subject matter experts. For this study, an expert panel was developed that consisted of five members. The members of the panel were experts in medical education, student affairs in medical education, and survey design. These experts were provided the survey, research questions with analysis, and the dissertation abstract. Upon their review of the proposed survey, the researcher tabulated their comments. See Table 3.6 for a summary table of their comments.
<table>
<thead>
<tr>
<th>Reviewer</th>
<th>Comments by Expert Panel</th>
<th>Changes made as a Result of Expert Panel Feedback</th>
</tr>
</thead>
</table>
| 1        | • The survey is too long.  
         | • In question 3, the “whom” and “they” confuse me.  
         | • In question 6, are these really “qualities”? I suspect those who fill out the survey will get what you mean. | • Shorten Length  
         |                                           | • Change the words “whom and they” |
| 2        | • It was not clear that students would indicate which campus they are on.  
         | • Would knowing the mentor’s degree be beneficial?  
         | • In question 3, the “whom” and “they” are confusing.  
         | • Should nationality be used or ethnicity?  
         | • In question 5, 6th characteristic – unsure what this question is asking.  
         | • In question 6, Should the scale be very important, important, important, and not important? | • Students for each campus will receive a different link so that the data can remain separate.  
         |                                           | • The survey design would be benefitted to state the degree of the mentor.  
         |                                           | • Changes in wording for question #5.  
         |                                           | • Changes to wording in question #6 stem. |
| 3        | • In question 5 characteristic 1- did not know if frequency was a characteristic of mentoring.  
         | • In question 5, second column question is a yes/no question not a SA, A, N, D, SD  
         | • In questions six, the first column is all worded in yes/no. These should be like; finding your own mentor and developing your own goals, etc.  
         | • Suggested to reword question six. | • Mentoring availability is a characteristic of mentors.  
         |                                           | • Changes in wording for question 5 & 6 stem. |
| 4        | • In Question 1, suggested adding a question regarding if their mentor was not assigned, how was the mentor selected?  
         | • In question 5, shorten the characteristics by leaving out my mentor/s were each time. | • Added an open response for questions 1, 2 & 3 to allow student to describe how the mentor was selected.  
         |                                           | • Reworded characteristics in question 5. |
| 5        | • The survey is very comprehensive and there are no suggestions at this time. | • No additional changes made |
After completion of the expert panels, the researcher reviewed the recommended changes and incorporated them into the next version of the survey. These changes were noted in Table 8.

According to Dillman, Smyth, and Christian (2009), pilot studies are utilized to determine whether the proposed questionnaire and procedures are adequate for the larger study. Pilot studies are critical for web surveys to determine if additional changes are needed (Dillman, et al., 2009). To determine feasibility, a pediatric residency program at Campus E was selected to review the questionnaire. A professor from the first year residency program was providing education on survey design to these students. This resident group was uniquely qualified since they had just finished medical school training, and they were developing surveys for their own research. The residency program consisted of a group of seven residents that were asked to take the survey. Then the participants provided feedback about the questionnaire. Table 3.7 displays the feedback received and changes made to the survey as a result of the feedback obtained in this session.

The survey was edited based upon all feedback provided thus far. The survey was changed further based on feedback from the proposal defense. The Campus E administrator for Survey Monkey uploaded the survey onto the web based survey tool. The pediatric residents then completed a second feasibility study of the survey using Survey Monkey. The survey was then changed based upon the feedback of the residents. The fourth year students on each campus were sent emails requesting that the students complete the surveys. Since the
researcher had decided this was to be a confidential survey, the survey software system automatically contacted students with personalized weekly reminders.

Table 9: Pediatric Residency Feedback and Changes for Web Survey

<table>
<thead>
<tr>
<th>Comment</th>
<th>Changes in Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident A</td>
<td>Question 2 should be peer mentor, stated second column in question 5 and 6 were not needed, and the survey is too long.</td>
</tr>
<tr>
<td>Resident B</td>
<td>Suggested to add clinical years when describing the last two years in 1 B, second column in questions 5 and 6 seem repetitive, did not finish all of the survey because it was too long.</td>
</tr>
<tr>
<td>Resident C</td>
<td>This survey is too long. Three typos were noted. Suggested removing “my mentors” from question 5.</td>
</tr>
<tr>
<td>Resident D</td>
<td>Too long, stated they would not take the time to read definitions of vague concepts, suggested to simplify questions 5 &amp; 6.</td>
</tr>
<tr>
<td>Resident E</td>
<td>Second column on questions 5 &amp; 6 not needed, survey too long.</td>
</tr>
<tr>
<td>Resident F</td>
<td>Students will skip the open-ended questions of the survey, second column on questions 5 &amp; 6 are not needed.</td>
</tr>
<tr>
<td>Resident G</td>
<td>Completed only the first page and stated the survey was too long to complete and stopped.</td>
</tr>
</tbody>
</table>

The survey was edited based upon all feedback provided thus far. The survey was changed further based on feedback from the proposal defense. The Campus E administrator for Survey Monkey uploaded the survey onto the web based survey tool. The pediatric residents then completed a second feasibility study of the survey using Survey Monkey. The survey was then changed based upon the feedback of the residents. The fourth year students on each campus were sent emails requesting that the students complete the surveys. Since the
The researcher had decided this was to be a confidential survey, the survey software system automatically contacted students with personalized weekly reminders.

The research administrator checked data obtained from the survey to correct any errors. Then the data were analyzed using appropriate statistical or qualitative measures (see Table 3.9). The researcher analyzed the results and made conclusions based upon the data (see Chapter 4).

**Focus Groups**

Mixed methods research utilizes both quantitative and qualitative data collected. Quantitative data for this study was collected using a web-based survey. For qualitative data, the researcher conducted focus group interviews using open-ended questions.

Focus groups were selected for this research study because of several advantages. Stewart, Shamdasni, and Rook (2007) stated focus groups provide data from a group of people quicker and often at a less expense if each person was interviewed one on one. Secondly, focus groups allow for the research to directly interact with the participants allowing for clarification of responses, follow up questions, and for probing responses. The third advantage is described in the participants’ own words as having lots of rich data. This allows for the researcher to make connections, identify subtle differences in expressions/statements, and obtain deeper levels of meaning. Focus groups also allow for participants to react to each other’s comments and build on synergy of the group.
According to Krueger and Casey (2009), there are four different approaches to focus groups: market research approach, academic research approach, public/nonprofit approach, and participatory approach. These four approaches each have different purposes for the data that is needed to be collected. The approach used in this study is the academic approach.

The academic approach is usually used by faculty, graduate students, and qualified staff at academic institutions or government agencies. The researcher for this study facilitated the focus groups of four to eight fourth year medical students. Field notes were taken by trained qualitative researchers at each institution and audio recordings were used to collect qualitative data. The researcher conducted focus groups at the five campuses. The focus group participants from each campus volunteered to be contacted on a separate screen after they submitted the web-based survey. Participants in these focus groups possibly knew each other, but are all at the exact same level (4th year medical students) and had no power or control over each other. The de-identified results appeared in the researcher’s dissertation and will possibly feature in future publications in academic journals.

Krueger (1998) stated that there is a need for consistency when completing a series of focus groups. For this research study, the utilization of prewritten questions would be implemented. This allowed for consistency between the three campuses that will participate in the focus group sessions. The prewritten questions permitted a better quality analysis. Krueger and Casey (2009), stated that the structure of focus groups can have different moderators;
this research study had the same moderator conduct all sessions of the focus groups at multiple campuses therefore, increasing standardization across the campuses. The moderator for this study was the researcher.

Since this purpose of the qualitative research is to more deeply explain the results obtained from the web-based survey, focus group could not be written until after the results from the web-based survey have been analyzed. The questions for the focus groups were created to have the following characteristics: evocative of conversations, easy to read, easily understandable, short, open ended, one-dimensional, utilizes the participants words, and are sequenced (Krueger & Casey, 2009).

In sequencing questions, there are five kinds of questions: opening, introductory, transition, key questions, and ending questions. Krueger and Casey (2009) recommended all participants be asked to answer the opening questions. This allowed for everyone to talk very early on in the conversation. Introductory questions introduce the topic of discussion and start to get the individual to think about their connection with the topic. Transition questions are logical questions that transition into the key questions. Key questions are the questions that drive the study. Ending questions bring the focus groups to close. Krueger and Casey identify three types of ending questions: all things considered, summary, and final questions. The researcher for this study sequenced the questions according to these recommendations by Krueger and Casey (2009).
Krueger and Casey (2009) stated that once the list of questions has been determined, feedback should be gathered. During this study, the researcher listed the prewritten questions and had the dissertation committee review the questions and revise the questions based upon their feedback.

Upon completion of the focus groups, the researcher had a transcriptionist transcribe the sessions. These transcriptions will then be supplemented with the researcher's own field notes. According to the Association for Institutional Research, “hiring a transcriptionist is an excellent way to ensure comprehensive and accurate representation of the focus group discussions.” (Billups, 2012 p.9)

Since I am somewhat affiliated with these campuses, I brought in an outside researcher to review the process of data collection and analysis. This reviewer had conducted focus groups previously and was familiar with transcript-based focus groups. This reviewer has been given full access to transcripts and the researcher's qualitative analysis. After the researcher made the original analysis, the reviewers were asked to review the summaries. Any discrepancies the reviewers noted prompted a live conversation between the research and reviewer. The researcher and reviewer ended in a consensus on the interpretation. At the end of the consensus, the changes in the qualitative analysis could be made.
Procedures

Since this study involved a mixed methodology and contained many detailed steps, a list of procedures that were followed for this study was created.

The list of procedures is as follows:

1. The problem was identified.
2. Literature regarding this topic was reviewed.
3. Research questions were identified in conjunction with the dissertation chair and committee members.
4. The three different institutions were contacted by phone and personal conversations were held to see if they would be willing to allow their students to participate in this study.
5. The first draft of the questionnaire was designed and submitted for feedback from the dissertation chair. Changes were made to the survey.
6. Potential web-survey administrator from campus E was contacted to see what survey software (Survey Monkey) is available and who can administer the survey.
7. The web-based questionnaire was sent to a panel of experts. Changes were made to the questionnaire based upon panel of experts.
8. A feasibility study of the questionnaire was implemented at Campus E by a college professor. Changes were made to the questionnaire based upon the residents’ feedback.
9. Web-based survey and proposal chapters 1, 2, and 3 were sent to dissertation committee members for feedback. Changes were made to the
survey based upon committee feedback, and the survey was uploaded into Survey Monkey. A successful proposal defense was completed.

10. Grant funding was applied for and $1000 was funded by a Dean’s grant from Campus E.

11. The same residents completed a feasibility study of the survey again. Changes were made to the survey based upon residents’ feedback.

12. IRB forms for Campus A, B, C, D, and E were completed and approved.

13. A list of 4th year medical students’ emails and names were acquired from the registrar at each campus.

14. The web administrator made five links for the survey. This allowed the data collected to remain site specific without adding additional questions. The researcher approved each of the survey links.

15. The web administrator set up automatic personalized reminders each week for students not completing the survey at that specific point in time. The researcher verified with the web survey administrator that weekly emails were sent.

16. The web administrator closed the survey at the end of three weeks and sent the researcher data with identifying information removed.

17. The researcher reviewed data for incomplete responses and performed descriptive analysis and qualitative analysis on the data collected from the web-based survey.

18. Based upon the data for the survey, questions were developed for the focus groups and those questions were reviewed by the chair of the
dissertation committee. The researcher edited focus group questions based upon dissertation chair suggestions.

19. Focus group sessions were held at each campus where field notes were made.

20. A transcriptionist transcribed all five focus groups.

21. The researcher analyzed the focus group sessions using content analysis. Outside researcher in qualitative research reviewed the transcripts and audio recordings for themes. Any discrepancies between outside researcher and primary researcher were noted and discussed live. A consensus was developed among the two researchers.

22. The researcher analyzed data in both the qualitative and quantitative parts of this study to better describe the mentoring perceptions and needs of the current fourth year medical students across five campuses.

23. Based upon the findings of both the qualitative and quantitative phases, recommendations and interpretations were made on how to better design mentoring programs for these campuses.

**Role of Researcher**

Creswell (2009) stated that researchers bring theories, expectations, and hunches to their study. It is these theories, expectations, and hunches that shape the type of questions asked, who participates in the study, how data are collected and how interpretations of the data are presented. The researcher in this study has been employed at campuses D and E at the surveyed institutions and believes that mentoring is necessary to help medical students transition from
layperson to physician. Being employed by these institutions allowed for detailed knowledge of the students’ curriculum, mentoring opportunities, and characteristics of the student populations at each institution. Students at campuses A and E had similar mentoring experiences. Both student groups had academic societies and supplemental instructors. Academic societies are groups of up to 30 students in each year where faculty members interact with students. The interactions are mostly in large group settings and are usually social in nature. The supplemental instruction at these two institutions is where upper classmen meet with the students to review the academic material that has been covered in class that week. Campus A’s supplemental instructors were primarily lecture based. Campus E’s supplemental instructors were interactive small groups. All campuses (A, B, C, D, and E) have a big sib program, where upperclassmen mentor the underclassmen. Each first year medical student is assigned a peer mentor. Campus D has clinical faculty that teach a course called Doctoring. This course allows for clinical faculty to meet with a group of 8 students every week and throughout medical school years 1, 2, and 3. These small groups are where the majority of clinical skills are taught. However, since the medical students see these faculty members every week, many students may consider these faculty mentors. These connections to the institutions bring some positive aspects. The connections to these institutions will hopefully allow for more thorough participation from students since some will know the researcher personally. Since the researcher has been involved at these institutions, the researcher had personal contacts to assist in writing letters of support to students.
when requesting participation in the surveys. The researcher was able to capitalize on the experts at each institution to provide feedback on the survey creation.

**Analysis**

The analysis of the research data was completed in two phases. The first phase analyzed the quantitative portion of the research data collected from the web-based survey. The second phase of analysis was completed after the focus group sessions have been conducted.

**Web-based survey analysis.**

After the three weeks to complete the survey have passed, the web-based survey administrator closed the survey and sent the researcher the data. The data was checked for completeness and then the campuses were combined. Table 10 shows the statistical analysis selected for each research question for this survey. The analysis for the questionnaire used descriptive analysis for closed ended questions.

According to Gall, Gall, and Borg (2007), descriptive statistics are “mathematical techniques for organizing and summarizing a set of numerical data (p. 132).” One descriptive statistic is a measure of central tendency. A measure of central tendency is defined by Gall, Gall, and Borg (2007) as “a numerical value used to describe the average of a set of scores (p. 133).” Gall, Gall, and Borg suggested using mean, median, and mode as statistical procedures to measure the central tendency. The mean is calculated by dividing
the sum of all scores by the number of scores. The median is the middle point of the distribution of scores, and the mode is the most frequently occurring score. Since some of the questions in the survey required categorical data, frequency distributions were calculated. Frequency distribution was just the number of individuals that selected that particular response. The researcher used frequencies, means, medians, and modes for all of the closed-ended survey questions.

The chi-square test was also be utilized for close-ended questions. Chi-square tests use frequency counts to see if they are distributed differently for different samples. This chi-square test provided a test of statistical significance (Gall, Gall, and Borg, 2007).

While the survey strived to reduce as many open-ended questions as possible for the web-based survey; the researcher still wanted to collect some information from open-ended questions on the survey. These questions were coded and analyzed for themes. Table 10 displays the research question, research method, where the data is collected from, and the analysis for each question.
Table 10: Aligning Analysis Methods with Research and Survey Questions

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Research Question</th>
<th>Research Method</th>
<th>Data Collection</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To what frequency have fourth year medical students had a mentoring experience?</td>
<td>Quantitative</td>
<td>Survey Questions # 3, 9, and 15</td>
<td>Frequencies, means, mode, median, chi square, and analyze for themes</td>
</tr>
<tr>
<td>2</td>
<td>If fourth year medical students have had a mentoring experience, within what type of mentoring did they participate?</td>
<td>Quantitative</td>
<td>Survey Questions # 3, 4, 5, 9, 10, 11, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31</td>
<td>Frequencies, means, mode, median, chi square, and analyze for themes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td>Focus Group Question 4C</td>
<td>Analyze for themes</td>
</tr>
<tr>
<td>3</td>
<td>What do fourth year medical students perceive as the needs related to mentoring for preparing the medical student during their academic training (first two years), their clinical training (last two years), for their professional growth?</td>
<td>Quantitative</td>
<td>Survey Question #8, 14, and 20</td>
<td>Frequencies, means, mode, median, chi square</td>
</tr>
<tr>
<td>4</td>
<td>According to fourth year medical students, to what frequency did mentoring contribute to their preparation for their professional growth?</td>
<td>Quantitative</td>
<td>Survey Questions # 6, 7, 12, 13, 18, and 19</td>
<td>Frequencies, means, mode, median, chi square, and analyze for themes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td>Focus Group Question # 3A &amp; 3B</td>
<td>Analyze for themes</td>
</tr>
<tr>
<td>5</td>
<td>To what frequency have fourth year medical students indicate that they possess the characteristics to benefit from a mentoring program?</td>
<td>Quantitative</td>
<td>Survey Question #39</td>
<td>Frequencies, means, mode, median, chi square, and analyze for themes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td>Focus Group Questions # 4A &amp; 4B</td>
<td>Analyze for themes</td>
</tr>
</tbody>
</table>
Table 10 (continued)

<table>
<thead>
<tr>
<th>Question Number</th>
<th>Research Question</th>
<th>Research Method</th>
<th>Data Collection</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>To what frequency do fourth year medical students understand characteristics of mentoring as essential for successful mentoring?</td>
<td>Quantitative</td>
<td>Survey Questions # 2 and 46</td>
<td>Frequencies, means, mode, median, chi square</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td>Focus Group Questions # 1 and 2</td>
<td>Analyze for themes</td>
</tr>
<tr>
<td>7</td>
<td>To what frequency have fourth year medical students experienced characteristics of mentoring?</td>
<td>Quantitative</td>
<td>Survey Question # 38</td>
<td>Frequencies, means, mode, median, chi square</td>
</tr>
<tr>
<td>8</td>
<td>What are mentee preferences in regards to demographic information (gender, age, nationality, specialty and sexuality)?</td>
<td>Quantitative</td>
<td>Survey Questions # 32, 33, 34, 35, 36, 37, 40, 41, 42, 43, 44, and 45</td>
<td>Frequencies, means, mode, median, chi square</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualitative</td>
<td>Focus Group Question # 5 &amp; 6</td>
<td>Analyze for themes</td>
</tr>
</tbody>
</table>

Focus group analysis.

The second phase of data collection involved the qualitative data collection. Qualitative data was used to explain the results of the quantitative data. Krueger and Casey (2009) described a classic analysis strategy for focus groups. This focus group analysis strategy was implemented during this research project. The suggested strategy was as follows:

- Each focus group session will be printed out on a different color paper with each line numbered.
- Then post it note flip chart paper will be utilized.
- There will be one question at the top of each post it note page.
- Each comment to that question will be sorted and taped under each question. Similar comments will be noted.
• After all comments have been distributed for applicability to each question, a summary was written of what the participants stated for each question.
• An analysis is written using the summaries previously written. Some quotes can be used in this analysis. Krueger recommended using three quotes per question.

A grounded theory research methodology was used to analyze the data obtained from the focus group sessions. Grounded theory research methodology was introduced in 1967 by Glaser and Strauss in the book, *The Discovery of Grounded Theory*. According to Gibson and Brown (2009), grounded theory is the process of using data analysis to develop theory, rather than testing preformed theories. According to Merriam (2009), the constant comparative method is used to analyze the data in grounded theory research methodology. The constant comparative method is used to compare one segment of data with another to determine similarities and differences. Using the constant comparative method, the focus group transcripts and field notes were coded into emergent dimensions. These dimensions were revisited after initial coding and after additional readings of the transcripts until no new dimensions arose. The dimensions will then become themes. According to Hewitt-Taylor (2001), constant comparative analysis can be used in a study with a single method of data collection or in situations with multiple collection methods are implemented. Merriam (2009) stated that validity and reliability can be increased by using rich, thick descriptions and peer review. The researcher in this study used a qualitative research trained colleague to analyze the data after the initial analysis is complete. Any discrepancies in identification of themes were discussed until a consensus was reached.
Once the analysis is complete, interpretations and recommendations were suggested, taking care to keep the recommendations and interpretations separate from the findings (Krueger & Casey, 2009). The researcher used this classic analysis approach in analyzing the qualitative data collected for this study.

Ethical Considerations

**Anonymity of institutions and participants.**

Each campus remained anonymous to protect the institutional reputation. For the quantitative portion of this study, the participants completed a survey on Survey Monkey. The students logged in with their unique identifier. The list of names, email addresses, and unique identifiers were only available on the Survey Monkey site behind the web survey administrator’s unique login. No participant’s results was shared with the institution. The only information shared with institutions was the summary data. Fowler (2009) stated that, for confidentiality reasons, unique identifiers are acceptable forms of identification. Fowler (2009) stated that when identifiers are used for surveys, the identifiers should be separated as soon as possible. For this study, the web survey administrator removed the identifiers prior to releasing the results to the researcher. Sierles (2003) stated that the researcher for this study must convey that the researcher would not know, would not try to know, and did not care who the respondent is. Furthermore, the researcher would not pass judgment about the respondents. Sierles stated that medical students are especially sensitive to
their confidentiality (Sierles, 2003). The researcher applied to all five Institutional Review Boards and made sure that the respondents understood in the informed consent prior to taking the survey that their individual data will not breach confidentiality. For Phase II, the researcher knew who volunteered to participate in the focus groups. However, no names were utilized in the transcripts or the summaries.

**Informed consent.**

According to Fowler (2009), survey research involves enlisting voluntary participants. Fowler recommended that the following information should be provided to the survey participant:

- Name of the organization and researcher
- Any sponsorship of the survey
- Brief description of the research process
- Statement to describe confidentiality
- Assurance that cooperation is voluntary, and there would not be negative consequences for those who did not participate.
- Assurance that respondents can skip any questions that they do not want to answer.

(Fowler, 2009, p. 164)

Based upon these guidelines, the web-based survey’s initial screen had a description of the institutions involved, description of the researcher, assurance that this was a voluntary participation, answers may be skipped, and that the participant can stop the survey at any time (Fowler, 2009). The first screen conveyed to the participants that the researcher did not have access to the participants’ replies and that confidentiality would not be breached (Sierles, 2003).
**Confidentiality**

Confidentiality in research is concerned with who had access to the data and how the data will be used (Wiles, Charles, Crow, & Heath, 2006). For this study, the only person accessing the raw data was the web survey administrator. This administrator had no vested interest in this research study, nor did this person have any interest in students’ responses. The administrator did not share identifying information with anyone, including the researcher.

According to Fowler (2009), confidentiality is easier to maintain when completing a web-based survey. Fowler provides a list of standard procedures to be followed when maintaining confidentiality. These procedures are as follows:

- All people who have access to data are committed to confidentiality in writing.
- When identifiers are used, they are put in a form that can be easily removed to separate survey responses from identifiers.
- Completed surveys are not accessible to non-project members.
- Individuals from institutions who could identify participants from their answers will not be allowed to see the actual survey responses.
- Researchers are careful about presenting data for small categories of participants who might be identified.
- Researchers are responsible for secure storage of the research data and its destruction after the completion of the project.
  (Fowler, 2009, p. 166)

Institutional Review Board permission was collected from each campus and those approval numbers were shared with the students participating in this research study based upon which campus they are attending. The researcher kept all data secured and protected at all times on a password-protected desktop computer in their locked office.
Also, participants who wanted to participate in the focus groups will be able to volunteer for the focus groups after submitting their web-based survey. The students were able to provide their email address in order to be contacted later for participation in the focus groups. The data from this session did not use identifying information. The transcripts were coded so that only numbers were used to identify each person.

**Estimated Dissertation Timeline**

Table 11: Estimated Dissertation Timeline

<table>
<thead>
<tr>
<th>Dissertation Part</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal Defense</td>
<td>February 2012</td>
</tr>
<tr>
<td>IRB Approval</td>
<td>August 2012</td>
</tr>
<tr>
<td>Web Survey Administered</td>
<td>November 2012</td>
</tr>
<tr>
<td>Results from Web Survey</td>
<td>February 2013</td>
</tr>
<tr>
<td>Review of Focus Group Questions</td>
<td>February 2013</td>
</tr>
<tr>
<td>Conduct Focus Group Sessions</td>
<td>February/March 2013</td>
</tr>
<tr>
<td>Transcript and Field Note Analysis</td>
<td>May/June/July 2013</td>
</tr>
<tr>
<td>Chapter 4 Presentation of Data</td>
<td>August/Sept/October 2013</td>
</tr>
<tr>
<td>Chapter 5 Analysis and Summary</td>
<td>November/December/January 2014</td>
</tr>
<tr>
<td>Review of dissertation by Copy Editor</td>
<td>February 2014</td>
</tr>
<tr>
<td>Dissertation Defense</td>
<td>March 2014</td>
</tr>
<tr>
<td>Final Copy of Dissertation</td>
<td>April 2014</td>
</tr>
<tr>
<td>UMI Registration</td>
<td>April 2014</td>
</tr>
<tr>
<td>Graduation</td>
<td>May 2014</td>
</tr>
</tbody>
</table>
Methods Summary

This was a sequential explanatory mixed methods research project. The purpose of this study was to assess the needs of fourth year medical students, from across multiple campuses, as it relates to mentoring. This research study was completed in two phases. Phase I was a quantitative study in which a web survey was created, validated, and administered to 432 fourth year medical students. Data was collected and analyzed and then phase II was implemented. Phase II research consisted of one focus group being conducted at each of the five campuses for participants who volunteered to be involved in a follow up focus group. Data from these focus groups was analyzed. All data is reported in Chapter 4 and the analysis and conclusions are reported in Chapter 5 of this dissertation. Figure 3 summarizes the research methodology used in this study.

Figure 3: Summary of Research Methodology
CHAPTER FOUR: RESULTS

Overview of Chapter 4

Chapter 4 describes the results of this research study, and is divided into three sections: summary of the mentoring survey, summary of the focus groups, and summary of the chapter. Each subsection will address the appropriate research questions listed in Chapters 1 and 3 of this dissertation.

Mentoring Survey Introduction

The mentoring survey was electronically delivered to all of the fourth year medical students at five medical campuses. A total of 202 fourth year medical students agreed to participate in this research study (46.8% of the survey population). In order to achieve a 90% confidence level, a total of 267 student responses would be needed (Raosoft, Inc., 2004). However, according to Sivamalai, Murthy, Gupta, and Woolley (2011), the response rate for medical students is around 33%. This survey did exceed the 33% response rate. Additional medical schools throughout the country were contacted to participate in this study but they either did not respond or declined the invitation.

It should be noted thirty-three students agreed to complete the survey, but did not answer a single question. Eleven additional students did not complete at least half of the survey and their responses were eliminated. Five students had
inconsistent data and their responses were eliminated. Therefore, forty-nine respondents were dropped from being included in the results, yielding a total of 153 valid responses out of a possible 432 students for a total of 35.4% response rate.

As seen in Table 11, Campus A had 41 valid respondents out of a possible 101 respondents for a total of 40.6% of the population. Campus B had 31 valid respondents out of a possible 131 respondents for a total of 23.6% of the population. Campus C is the smallest campus, and had only 7 respondents out of a possible 28 respondents for a total of 25.0% of the population. Campus D had 48 valid respondents out of a possible 115 respondents for a total of 41.7% of the population. Campus E had 26 valid respondents out of a possible 57 respondents for a total of 45.6% of the population.

**Demographic results.**

Demographic data gathered from the survey (survey questions 47-52) reveal the characteristics evaluated for this study. Table 11 displays the demographic information pertaining to the 153 respondents. These data reveal that there were no significant differences between the number of males or females that completed this survey. The average age of participants was 26.6 years old for 142 respondents and ages ranged from 24-32. The remaining eleven respondents did not report their age. The majority of the participants did not have children (90.8%). With the majority of the participants who did have children, those children were under the age of 5. The majority of the respondents
were single (56.0%) and about a third of the respondents were married (37.0%). The remaining participants were partnered (5.7%) or divorced (0.7%).

Table 12: Demographic Information for 153 Respondents

<table>
<thead>
<tr>
<th>SQ 47-52</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>72</td>
<td>50.7%</td>
</tr>
<tr>
<td>Male</td>
<td>70</td>
<td>49.3%</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>79</td>
<td>56.0%</td>
</tr>
<tr>
<td>Married</td>
<td>53</td>
<td>37.6%</td>
</tr>
<tr>
<td>Partnered</td>
<td>8</td>
<td>5.7%</td>
</tr>
<tr>
<td>Divorced</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>Number of Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>128</td>
<td>90.8%</td>
</tr>
<tr>
<td>One</td>
<td>9</td>
<td>6.4%</td>
</tr>
<tr>
<td>Two</td>
<td>3</td>
<td>2.1%</td>
</tr>
<tr>
<td>Five</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>Children age(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>1-5 years</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>6-11 years</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Sexuality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>136</td>
<td>88.9%</td>
</tr>
<tr>
<td>Bisexual</td>
<td>2</td>
<td>1.3%</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>4</td>
<td>2.6%</td>
</tr>
<tr>
<td>Unknown</td>
<td>11</td>
<td>7.2%</td>
</tr>
<tr>
<td>Campus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>41</td>
<td>26.8%</td>
</tr>
<tr>
<td>B</td>
<td>31</td>
<td>20.3%</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
<td>4.6%</td>
</tr>
<tr>
<td>D</td>
<td>48</td>
<td>31.4%</td>
</tr>
<tr>
<td>E</td>
<td>26</td>
<td>17.0%</td>
</tr>
</tbody>
</table>

The majority of the respondents (88.9%) identified as heterosexual. Zero respondents identified as Gay, Lesbian, and Transgendered. Only two students
(1.3%) identified as bisexual. It is noted that 4 students (2.6%) preferred not to answer this question.

**Frequency of mentoring experience.**

Regarding the mentoring experience, the survey data (survey questions 3, 9, and 15) revealed that the median number of mentors for traditional mentoring is two, peer mentoring is two, and group mentoring is zero. The numbers of mentors for the 25th percentile are one for traditional, one for peer mentoring, and zero for group mentoring. The number of mentors for the 75th percentile is three for traditional mentoring, 4.75 for peer mentoring, and one for group mentoring. It should be noted that 97 students reported that they did not have a group mentoring experience, even though every campus had some group mentoring components. Also, only 26 students did not have traditional mentoring and only 27 students reported they did not have peer mentoring. The frequencies for each type of mentoring are displayed in Figure 4. There were no significant differences between the type of mentoring (traditional p=.43, peer p=0.321 and group p=0.649) and campus (A, B, C, D, and E). Students on most campuses identified 1 to 3 traditional mentors, 1 to 3 peer mentors, and zero group mentors. The data is displayed in Table 13.
Figure 4: Frequency of Type of Mentoring

Table 13: Number of Mentors by Type and by Campus

<table>
<thead>
<tr>
<th>SQ 3, 9, 15</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>n (%)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM_grp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero</td>
<td>10 (24.4%)</td>
<td>4 (12.9%)</td>
<td>1 (16.7%)</td>
<td>9 (19.6%)</td>
<td>2 (8.3%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.43</td>
</tr>
<tr>
<td>1 to 3</td>
<td>27 (65.9%)</td>
<td>22 (71%)</td>
<td>5 (83.3%)</td>
<td>30 (65.2%)</td>
<td>12 (50%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 or more</td>
<td>4 (9.8%)</td>
<td>5 (16.1%)</td>
<td>0 (0%)</td>
<td>7 (15.2%)</td>
<td>10 (41.7%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM_grp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zero</td>
<td>8 (19.5%)</td>
<td>6 (20%)</td>
<td>3 (50%)</td>
<td>9 (19.6%)</td>
<td>1 (4.2%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.321</td>
</tr>
<tr>
<td>1 to 3</td>
<td>21 (51.2%)</td>
<td>17 (56.7%)</td>
<td>2 (33.3%)</td>
<td>23 (50%)</td>
<td>12 (50%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 or more</td>
<td>12 (29.3%)</td>
<td>7 (23.3%)</td>
<td>1 (16.7%)</td>
<td>14 (30.4%)</td>
<td>11 (45.8%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 13 (continued)

<table>
<thead>
<tr>
<th>SQ 3, 9, 15</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>GM_grp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>26</td>
<td>22</td>
<td>5</td>
<td>31</td>
<td>13</td>
<td>0.649</td>
</tr>
<tr>
<td>Zero</td>
<td>(63.4%)</td>
<td>(75.9%)</td>
<td>(83.3%)</td>
<td>(68.9%)</td>
<td>(56.5%)</td>
<td></td>
</tr>
<tr>
<td>1 to 3</td>
<td>13</td>
<td>6</td>
<td>1</td>
<td>10</td>
<td>6</td>
<td>(20.7%)</td>
</tr>
<tr>
<td>(31.7%)</td>
<td>(20.7%)</td>
<td>(16.7%)</td>
<td>(22.2%)</td>
<td>(26.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 or more</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>(4.9%)</td>
</tr>
<tr>
<td>(4.9%)</td>
<td>(3.4%)</td>
<td>(0%)</td>
<td>(8.9%)</td>
<td>(17.4%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Chi-square test, df = 8
n=148

Types of mentoring in which medical students participate.

Students identified participating in traditional mentoring more than peer or group mentoring. Participants in this study identified participating in traditional peer and group mentoring throughout the four years of medical school. More fourth year medical students identified participating consistently in peer mentoring across all four years of undergraduate medical school than any other type of mentoring. Traditional mentoring was utilized by participants in the study more in the clinical years. Group mentoring was identified as occurring more in the basic science years. However, it should be noted medical students in this study participated in group mentoring less than any other type mentoring. The data collected from survey questions 5, 11, and 17 are displayed in Table 14.
Survey questions 4, 10, and 16 were used to describe how students identified their types of mentors. A Kruskal-Wallis test was ran for within group difference and traditional mentoring was statistically significant (p=.029). A Kruskal-Wallis test was ran for between group difference and traditional mentoring was statistically significant (p=.001). According to Windish and Diener-West (2006), the Kruskal-Wallis test is executed where there were more than three unpaired samples with an ordinal outcome measure. This research question had three unpaired samples with an ordinal outcome measure.

Students responded that they identified their traditional mentor (96 respondents) and peer mentor (79 respondents) on their own based upon mentors’ specialty. The survey (questions 22-31) asked students to identify their longest mentor/s based upon their demographic information (gender, nationality, sexuality, and age). The data are displayed in Table 15. From qualitative data in the web-survey, some students identified finding their own mentor/s based upon personality and similar extracurricular interests outside medicine (faith, worldviews, and fun activities).
Table 15: Mentoring Group Comparisons

<table>
<thead>
<tr>
<th>SQ 3,4, 9,10, 15, 16,</th>
<th>TM</th>
<th>PM</th>
<th>GM</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses per group, n</td>
<td>148</td>
<td>147</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>Number of mentors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 to 3</td>
<td>96*</td>
<td>75</td>
<td>36</td>
<td>&lt; 0.001**</td>
</tr>
<tr>
<td>4 or more</td>
<td>26</td>
<td>45</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>26</td>
<td>27</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Longest mentor</td>
<td>58</td>
<td>74</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>How identified (longest)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assigned randomly by institution</td>
<td>46 (11)</td>
<td>11 (8)</td>
<td>26 (0)</td>
<td></td>
</tr>
<tr>
<td>Assigned using criteria by institution</td>
<td>20 (7)</td>
<td>7 (3)</td>
<td>6 (0)</td>
<td></td>
</tr>
<tr>
<td>Identified on my own based on mentor's specialty</td>
<td>96 (29)</td>
<td>79 (27)</td>
<td>18 (0)</td>
<td></td>
</tr>
<tr>
<td>Identified on my own based on mentor's research interest(s)</td>
<td>24 (10)</td>
<td>13 (4)</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Identified on my own based on mentor's demographic characteristics (e.g. gender, nationality)</td>
<td>14 (2)</td>
<td>50 (28)</td>
<td>9 (0)</td>
<td></td>
</tr>
</tbody>
</table>

* Within group difference by campus: Kruskal Wallis test = 10.829, df = 4, p = 0.029

** Between group difference: Kurskal-Wallis test = 80.24, df = 2

The students identified the longest lasting mentoring relationship, with 74 respondents (52.11%), as peer mentoring. The second longest lasting type of mentoring relationship was traditional mentoring with 58 respondents (40.85%) while group mentoring only had 3 respondents (2.11%). There were 4.93% of students who had missing data for this question. Figure 5 illustrates the above statistics in a pie chart.
Figure 5: Type of Mentor for Longest Period

Perceived needs related to mentoring.

Research question three inquired what the participants in the study perceived as needs related to mentoring during the first two and last two years of undergraduate medical education. Survey questions 8, 14, and 20 were used to answer this research question. Each type of mentor was identified by medical student as helping meet their needs in the first two years of their training. However, more students in their first two years identified that a traditional mentor can assist in finding research projects, professional networking, developing careers goals, developing a Curriculum Vitae, and refining test taking strategies. More students identified that a peer mentor can assist in finding organizations to participate in, manage stress, balance work/life balance, managing time, personal growth, and reflecting critically in the first two years of medical school. More students identified group mentoring as being able to assist with working in
other health professional teams in the first two years. A chi-square was used to determine statistical significance and those values are displayed in Table 16. A Pearson chi-square was used to answer this research question because there were three unpaired samples with a dichotomous outcome variable, as according to Windish and Diender-West’s recommendation.

Table 16: Student Perceived Mentoring Needs During First Two Years

<table>
<thead>
<tr>
<th>N=148, SQ 8, 14, 20</th>
<th>TM</th>
<th>PM</th>
<th>GM</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding research projects</td>
<td>110</td>
<td>49</td>
<td>46</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Making ethical decisions</td>
<td>41</td>
<td>60</td>
<td>66</td>
<td>0.001</td>
</tr>
<tr>
<td>Professional networking</td>
<td>75</td>
<td>44</td>
<td>56</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>93</td>
<td>65</td>
<td>55</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Refining test taking strategies</td>
<td>99</td>
<td>117</td>
<td>57</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Developing Curriculum Vitae (CV)</td>
<td>60</td>
<td>39</td>
<td>33</td>
<td>0.001</td>
</tr>
<tr>
<td>Participating in organizations</td>
<td>105</td>
<td>115</td>
<td>67</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Managing stress</td>
<td>90</td>
<td>119</td>
<td>71</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Balancing work/life</td>
<td>94</td>
<td>119</td>
<td>61</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Managing time</td>
<td>95</td>
<td>109</td>
<td>56</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Personal growth</td>
<td>94</td>
<td>105</td>
<td>60</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Reflecting critically</td>
<td>74</td>
<td>86</td>
<td>58</td>
<td>0.001</td>
</tr>
<tr>
<td>Working with teams in other health professionals</td>
<td>26</td>
<td>33</td>
<td>46</td>
<td>0.009</td>
</tr>
<tr>
<td>None of the above</td>
<td>3</td>
<td>8</td>
<td>34</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Table 17: Student Perceived Mentoring Needs During the Last Two Years of Medical School

<table>
<thead>
<tr>
<th>N=148, SQ 8, 14, 20</th>
<th>TM</th>
<th>PM</th>
<th>GM</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding research projects</td>
<td>79</td>
<td>30</td>
<td>26</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Making ethical decisions</td>
<td>92</td>
<td>77</td>
<td>64</td>
<td>0.001</td>
</tr>
<tr>
<td>Professional networking</td>
<td>133</td>
<td>81</td>
<td>69</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>126</td>
<td>97</td>
<td>61</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Refining test taking strategies</td>
<td>15</td>
<td>54</td>
<td>27</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Developing Curriculum Vitae (CV)</td>
<td>120</td>
<td>70</td>
<td>71</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Participating in organizations</td>
<td>48</td>
<td>68</td>
<td>43</td>
<td>0.001</td>
</tr>
<tr>
<td>Managing stress</td>
<td>63</td>
<td>89</td>
<td>42</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Balancing work/life</td>
<td>90</td>
<td>95</td>
<td>46</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>
Medical students identified all three types of mentoring (traditional, peer, and group) as helpful in the last two years. The students perceived multiple characteristics as statistically significant among the three types of mentoring. Statistical significance was determined by a Pearson’s Chi-Square test, and the results are listed in the column as a p-value. All characteristics were statistically significant (p<.05). More students identified that a traditional mentor can help them find research projects, make ethical decisions, professional networking, develop career goals, develop a Curriculum Vitae (CV), grow personally, reflect critically, and work with teams in other health professions during the last two years of medical school. The students identified refining test taking strategies, participating in organizations, managing stress, and managing time as roles that a peer mentor can help with during the last two years of medical school. Group mentoring was not identified by the majority of students as being helpful during the third and fourth years of medical school for the characteristics listed in Table 17.

While a traditional mentor can help with all of the characteristics mentioned in the survey, several trends were detected amongst all campuses in regards to how a traditional mentor could help their mentees.
Table 18: How a Traditional Mentor Could Have Helped by Campus

<table>
<thead>
<tr>
<th>SQ 8</th>
<th>% First two years</th>
<th>% Last two years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Campus A</td>
<td>B</td>
</tr>
<tr>
<td>n</td>
<td>41</td>
<td>31</td>
</tr>
<tr>
<td>Traditional Mentor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding research projects</td>
<td>70.7%</td>
<td>43.9%</td>
</tr>
<tr>
<td>Making ethical decisions</td>
<td>31.7%</td>
<td>61.0%</td>
</tr>
<tr>
<td>Professional networking</td>
<td>43.9%</td>
<td>90.2%</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>65.9%</td>
<td>82.9%</td>
</tr>
<tr>
<td>Refining test taking strategies</td>
<td>70.7%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Developing Curriculum Vita (CV)</td>
<td>43.9%</td>
<td>70.7%</td>
</tr>
<tr>
<td>Participating in organizations</td>
<td>80.5%</td>
<td>22.0%</td>
</tr>
<tr>
<td>Managing stress</td>
<td>70.7%</td>
<td>53.7%</td>
</tr>
<tr>
<td>Balancing work/life</td>
<td>75.6%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Managing time</td>
<td>65.9%</td>
<td>41.5%</td>
</tr>
<tr>
<td>Personal growth</td>
<td>70.7%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Reflecting critically</td>
<td>51.2%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Working with teams in other health professions</td>
<td>24.4%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Other useful</td>
<td>2.4%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>
The majority of respondents for all campuses identified that a traditional mentor in the first two years would be able to assist more with refining test strategies, managing time, and participating in organizations. They also identified that a traditional mentor would help more in the clinical years (last two years) by assisting them in developing a CV, reflecting critically, and working in teams.

Table 18 displays data on the percentage of students identifying how a traditional mentor could help them in the first two and last two years. Campus C does stand out as their sample size (6 respondents) was quite small. While there were similarities among campuses, percentages varied quite a bit and this can be accounted for by variation between the mentoring programs on each campus.

Peer mentoring was also identified by students as assisting in mentoring needs. Students identified that peers can provide some assistance in locating research projects, working in teams, professional networking, and developing a CV, although it was a lower percentage than a traditional mentor. Peer mentoring was identified as able to provide assistance with ethical decisions more in the third and fourth years for all campuses. Students identified on all campuses that peers were helpful in refining test taking strategies in the first two years. Reflecting critically was different by campus. Campus A, B, and D identified reflecting critically as being more useful in the first two years, while Campus C was split, and Campus E identified it being more useful in the last two years. Campus C’s small sample size meant that their percentages per student were
Table 19: How a Peer Mentor Could Have Helped by Campus

<table>
<thead>
<tr>
<th>SQ 14</th>
<th>% First two years</th>
<th>% Last two years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus</td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>n</td>
<td>41</td>
<td>31</td>
</tr>
<tr>
<td>Peer Mentor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding research projects</td>
<td>41.5%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Making ethical decisions</td>
<td>46.3%</td>
<td>63.4%</td>
</tr>
<tr>
<td>Professional networking</td>
<td>24.4%</td>
<td>51.2%</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>56.1%</td>
<td>75.6%</td>
</tr>
<tr>
<td>Refining test taking strategies</td>
<td>82.9%</td>
<td>43.9%</td>
</tr>
<tr>
<td>Developing Curriculum Vita (CV)</td>
<td>36.6%</td>
<td>43.9%</td>
</tr>
<tr>
<td>Participating in organizations</td>
<td>78.0%</td>
<td>43.9%</td>
</tr>
<tr>
<td>Managing stress</td>
<td>90.2%</td>
<td>61.0%</td>
</tr>
<tr>
<td>Balancing work/life</td>
<td>87.8%</td>
<td>70.7%</td>
</tr>
<tr>
<td>Managing time</td>
<td>78.0%</td>
<td>48.8%</td>
</tr>
<tr>
<td>Personal growth</td>
<td>85.4%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Reflecting critically</td>
<td>63.4%</td>
<td>56.1%</td>
</tr>
<tr>
<td>Working with teams in other health professions</td>
<td>14.6%</td>
<td>31.7%</td>
</tr>
<tr>
<td>Other useful</td>
<td>0%</td>
<td>4.9%</td>
</tr>
</tbody>
</table>
Table 20: How a Group Mentor Could Have Helped by Campus

<table>
<thead>
<tr>
<th>Campus</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>% First two years</td>
<td>% Last two years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Mentor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding research projects</td>
<td>29.3%</td>
<td>14.6%</td>
<td>29.0%</td>
<td>16.1%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Ethics guidance</td>
<td>53.7%</td>
<td>43.9%</td>
<td>19.4%</td>
<td>22.6%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Professional networking</td>
<td>36.6%</td>
<td>48.8%</td>
<td>38.7%</td>
<td>45.2%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>31.7%</td>
<td>34.1%</td>
<td>22.6%</td>
<td>35.5%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Test taking strategies</td>
<td>39.0%</td>
<td>22.0%</td>
<td>35.5%</td>
<td>12.9%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Developing Curriculum Vita (CV)</td>
<td>19.5%</td>
<td>24.4%</td>
<td>19.4%</td>
<td>29.0%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Participation in organizations</td>
<td>46.3%</td>
<td>22.0%</td>
<td>35.5%</td>
<td>19.4%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Stress management</td>
<td>56.1%</td>
<td>31.7%</td>
<td>29.0%</td>
<td>9.7%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Work/Life balance</td>
<td>51.2%</td>
<td>34.1%</td>
<td>22.6%</td>
<td>9.7%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Time management</td>
<td>43.9%</td>
<td>31.7%</td>
<td>29.0%</td>
<td>12.9%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Personal growth</td>
<td>53.7%</td>
<td>43.9%</td>
<td>22.6%</td>
<td>12.9%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Critical reflection</td>
<td>39.0%</td>
<td>39.0%</td>
<td>29.0%</td>
<td>25.8%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Teamwork with other health professionals</td>
<td>22.0%</td>
<td>36.6%</td>
<td>35.5%</td>
<td>32.3%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Other useful</td>
<td>26.8%</td>
<td>41.5%</td>
<td>25.8%</td>
<td>38.7%</td>
<td>33.3%</td>
</tr>
</tbody>
</table>
large (16.67% per student). While there were similarities among campuses percentages varied quite a bit, and this can be accounted for by variation of mentoring programs on each campus. The data are displayed in Table 19.

Group mentoring was identified by students as able to assist with many roles. However, students rated the percentages much lower than traditional and peer mentoring overall. Group mentoring on all campuses except Campus C was identified as useful in the first two years to help find research projects. Ethics guidance from group mentoring was identified as more useful in the first two years on campuses A and D and more useful on Campuses B, C, and E in the last two years. Professional networking was identified as a role in which group mentoring could be more useful during the last two years on all campuses except Campus C. Stress Management was identified as a role in which group mentoring could be more useful during the first two years on all campuses. Time management was identified as a role in which group mentoring could be more useful during the first two years on all campuses except Campus C. Campus C has a small sample size and did provide some complications for the data. While there were similarities among campuses, percentages varied somewhat, and this can be accounted for by variation of mentoring programs on each campus. The data are displayed in Table 19.

All three types of mentoring (traditional, peer, and group) were identified as useful throughout all years of medical school. However, there were some campuses that differed where the types of mentoring would be useful (during the first two years or last two years) during undergraduate medical school training.
While campuses were not identical in percentages, many trends were identified. Campus C has a very small sample size and led to Campus C being an anomaly for many roles of mentoring.

**Mentoring contributes to professional growth.**

Research question four inquired to what frequency mentoring contributed to professional growth. Survey questions 6, 7, 12, 13, 18, and 19 were used to answer research question four. Overall, students identified all three types of mentoring as contributing to their own professional growth during medical school (TM = 108, PM=92, and GM=36). A chi-square test was calculated, organized by campus, and there was one statistically significant campus identified. Campus C had 2 responses out of 5 that stated traditional mentoring did not contribute to their own professional growth. Group mentoring had the least amount of responses due to the large number of students identifying that they did not experience this type of mentoring in their current educational environments. The data are displayed in Table 21.

Table 21: Mentor Contribution towards Professional Growth

<table>
<thead>
<tr>
<th>SQ 6, 12, 18</th>
<th>Response</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n(%)</td>
<td>Yes</td>
</tr>
<tr>
<td>TM: Did traditional mentoring contribute to professional growth?†</td>
<td>108 (90.0%)</td>
<td>12 (10.0%)</td>
</tr>
<tr>
<td>PM: Perceive peer mentoring as key factor in professional growth?</td>
<td>92 (78.0%)</td>
<td>26 (22.0%)</td>
</tr>
<tr>
<td>GM: Perceive group mentoring as key factor in professional growth?</td>
<td>36 (78.3%)</td>
<td>10 (21.7%)</td>
</tr>
<tr>
<td>† Chi-square by campus, exact test, df=4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>† The majority of campus responded &quot;Yes&quot; to this question, with the exception of Campus C, 2 out of 5 responded &quot;No&quot;.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mentees possess the characteristics to benefit from mentoring.

Research question five inquired to what frequency the participants in this study possess the characteristics to benefit from a mentoring program. Survey question number 39 was used to answer this research question. Most students identified that they possessed the characteristics to benefit from mentoring. Of the 153 students who participated in this study, 113 identified as being able to find their longest mentor/s on their own, compared to 15 who did not. Of the participants in this survey, 116 students identified taking responsibility for the relationship with their longest mentor/s compared to only 11 students who did not. Fourth year medical students (116 students) identified as being able to self-assess knowledge and skill gaps as compared to nine who did not. Medical students (122 students) stated they accepted criticism well as compared to five who did not. Of the participants in this survey, 90 students identified that they did not discuss the ending of their mentoring relationship as compared to 28 who did. Fourth year medical students (22 students) did not discuss personal growth with their longest mentor, as compared to 104 students who did. A chi-square test by campus was conducted for all of the characteristics in Table 22 and only one statistically significant result was obtained. Campus D responded that mentors more favorably accepted their weaknesses than other campuses. It should be noted data are sparse.
Table 22: Mentoring Characteristics that Students’ Possess

<table>
<thead>
<tr>
<th>SQ 39</th>
<th>N</th>
<th>Strongly Agree (%)</th>
<th>Agree (%)</th>
<th>Disagree (%)</th>
<th>Strongly Disagree (%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regarding my longest mentor, I …</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>found a mentor/s on my own</td>
<td>128</td>
<td>65 (50.8%)</td>
<td>48 (37.5%)</td>
<td>11 (8.5%)</td>
<td>4 (3.1%)</td>
<td>0.097</td>
</tr>
<tr>
<td>took responsibility for the relationship with the mentor/s (plan meetings, ask questions, active listening and completed assigned tasks)</td>
<td>127</td>
<td>52 (40.9%)</td>
<td>64 (50.4%)</td>
<td>8 (6.3%)</td>
<td>3 (2.4%)</td>
<td>0.781</td>
</tr>
<tr>
<td>demonstrated that I was able to self-assess knowledge and skill gaps</td>
<td>125</td>
<td>42 (33.6%)</td>
<td>74 (59.2%)</td>
<td>8 (6.4%)</td>
<td>1 (0.8%)</td>
<td>0.533</td>
</tr>
<tr>
<td>accepted criticism well</td>
<td>127</td>
<td>46 (36.2%)</td>
<td>76 (59.8%)</td>
<td>5 (3.9%)</td>
<td>0 (0.0%)</td>
<td>0.304</td>
</tr>
<tr>
<td>accepted my mentor/s weaknesses¹</td>
<td>128</td>
<td>34 (26.5%)</td>
<td>90 (70.3%)</td>
<td>4 (3.1%)</td>
<td>0 (0.0%)</td>
<td>0.022</td>
</tr>
<tr>
<td>sought assistance from other resources when my mentor could not provide the information or guidance that was needed</td>
<td>126</td>
<td>42 (33.3%)</td>
<td>73 (57.9%)</td>
<td>11 (8.7%)</td>
<td>0 (0.0%)</td>
<td>0.232</td>
</tr>
<tr>
<td>demonstrated appreciation of mentors’ time</td>
<td>128</td>
<td>69 (53.9%)</td>
<td>58 (45.3%)</td>
<td>1 (0.8%)</td>
<td>0 (0.0%)</td>
<td>0.773</td>
</tr>
<tr>
<td>discussed future steps for personal growth with my mentor</td>
<td>126</td>
<td>50 (39.7%)</td>
<td>54 (42.9%)</td>
<td>18 (14.2%)</td>
<td>4 (3.2%)</td>
<td>0.692</td>
</tr>
<tr>
<td>discussed when to end the mentoring relationship/s</td>
<td>124</td>
<td>8 (6.5%)</td>
<td>20 (16.1%)</td>
<td>66 (53.2%)</td>
<td>30 (24.2%)</td>
<td>0.47</td>
</tr>
</tbody>
</table>

* Chi-square by campus, df=4

¹ Campus D tended to respond more favorably, compared to other campuses, but data are sparse
Mentees understand characteristics of mentoring.

Research question six seeks to discover if the participants of this study understand the characteristics of mentoring as essential for successful mentoring. Survey questions 2 and 46 were used to answer this research question. Fourth year medical students were asked in the web-based survey to describe what does a mentor mean to them. Since this was the first question of the survey, medical students provided a list of characteristics that mentors fill for the mentee. Upon analysis of these free response items, ten roles were identified. Medical students most frequently identified that mentors guide (66 responses), provide advice (59 responses), and were experts in their field (57 responses). The least identified roles were coach (1 response) and tutor (1 response). It should be noted that students identified teacher (30 responses), role model (24 responses), and supporter (17 responses) as characteristics of a mentor. Table 23 shows all ten roles identified in this free response item and the frequency of identification.

Students were also asked about what their individual needs were at the end of their fourth year. Medical students from across all campuses identified finding research projects, publishing research, professional networking, and developing career goals as areas of high need. Also, students identified still needing assistance with building self-confidence, developing a CV, personal growth and finding evidenced based medicine resources. These same students identified making ethical decisions, refining test taking strategies, and managing stress as areas of low need.
Table 23: Essential Characteristics of Mentoring (Roles)

<table>
<thead>
<tr>
<th>SQ 1</th>
<th>Roles</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advisor</td>
<td>59</td>
<td>52.2%</td>
</tr>
<tr>
<td></td>
<td>Coach</td>
<td>1</td>
<td>0.90%</td>
</tr>
<tr>
<td></td>
<td>Expert</td>
<td>57</td>
<td>50.4%</td>
</tr>
<tr>
<td></td>
<td>Guide</td>
<td>66</td>
<td>58.4%</td>
</tr>
<tr>
<td></td>
<td>Leader</td>
<td>6</td>
<td>5.3%</td>
</tr>
<tr>
<td></td>
<td>Motivator</td>
<td>9</td>
<td>8.0%</td>
</tr>
<tr>
<td></td>
<td>Role Model</td>
<td>24</td>
<td>21.2%</td>
</tr>
<tr>
<td></td>
<td>Supporter</td>
<td>17</td>
<td>15.0%</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>30</td>
<td>26.5%</td>
</tr>
<tr>
<td></td>
<td>Tutor</td>
<td>1</td>
<td>0.90%</td>
</tr>
</tbody>
</table>

n=113; percentages will not total 100% because more than one answer could have been responded by the participants

A chi-square test was completed by campus and identified making ethical decisions (p=.025) and making and managing stress (p=.024) were statistically significant on Campus C. Campus C only had six responses so the data are sparse from this campus. Data are reported in Table 24.

**Frequency of characteristics of mentoring.**

Research question seven inquired to what frequency participants experienced characteristics of mentoring. Survey question 39 was used to answer this research question. Almost half of the students surveyed reported that they did not meet with their mentor at least once a month (59 students). Students also reported that they did not get guidance on time management from their mentor/s (59 students).
Table 24: Essential Characteristics for Successful Mentoring (Level of Need)

<table>
<thead>
<tr>
<th>SQ 46</th>
<th>1 low</th>
<th>2</th>
<th>3 moderate</th>
<th>4</th>
<th>5 high</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings on level of need: n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding research projects</td>
<td>20 (15%)</td>
<td>8 (6%)</td>
<td>28 (21.1%)</td>
<td>36 (27.1%)</td>
<td>41 (30.8%)</td>
<td>0.292</td>
</tr>
<tr>
<td>Publishing research</td>
<td>17 (12.8%)</td>
<td>10 (7.5%)</td>
<td>24 (18%)</td>
<td>29 (21.8%)</td>
<td>53 (39.8%)</td>
<td>0.091</td>
</tr>
<tr>
<td>Making ethical decisions</td>
<td>41 (30.8%)</td>
<td>33 (24.8%)</td>
<td>38 (28.6%)</td>
<td>11 (8.3%)</td>
<td>10 (7.5%)</td>
<td>0.025</td>
</tr>
<tr>
<td>Professional networking</td>
<td>6 (4.5%)</td>
<td>8 (6%)</td>
<td>26 (19.5%)</td>
<td>47 (35.3%)</td>
<td>46 (34.6%)</td>
<td>0.074</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>7 (5.3%)</td>
<td>13 (9.8%)</td>
<td>33 (24.8%)</td>
<td>42 (31.6%)</td>
<td>38 (28.6%)</td>
<td>0.291</td>
</tr>
<tr>
<td>Building self-confidence</td>
<td>19 (14.3%)</td>
<td>28 (21.1%)</td>
<td>34 (25.6%)</td>
<td>34 (25.6%)</td>
<td>18 (13.5%)</td>
<td>0.653</td>
</tr>
<tr>
<td>Refining test taking strategies</td>
<td>42 (31.6%)</td>
<td>39 (29.3%)</td>
<td>27 (20.3%)</td>
<td>16 (12%)</td>
<td>9 (6.8%)</td>
<td>0.267</td>
</tr>
<tr>
<td>Developing CV</td>
<td>14 (10.5%)</td>
<td>20 (15%)</td>
<td>42 (31.6%)</td>
<td>39 (29.3%)</td>
<td>18 (13.5%)</td>
<td>0.284</td>
</tr>
<tr>
<td>Participating in organizations&lt;sup&gt;1&lt;/sup&gt;</td>
<td>27 (20.5%)</td>
<td>35 (26.5%)</td>
<td>45 (34.1%)</td>
<td>20 (15.2%)</td>
<td>5 (3.8%)</td>
<td>0.115</td>
</tr>
<tr>
<td>Managing stress</td>
<td>34 (25.6%)</td>
<td>38 (28.6%)</td>
<td>34 (25.6%)</td>
<td>22 (16.5%)</td>
<td>5 (3.8%)</td>
<td>0.024</td>
</tr>
<tr>
<td>Balancing work/life</td>
<td>30 (22.6%)</td>
<td>31 (23.3%)</td>
<td>39 (29.3%)</td>
<td>27 (20.3%)</td>
<td>6 (4.5%)</td>
<td>0.104</td>
</tr>
<tr>
<td>Managing time</td>
<td>31 (23.3%)</td>
<td>29 (21.8%)</td>
<td>45 (33.8%)</td>
<td>24 (18%)</td>
<td>4 (3%)</td>
<td>0.390</td>
</tr>
<tr>
<td>Personal growth</td>
<td>21 (15.8%)</td>
<td>21 (15.8%)</td>
<td>43 (32.3%)</td>
<td>27 (20.3%)</td>
<td>21 (15.8%)</td>
<td>0.435</td>
</tr>
<tr>
<td>Finding evidence based medicine resources&lt;sup&gt;1&lt;/sup&gt;</td>
<td>21 (15.9%)</td>
<td>26 (19.7%)</td>
<td>38 (28.8%)</td>
<td>36 (27.3%)</td>
<td>11 (8.3%)</td>
<td>0.132</td>
</tr>
<tr>
<td>Reflecting critically</td>
<td>11 (8.3%)</td>
<td>26 (19.5%)</td>
<td>48 (36.1%)</td>
<td>38 (28.6%)</td>
<td>10 (7.5%)</td>
<td>0.172</td>
</tr>
<tr>
<td>Working with teams in other health professions</td>
<td>26 (19.5%)</td>
<td>33 (24.8%)</td>
<td>40 (30.1%)</td>
<td>19 (14.3%)</td>
<td>15 (11.3%)</td>
<td>0.243</td>
</tr>
</tbody>
</table>

* Chi-square by campus, df=4

n=133; <sup>1</sup>n =132
However, the students reported their mentors were knowledgeable in content areas (126 students), provided constructive feedback (116 students), and gave valuable career guidance (120 students). It should be noted that 114 students reported their mentor/s demonstrated interest in the mentoring relationship and 113 students reported their mentor challenged themselves to grow professionally. Data are reported in Table 25.

**Mentee preferences in regards to mentor demographic information.**

Research question eight inquires about participants preference for mentors’ demographic characteristics. Survey questions 32, 33, 34, 35, 36, 37, 40, 41, 42, 43, 44, and 45 were used to answer this research question. All demographics (gender, nationality, age, specialty, and sexuality) questioned about in this survey reported that some students had preferences. A chi-square test by campus was completed and only one demographic characteristic was statistically significant, specialty (p=.002). Campus B responded with a preference for specialty more than any other campus with 24 of 26 responders having a specialty preference. The data are displayed in Table 26.
Table 25: The Mentor Experience

<table>
<thead>
<tr>
<th>SQ 38</th>
<th>n</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>My mentor(s)…</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>met with me at least once a month.</td>
<td>128</td>
<td>25 (19.5%)</td>
<td>44 (34.4%)</td>
<td>43 (33.6%)</td>
<td>16 (12.5)</td>
<td>0.71</td>
</tr>
<tr>
<td>were knowledgeable in their content area.</td>
<td>128</td>
<td>82 (64.1%)</td>
<td>44 (34.4%)</td>
<td>1 (0.8%)</td>
<td>1 (0.8%)</td>
<td>0.957</td>
</tr>
<tr>
<td>gave constructive feedback.</td>
<td>127</td>
<td>66 (52%)</td>
<td>50 (39.4%)</td>
<td>9 (7.1%)</td>
<td>2 (1.6%)</td>
<td>0.663</td>
</tr>
<tr>
<td>gave valuable career guidance.</td>
<td>128</td>
<td>67 (52.3%)</td>
<td>53 (41.4%)</td>
<td>7 (5.5%)</td>
<td>1 (0.8%)</td>
<td>0.0497</td>
</tr>
<tr>
<td>provided professional direction/guidance</td>
<td>128</td>
<td>47 (36.7%)</td>
<td>53 (41.4%)</td>
<td>26 (20.3%)</td>
<td>2 (1.6%)</td>
<td>0.793</td>
</tr>
<tr>
<td>recognized my lack of experience.</td>
<td>126</td>
<td>32 (25.4%)</td>
<td>79 (62.7%)</td>
<td>12 (9.5%)</td>
<td>3 (2.4%)</td>
<td>0.435</td>
</tr>
<tr>
<td>included me in professional activities.</td>
<td>125</td>
<td>34 (27.2%)</td>
<td>60 (48%)</td>
<td>27 (21.6%)</td>
<td>4 (3.2%)</td>
<td>0.668</td>
</tr>
<tr>
<td>provided guidance on time management.</td>
<td>125</td>
<td>19 (15.2%)</td>
<td>49 (39.2%)</td>
<td>50 (40%)</td>
<td>7 (5.6%)</td>
<td>0.913</td>
</tr>
<tr>
<td>provided guidance on professional ethics.</td>
<td>125</td>
<td>27 (21.6%)</td>
<td>52 (41.6%)</td>
<td>38 (30.4%)</td>
<td>8 (6.4%)</td>
<td>0.508</td>
</tr>
<tr>
<td>provided strategies for coping with stress.</td>
<td>124</td>
<td>27 (21.8%)</td>
<td>48 (38.7%)</td>
<td>38 (30.6%)</td>
<td>11 (8.9%)</td>
<td>0.704</td>
</tr>
<tr>
<td>critically reflected on clinical cases with me.</td>
<td>125</td>
<td>37 (29.6%)</td>
<td>38 (30.4%)</td>
<td>42 (33.6%)</td>
<td>8 (6.4%)</td>
<td>0.338</td>
</tr>
<tr>
<td>demonstrated interest in our mentoring relationship.</td>
<td>126</td>
<td>56 (44.4%)</td>
<td>58 (46%)</td>
<td>9 (7.1%)</td>
<td>3 (2.4%)</td>
<td>0.262</td>
</tr>
<tr>
<td>motivated me to challenge myself professionally.</td>
<td>126</td>
<td>56 (44.4%)</td>
<td>57 (45.2%)</td>
<td>8 (6.3%)</td>
<td>5 (4%)</td>
<td>0.828</td>
</tr>
<tr>
<td>suggested other resources when questions were outside their area of expertise.</td>
<td>123</td>
<td>47 (38.2%)</td>
<td>56 (45.5%)</td>
<td>16 (13%)</td>
<td>4 (3.3%)</td>
<td>0.975</td>
</tr>
</tbody>
</table>

* Chi-square by campus, df=4
Table 26: Mentee Demographic Preference

<table>
<thead>
<tr>
<th>SQ 32-37</th>
<th>Mentee demographics</th>
<th>No</th>
<th>Yes</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>104 (78.2%)</td>
<td>29 (21.8%)</td>
<td>0.907</td>
<td></td>
</tr>
<tr>
<td>Nationality</td>
<td>127 (95.5%)</td>
<td>6 (4.5%)</td>
<td>0.886</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>102 (76.7%)</td>
<td>31 (23.3%)</td>
<td>0.452</td>
<td></td>
</tr>
<tr>
<td>Specialty</td>
<td>50 (37.6%)</td>
<td>83 (62.4%)</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Sexuality</td>
<td>116 (89.2%)</td>
<td>14 (10.8%)</td>
<td>0.945</td>
<td></td>
</tr>
</tbody>
</table>

* Chi-square by campus, df=4

* Campus B responded "Yes" more often than any other campus: 24 out of 26 responders.

Preferences were also dissected out by the sex of the respondent. Again some fourth year medical students had preferences for all categories (gender, nationality, age, specialty, sexuality, and medical degree). A larger proportion of males had gender preferences when compared with females; however, the differences were not statistically significant. It should be noted that for the nationality characteristic, only five medical students responded to this question and therefore, the data were sparse. A Pearson’s Chi-Square test was completed, and it identified one statistically significant finding, males had a preference on their mentor’s sexuality (p=.013). The data are displayed in Table 26. Qualitative data informed the researcher that some students did not have a preference for sexual orientation. However, several students stated that it was easier to relate to heterosexual males, that their mentor’s personal values must agree with their own values, and stated a simple preference for heterosexual mentors. One student wrote the following: “With a similar orientation we can better relate to common problems that face that orientation. It would be difficult
for me to discuss getting married to a wife to someone who has never dealt with that experience.” Another student stated the following: “It is easier to relate with heterosexual males.” Furthermore, a different student stated, “If I am going to model myself after a certain person, their set of values must agree with mine.” Finally a student wrote the following comment that separates academic mentoring from personal mentoring in regards to sexuality, “Regarding academic and professional matters, I don’t think sexuality plays that big of a role. However, I would seek out a mentor of a certain sexuality regarding personal matters.”

Table 27: Mentor Characteristic Preferences by Gender

<table>
<thead>
<tr>
<th>SQ 32-37</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationality</td>
<td>13 % 46.4</td>
<td>15 % 53.6</td>
</tr>
<tr>
<td>Age</td>
<td>26 % 55.2</td>
<td>13 % 44.8</td>
</tr>
<tr>
<td>Specialty</td>
<td>46 % 56.1</td>
<td>36 % 43.9</td>
</tr>
<tr>
<td>Sexuality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MD degree</td>
<td>52 % 49.5</td>
<td>53 % 50.5</td>
</tr>
<tr>
<td>Other degree</td>
<td>10 % 58.8</td>
<td>7 % 41.2</td>
</tr>
</tbody>
</table>

Pearson Chi-Square tests

* Data were sparse

Medical students indicated they preferred their mentors to have a MD degree (86% of respondents). The students also responded with a preference for a MD/PHD (5% of respondents). Only 1% of respondents stated that they preferred a DO degree. Seven percent of the respondents identified other degrees as preferences. These other degrees include: BA, BS, MBA and MPH. Qualitative data suggested that the BS/BA degree was suggested for peer
medical students. The following comments explain that preference: “future MD recipient,” “MD student,” “peer-BS,” “not yet MD recipient,” and “medical student.”

Figure 6: Mentor Degree Preferences

While students stated they had preferences for degree of mentor, I furthered asked if these preferences were being met. The results of the survey showed that the MD degree was being implemented. There was a statistically significant number of preferences for MDs and those students were being mentored by MDs (p=.033). It should be noted that four students responded being mentored by a mentor with a PhD, eight students responded being mentored by a mentor with a MS, and one student responded being mentored by a mentor with an MA degree. The results of these preferences are displayed in Table 28.
Table 28: Mentor Degree Preference versus Actual Degree Held

<table>
<thead>
<tr>
<th>SQ 27 and 37</th>
<th>Mentor’s Degree held</th>
<th></th>
<th>MD</th>
<th>MD/PhD</th>
<th>PhD</th>
<th>DO</th>
<th>MS</th>
<th>MA</th>
<th>Total</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preference</td>
<td>MD</td>
<td>64</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>78</td>
<td>0.033</td>
</tr>
<tr>
<td></td>
<td>MD/PhD</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PhD</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total n</td>
<td></td>
<td>69</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>89</td>
<td></td>
</tr>
</tbody>
</table>

* Pearson Chi-Square exact test = 44.848, df=15

Summary of Quantitative Results

The results of the quantitative web-based survey were described in the preceding sections. These results described quantitative answers to the eight research questions guiding this study. These quantitative results were used in the qualitative section (focus groups) of this study to seek further explanations of these results on each campus.

Focus Group Analysis Method

Introduction

Five focus groups were held over the period of two weeks from February 28, 2013 to March 14, 2013. One focus group session was held on each campus that participated in the web-based survey and was labeled campus A, B, C, D, and E. Each session consisted of four to seven students who had previously filled out the survey. A total of 29 students participated in these focus group sessions across all five campuses. Each focus group had field notes completed by the primary researcher and was audio recorded for later analysis. These focus
groups were transcribed, and each comment was then sorted by each focus group question by campus. There were 427 comments that were initially coded from the five focus group sessions.

According to Merriam (2009), peer review is a process where a colleague examines raw data and assesses whether the findings are plausible based on the data. The peer review process increases the validity and reliability of the qualitative data collected and analyzed in this study. According to Creswell and Clark (2011), another way to increase reliability in qualitative research is called interrater reliability. This procedure involves using a second individual to code transcripts and compare the themes identified. Once a predetermined code has been agreed upon, the transcripts are recoded. Rates of agreement between the researchers are calculated and a Kappa value is produced for comparison (Creswell & Clark, 2011).

To increase validity and reliability, the primary researcher (SC) hired a second qualitative researcher to assist with this research study. The second qualitative researcher (PP) has a background in medical education and qualitative research. The comments were then each hand coded by the two researchers, SC and PP. Bright and O'Connor (2007) described this process as traditional text analysis.

SC and PP discussed similarities and differences in initial coding. Some examples of the similarities in the initial coding discussed were from the following student comment: "I have my mentor since college and one of them wrote my
letter of recommendation so some of the places I went to they are like oh, I know this person, and it really helped me with some of my interviews which was very helpful.” SC’s initial coding was “mentor provides recommendations” and PP’s coding was “writing letter of recommendations.” These two initial codes were similar, describing the writing of recommendation letters by a student’s mentor as an important role. Another similarity was with the comment, “They just give you guidance, and it’s just nice to have them there. It’s very comforting.” SC coded this as “the mentor provides general advice” and PP coded this as “providing guidance.” It was then noted by the SC and PP that while the initial codes were similar in meaning, they were not identical due to phrasing of the codes. PP’s initial coding was developed so that the codes were action based. SC consulted literature and found that according Charmaz (2006), codes and themes should be action and process based not topic based.

Larger differences were noted on several initial codes. For the student comment,

“Multiple mentors helped me in choosing some of the programs I was applying to, and so because they know me as a person because I have kind of grown up with them so to speak, and so they are like I think you would really like this program because of X, Y, Z and so I think because they know you on a different level and I think that’s kind of helpful.”

SC’s initial code was the “mentor provides personal career planning advice” and PP’s code was “knowing on a different level.” The two researchers discussed this code at length and discussed the differences in the codes. While they were identifying similar concepts, they were describing it differently. Another example of this occurrence is with the student comment,
“It’s okay to have mentors in other fields. They can still, I mean not necessarily be like oh so this is what you are going to do, but like help talk to you about kind of like other career guidance, maybe like talk to you about your personality, like do you think this is something, just be like a normal sounding board, just because you don’t want to do plastic surgery doesn’t mean that they can’t talk to you about pediatrics, you know what I mean. I think a mentor just because, I think they are just somebody who is a role model for you, and they can just be a great person to talk to about advice. And I would still want them to be somebody in the medical field, but they would know the process we are going through with applications and the matches and they are still a great person to talk to.”

SC’s code was “find mentors outside your field” and PP's code was “being a sounding board.” While at first these seem to be completely different codes, SC was describing the cause and PP was describing the end result. Finally, a difference was noted in vocabulary between students, the researcher, and PP.

For example the following student comment,

“I’d say generally like just a guide, someone to help you along the way, someone you can seek out advice from to help you along this educational process, or an educational process whatever that may be. Someone to help you along the way, someone you can seek out advice from along this educational process, or an educational process whatever that may be.”

It was coded by the primary researcher as advisor and by PP as providing academic guidance. The primary researcher uses the following definition for advisor: a person who focuses on providing information on degree requirements, technical guidance regarding requirements, and monitoring the student’s progress through an academic program. PP and the students both used the term guide and advisor interchangeably. It was noted by both researchers that specific roles such as guide and advisor would be difficult to separate from the student perspective and coding would need to take that into consideration.
After initial coding was completed, each researcher created their own list of thematic codes. SC identified 88 themes based upon each research question and PP identified 10 themes based upon overall comments. Each theme had a code, code number, and definition. Then the two researchers compared their thematic codes. The method of having separate thematic codes developed by two qualitative researchers has been used many times in qualitative literature (Hernandez & Naccarato, 2010; Ladge, Clair, Greenberg, 2012).

Two errors were found in the individual thematic coding when comparing them. SC’s themes were too specific and the themes identified topics rather than actions/processes. SC, having parsed out many aspects of mentoring for the web-based survey, struggled with not losing data. PP’s themes were too broad (as they did not pertain to a specific research question), and data loss could be present. According to Charmaz (2006), the two errors identified in this study are common errors in qualitative research.

In order to address these concerns, the two researchers collaborated by discussing the thematic codes multiple times. A final thematic codebook was agreed upon, with 27 thematic codes based upon all research questions. These codes were action/process based and consisted of a short code, a numerical code, and a definition. Once the final code book was completed, each researcher then coded each of the 427 comments independently, and inter-rater reliability was calculated.
According to Wood (2007), Cohen’s Kappa is a good measurement of inter-rater reliability between two raters. Kappa’s formula is as follows:

\[
\text{Kappa} = \frac{\text{Observed} - \text{expected}}{1 - \text{expected}}.
\]

According to Wood (2007), Kappa for research purposes should be at least 0.70.

Table 29 displays the Kappa value for each research question and overall Kappa for this study.

Table 29: Cohen’s Kappa for Thematic Coding

<table>
<thead>
<tr>
<th>Research Question Number</th>
<th>Research Question</th>
<th>Number of Themes</th>
<th>Cohen’s Kappa</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>If a fourth year medical students had mentoring experience, within what type of mentoring did they participate?</td>
<td>4</td>
<td>.790</td>
</tr>
<tr>
<td>4</td>
<td>According to Fourth year medical students, to what frequency did mentoring contribute to their preparation for their professional growth?</td>
<td>4</td>
<td>.637</td>
</tr>
<tr>
<td>5</td>
<td>To what frequency have fourth year medical students indicate that they possess characteristics to benefit from a mentoring program?</td>
<td>4</td>
<td>.557</td>
</tr>
<tr>
<td>6</td>
<td>To what frequency do fourth year medical students understand characteristics of mentoring as essential for successful mentoring?</td>
<td>4</td>
<td>.899</td>
</tr>
<tr>
<td>8</td>
<td>What are mentee preferences in regards to demographic information (gender, age, nationality, specialty, and sexuality)?</td>
<td>3</td>
<td>.651</td>
</tr>
<tr>
<td>9</td>
<td>Do you have additional comments?</td>
<td>8</td>
<td>.949</td>
</tr>
<tr>
<td>Overall</td>
<td>N/A</td>
<td>27</td>
<td>.778</td>
</tr>
</tbody>
</table>
A sufficient Kappa of 0.778 was achieved overall. However, Kappa was also calculated for each research question. The Kappa values for research questions 2, 6, and additional comments were above the 0.70 cutoff. However, research questions 4, 5, and 8 fell below the cutoff of 0.70. These research questions had 4 themes or less. With a small number of themes (3-4), there is a lower margin of error for Cohen’s Kappa. Therefore, any discrepancies between coders would decrease Kappa at a considerable rate. It should be noted the highest Kappa for the research question analysis (0.949), occurred with the highest number of themes.

With a satisfactory overall Kappa value (0.778), the researchers continued to move forward with the analysis. Any discrepancies between researchers’ thematic coding was discussed, and a consensus was reached between SC and PP. A third party was not needed to reach a consensus between the two researchers.

In summary, all five campuses that participated in the web-based study participated in the focus group sessions. The focus group sessions were recorded, transcribed, and analyzed for thematic coding based upon research question. Inter-rater reliability was calculated between the primary researcher and the second qualitative researcher and an overall sufficient Kappa was achieved between the two researchers for thematic coding. Any discrepancies
Types of Mentoring Medical Students Participate

Research question two inquired whether fourth year medical students had mentoring experience, and if so, what type of mentoring did they participate? So in these focus groups, a single question was asked regarding which type of mentoring you participated in during your undergraduate medical education program. A total of 51 comments were collected and analyzed for this question across all five campuses.

In the initial analysis of the question, the researcher identified 15 themes and the second researcher identified three themes. After discussing and recoding themes, a final of four themes were identified and agreed upon by both researchers. All comments were then recoded separately by the researcher and the second qualitative researcher. The inter-rater reliability of the codes was 0.790. Any discrepancies in coding were discussed and a consensus reached.

Table 30 lists the four themes for research question two.

Table 30: Research Question Two Codes and Descriptions

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating in Informal Mentoring</td>
<td>The student participated in a mentoring relationship not assigned by institution.</td>
<td>9</td>
</tr>
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</table>
Table 30 (continued)

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating in Formal Mentoring</td>
<td>2</td>
<td>The student participated in a mentoring relationship assigned by institution.</td>
<td>30</td>
</tr>
<tr>
<td>Participating in both formal and informal mentoring</td>
<td>3</td>
<td>The student participated in a mentoring relationship identified on their own and assigned by institution.</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>Personal experiences that did not state whether they were formal or informal mentoring or lack of any mentoring experiences.</td>
<td>4</td>
</tr>
</tbody>
</table>

**Participating in informal mentoring.**

Medical students across campuses A, C, D, and E identified themselves as having participated in informal mentoring. This theme was defined by students participating in a mentoring relationship not assigned by the institution. This meant students identified a mentor that was met prior to medical school and a peer mentor not assigned by an institution.

An example of the dominant responses includes the following comment from campus C: “I started shadowing and they have been my mentor for probably six years. I built a relationship from that and then it became a mentoring relationship. It started that way.” This student describes obtaining a physician to shadow prior to matriculation into medical school as well as continuing that relationship for the six years of medical school. This situation is in agreement
with Noe (1988) in which he suggests that informal relationships are generally three to six years in length.

A variation on this theme is that medical students from campus A described not having a successful peer mentoring program and how they were trying to prevent that from happening to the underclassmen. The student from campus A stated: "It sounds like a lot of us feel that way and that’s why we are all sort of trying our best to the opposite for first and second years and even third years now, trying to get them advice and help them out because we didn’t feel like we had that." This relationship developed from the medical students without institutional assigning of peer mentors.

Finally, another variation of this theme discusses how students locate an informal mentor. A student from campus D states,

"Mine simply was the most outspoken person in the field I wanted to go into. Once I came to campus D, through meetings with student groups and the faculty that were involved with those groups, I was able to find an informal mentor."

Kram and Isabella (1985) describe a benefit to informal mentoring because the selection of a mentor can be based on both psychosocial and career related functions.

Students from all campuses but Campus B identified that they participated in informal mentoring relationships. There were nine comments coded in this theme. Of those comments, there were three variations that this theme identified: students describing an informal mentoring relationship that lasted from three to six years, students describing how they are trying to increase informal mentoring
because of their personal experiences, and how students identified their informal mentor.

**Participating in formal mentoring.**

Medical students across all campuses identified as participating in formal mentoring. A total of 30 comments were related to this code. This code was defined by participating in a mentoring relationship assigned by their institution. This section will be divided into three categories of formal mentoring: traditional, peer and group.

**Traditional mentoring.**

Both successful and unsuccessful traditional mentoring occurred at all institutions. Campus A and B had students describe participating in a successful traditional mentoring experience. A student from campus A, stated

“\[
I \text{ think I had a little bit different than anybody else. I was the president of my academic society second year, so I think I got a lot more out of that just being more involved and I was very fortunate to have an assigned mentor that I clicked with really, really well.} \]

A student from Campus B stated,

“\[
\text{I think I’ve had all three (types of mentoring), but one on one with faculty and our mod mentor was fantastic, and set up things not just school function type things, but hey let’s get together, I’m going to buy you breakfast and let’s just talk about how school is going, is there anything we can do, anything I can do for you. And one of the things was that the faculty member, we had difficulty getting ahold of this person to discuss something in class that we didn’t understand. So he went and sought this person out to meet with us on a weekend day so our class and other students were invited to come and get help on this topic that we didn’t understand, but it was through our mentor, not from the same area of} \]

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expertise, who went and sought this other faculty member out to help us. That was really beneficial.”

Four students at Campus D identified having a traditional mentoring experience. However the students did not describe if this mentoring was successful or not. One student stated, “I have a traditional mentor” and another student states “I think all mine was traditional.” The moderator did not ask a follow up question but upon reflection needed to do so.

Students also identified traditional mentoring experiences that were not successful at Campus A and E. A student from Campus A states,

“Mine was slightly different because I came in after them so while they had an assigned mentor that they had to meet with I had an assigned mentor that I didn’t have to meet with and I can tell you most of my class didn’t meet with their mentors unless it was like they formed a strong relationship with them and they were in their field.”

This was also brought up on Campus E by the following student comment,

“It would be nice if in Campus E, instead of assigning them you could have maybe some way of aligning up earlier with people who, like if you thought maybe you had an interest in family medicine and they had an academic society more geared towards that you could go with that, the size would be probably off, but that would have --Primary care versus not.”

These comments from Campus A and E, highlight a weakness of formal mentoring, that one mentor may not be enough for the mentee. According to Bettemann (2008), most formal mentoring programs only include a single match, and this mentor may not be able to provide all of the necessary support for the mentees.

**Peer mentoring.**

Peer mentoring was identified by students as occurring only on Campus A, D, and E. After analysis of the peer mentoring comments occurred, two
subcategories emerged: one category was unsuccessful peer mentoring and self-fulfillment from being a peer mentor. A student from campus A identified unsuccessful peer mentoring with the following comment:

“I know that we have like the big sib and little sib thing first and second year, which is wildly unsuccessful for a variety of reasons, but probably one of those is that some people get a lot of fulfillment and satisfaction out of that kind of relationship and other people don’t. And I feel like my big sib didn’t get that kind of satisfaction and my little sib didn’t either, so here I was like wanting to have this relationship both ways and nobody really did with me.”

Two students at Campus D identified having a peer mentoring experience. However the students did not describe if this mentoring was successful or not. One student states, “I had peer and traditional” and another student states “Both traditional and peer.” The moderator did not ask a follow up question here, and the data was not as complete as desired.

On Campus A one student states, “I was never involved with the academic societies but my MD/PhD group I have mentored students all the way along and I think part of it for me is I get sort of self-fulfillment out of it, I like taking these underclassmen under my wing and helping them through the process. I think that fulfillment I think that if’s that there, any similar situation; anybody could be involved with it.” The medical student discusses the benefits of being a peer mentor in the unique MD/PhD program on Campus A. This shows that this student is willing to devote time to being a peer mentor and that the peer mentor has experience at the institution. These are characteristics identified by Terrion and Leonard (2007) of successful peer mentors.
Group mentoring.

While the majority of students who completed the web-based survey stated they did not have a group mentoring experience (97 students), the majority of students from Campus A, B, C, and E did describe having a group mentoring experience. Campus D was the only campus that did not describe having a group mentoring experience. One student from campus D stated “I’m surprised that many people have group mentoring.” However, there was a range of successes pertaining to group mentoring from Campus A, B, C, and E.

Successful group mentoring was described by students on Campus B, C, and E. One student from Campus B stated,

“For the first year of medical school we are broken into groups of about 18 to 20 students, each one is a module, and these people become your best friends and your family members away from home, and we are randomly assigned a faculty member, whether it is an MD or PhD who is kind of in charge of our group, getting small group meetings together, mainly just kind of to check on you, make sure everything is going okay. And our mentor went over and beyond his duties.”

Another student from Campus C stated,

“I think the same thing is true to a degree in medical school, especially the first two years, the interest groups in Campus B were, each group at least put on a panel once a year on people who were successful in the match process in that field and I think that was helpful.”

Campus E also has received praise from a student regarding their group mentoring experience,

“And we do like, we are doing family medicine, like family medicine interest group and I would say that is kind of group mentoring like the interest group, because I mean we meet and we talk about like the third year, what electives to take, like next week we are going to talk about how match went and the process and what you needed to do, because they
are going to be doing that in like six months and so we do a lot of things like for the third year students and now kind of more the second and first year since they are here we are trying to incorporate more things for them, but I think that’s kind of nice, it’s kind of a group mentoring with the interest group, but I think that has been very helpful, it was helpful for me as a third year student."

The positive students’ perceptions of the group mentoring align with Darwin and Palmer’s (2009) research, which states mentor groups allow for access to networks, reduction in feelings of isolation, greater connectivity, increased confidence, increased knowledge acquisition, and increased career progression.

Students from Campus A, B, C, and E state they had experienced unsuccessful group mentoring. A student from Campus A states,

“It would have been nice if we could have chosen our society, you know like a primary care society or academic research society or you were sorted that way, but they were just a hodgepodge of random people society so."

A student from Campus B states,

“Technically I had group mentoring, we had weekly, biweekly meetings with a physician and I felt like we were pretty welcome at his home. He offered us his phone number. I was able to contact him through email and set up times to follow him during the first two years, but that relationship disappears after we start our clinicals.”

Campus C student stated, “We had one mentor assigned to our entire group in Campus B where we had 20 students. We didn’t know he existed until we moved to Campus C. So whoever was assigned to us fell through the cracks pretty early.” This student spent two years on Campus B and two years on Campus C. A student from Campus E stated,

“I think the problem in Campus A was, you would hear about someone else’s society doing something and you were oh that sounds interesting I wish my society would do that. I guess you could go and sit in on those. But a lot of times too I never felt like those meetings were at good times
for what we were doing, you know, like now the fourth years have a little more time in the evenings but our daily schedules are just so unpredictable that it is hard to organize things like that. In Campus A, there was just so much going on all the time with book study that you didn’t want to go to it anyway because you felt like you didn’t have the time, at least I didn’t.”

It is important to note that this student spent two years on Campus E and two years on Campus A.

Students’ perceptions of group mentoring from Campus A, B, C, and E identified several weakness, which include a limited number of people in your career choice, commitment levels of mentors, and having a time to meet with a group that works with busy schedules. Eriksson (2013) has documented the group mentoring issues with scheduling concerns as brought up by the students on Campus A, B, C, and E. On Campus D, the scheduling issues may not have been a concern as students meet with their group mentor during the Doctoring course – it is built into the curriculum.

**Participating in both formal and informal mentoring.**

The third theme identified in this research question describes students’ participation in both formal and informal mentoring. Students from Campus A, B, C and E provided insight that they participated in both mentoring assigned by the institution and mentoring that develops without the institution’s involvement. There were only 8 student comments that pertained to recognizing they participated in both formal and informal mentoring. Three comments were from Campus A and another three comments were from Campus C. The two remaining comments were from Campus B and E. The dominant comments from these two institutions were like the comments from this student at Campus A,
“I think I have been involved with both formalized mentoring relationships, both in undergrad and here, and I have also been involved with my own personal one too, and I think the more personal where you have a relationship with that person and you want to help them, I think those relationships are much more successful and I think they get more out of it and I think I get more out of it versus these more formalized sort of meetings.”

A student from Campus C states,

“I had the individual. I have had a mentor for medical school since before I came to medical school, I do what I want to do, but we have always gotten along, he has mentored me through different processes and stuff like that. I sought him out early before I even came here and kept the relationship as mentoring, that was very helpful. I could always fall back and ask him a question if I needed one. That’s pretty much my experience with the one on one. And then the peer mentor we had, the first two years we had mentors from the second year class, I saw mine a couple times just randomly in the hallways, I always knew he was there to help me but I never relied on him for anything or talked to him, that was my experience.”

A student from Campus B states, “I think I had two because I had several people in my mod who I thought smarter than me so, I bounced ideas off them all the time. And then I also had the student who was a year above me that I used as a mentor quite a bit.” A student from Campus E states, “Well the panels that they set up for us when talking about shelf preparation and then even I think during orientation to third year with the older students, I mean that is kind of a group mentoring, it’s just not long term, it’s very short term.” All of these students identified a mentor that was assigned by the institution and one that was not. Students did recognize that they had both types of mentoring, formal and informal. Many students preferred informal mentoring over formal mentoring which is in line with Noe (1988) who states informal mentoring relationships are considered more beneficial than formal mentoring relationships.
Other.

The last theme identified for research question two, is a category for other. This category describes personal experiences that did not state whether they had formal or informal mentoring or lack of any mentoring experiences. There were only four comments that were coded for this theme. Three of those comments come from Campus D and one comment comes from Campus A. The comment from Campus A describes a PhD program where mentoring was occurring,

“Yeah, I think especially the peripheral organizations that I have been involved with at Campus A, with younger students who are in my similar career vein that they will look up to me, ask me, oh my gosh, what is this course selection that I have to do next year and what books do I need for this course, that has been so great because I knew that I was in their shoes just a year ago and I was freaking out just as much as they are now, and I go you need to calm down, it is not that hard. But it’s been really fulfilling to be just like one year above and like realize how much I have learned myself so that has been a really fulfilling experience of peer mentoring.”

Comments from Campus D, included two students saying they really didn’t have mentoring experience such as “I didn't really have any (mentoring experiences). Not that I can think of, no.” and one student who stated, “So it’s not like an attending who had applied 15 years ago, I have no idea what is good now, or someone who says I did it last year.” This comment did not relate to the question being asked.

Summary of research question two.

In summary, research question two focuses on what type of mentoring the students participated in throughout their medical school training. The focus group allowed students to share their own informal and formal mentoring
experiences. Students recognized the preference for informal mentoring and described successful and unsuccessful formal mentoring experiences. Students described the three types of formal mentoring: peer, traditional, and group. The information collected in these focus groups helps clarify some results of the web based surveys.

**Mentoring Contributes to Professional Growth**

Research question four researches whether mentoring contributed to the student preparation for professional growth. This question was addressed in the focus groups by questions 3A and 3B. Question 3A describes Katie who is a third year medical student and does not have mentor. Based upon student experiences, does Katie need a mentor to be successful in medical school? Question 3B asks the students what they would tell Katie the benefits to medical school are.

A total of 62 responses were analyzed to these two questions from the focus groups. Eleven themes were identified to begin with for this research question, after discussion and recoding responses four themes emerged and were agreed upon by the two researchers. All responses were coded individually and inter-rater reliability was calculated. The question overall had an inter-rater reliability, which was calculated using Cohen’s Kappa which yielded a result of 0.637 which is below 0.70. However, upon reviewing and discussing each question, very few responses were in disagreement. The two researchers
reviewed each disagreed item and reached a consensus. Table 31, lists the four themes identified by the researchers.

Table 31: Research Question Four Codes and Descriptions

<table>
<thead>
<tr>
<th>FG: 3A, 3B</th>
<th>Theme Code</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying Mentor's Roles and Relationship</td>
<td>1</td>
<td>The mentor can provide roles such as role model, guide, general advisor, and emotional support.</td>
<td>19</td>
</tr>
<tr>
<td>Valuing Professional qualities of Mentoring</td>
<td>2</td>
<td>The mentor has professional qualities such as experience, networks, and expertise in a specialty.</td>
<td>21</td>
</tr>
<tr>
<td>Desiring Multiple Perspectives</td>
<td>3</td>
<td>Having different mentors can provide different perspectives on the situation</td>
<td>4</td>
</tr>
<tr>
<td>Mentoring is not essential, and/or may be helpful</td>
<td>4</td>
<td>A mentor is not required to be successful in medical school and/or they can be helpful</td>
<td>18</td>
</tr>
</tbody>
</table>

Identifying mentor's roles and relationship.

The first theme identified for research question four is related to identifying the mentor’s roles and relationship. A description of this theme includes mentors provide roles such as role model, guide, general advisor, and emotional support. A total of 19 comments were made with Campus A and B only having two comments each and Campus C, D, and E each having five comments.

Campus A and B students thought you needed a mentor to get through medical school and prepare for career growth. Campus A student’s commented,
“Do I think you can get through the rest of your career without a mentor, no.”
Another Campus A comment stated, “So the earlier you start those relationships the better and the earlier you understand what the kind of process is and you know what a mentor/mentee relationship is the more successful you will be.”
Campus B, “I think she needs one (mentor). I mean at least someone to have one discussion with to avoid mistakes you know there's a lot of things in the process that can go wrong and it would be nice to have someone who has already traveled down that road to let her be aware of it.” Another student from Campus B states, “And hearing relatable stories from your mentor above you who has been through it can give you advice if you need it.” All of these students are describing roles of a mentor, which include career advice, and providing general guidance from lessons they have learned.

Campus C, D, and E have similar comments describing the roles of a mentor. From Campus C a student states, “They are a real resource of all kinds of information. It’s being able to say that this is actually not something that is ever on an exam, don’t worry about it, you are never going to use this in clinical practice, don’t struggle to commit it to memory, just learn it and forget it for the test. It’s that practical side of it.” An individual from Campus D states, “I think the guidance is the most beneficial. I mean it’s easy to kind of get lost or not know what you are doing or if what you are doing is right or the best thing, so it’s kind of a sounding board or somebody to help guide you, I think that would be the most beneficial.” On Campus E a student states, “Sometimes they have the easier way to do things or shortcuts or, you know, what’s really important or
what’s a waste of time rather than trying to figure it out on your own.” Also another student from Campus E states, “Like motivation I think is important for a mentor.” These comments are similar to all the other comments from Campus A and B as they describe the mentoring roles as a guide, general advisor, and emotional supporter.

One critical branching point for this theme was when a student from Campus E states, “I mean I think even not knowing what you want to do I think if you have that long term relationship with your mentor you really grow.” This comment is describing that the length of the mentoring relationship will affect how a student may grow professionally. The student is stating the longer the relationship is with a mentor the more the mentee will learn and grow professionally. This amount of time where there is a mentoring relationship is documented in the mentoring literature by Morrison-Beedy, Aronowitz, Dyne, and Mkandawire, (2001). It states traditional mentoring relationships are usually are over an extended period of time. According to Zerzan, et. al. (2009) and Taherian and Skekarchian (2008), a traditional mentoring relationship is described as a more experienced person who guides a younger inexperienced person for professional and personal growth and development. This effect of the mentoring relationship and length of time is what the student from Campus E is describing.

**Valuing professional qualities of a mentor.**

The second theme that emerged from the focus group sessions focuses on the mentee valuing the professional qualities of the mentor. This theme is
defined as the mentor having professional qualities such as experience, networks, and expertise in a specialty. After PP and the primary investigator collaborated and reached a consensus on the coding, twenty-one comments were coded this way. Four comments were coded in this fashion from Campus A and Campus D. Five comments were coded as such from Campus B and Campus E while three comments were coded this way from Campus C.

Comments in this theme related specifically to the mentor’s professional qualities. These qualities focused on mentor’s experience, networks, and expertise in a specialty. Mentor’s experience was recognized as a benefit to mentees on Campus A, B, and E. On Campus A, a student stated, “If Katie is trying to stay in Campus A and she knows she wants to be in a program here, it would be best for Katie to kind of get some inside cues from somebody who is here.” On Campus B a student responded, “The benefits are that oftentimes this is someone who has traveled down the same path that Katie would be traveling.” Another student from Campus B remarked,

“The real world is by experience because it is a lot different than lectures or things you read, it’s a lot different than somebody who has actually been through it, so I think the ideal mentor is basically who do you want to be professionally and find that person and hopefully you can connect with them.”

A student from Campus E responds, “For working purposes too, maybe not necessarily that you need a letter from that person.” It is evident from these comments that students understand and value the experiences that mentors can bring to the relationship.
A second benefit of this theme is that mentors provide mentees with access to their networks. Students on Campus A, C, and E made comments related to mentor’s networks. One student from Campus A remarked,

“In that same vein, even if you want to go elsewhere, I know one of my mentors made it clear that she knew people around campus with the appropriate pedigree if I wanted to go to this type of hospital or this type of program and she would put me in touch with them. So it would better my chances if I wanted to go somewhere else.”

A student from Campus E stated,

“Maybe they (the mentor) could write you a really good letter if they got to know you and then later on down the road maybe they know someone who is in charge of residency programs or someone who has a job opening that they could put you in touch with in their field.”

The last division of this theme comes from students who state that a mentor’s professional experience in their specialty is a major benefit from a mentoring relationship. This code was found to be on Campus B, C, D, and E. A student from Campus B stated, “I think it depends on what field she is going into. I think certain fields of medicine it is more important to have a mentor than others.” A student from Campus C stated,

“I think she will definitely need one once she decides what field she wants to apply to because it’s especially, I applied to internal medicine, and there is an internal medicine program at every nook and cranny in America and deciding alone what programs to apply to and kind of what stratosphere of applicant you are a member of is difficult to do on your own. It’s definitely possible but I think having a mentor in the field you want to go into especially somebody that’s in academics and knows programs and what might suit you would make her much more successful than she would have on her own.”

Another student from Campus C stated,
“What I wanted to do, Yes. When you discover the career path you want to take. So I discovered in the spring (of my third year) that I wanted to go into urology. After I found out I talked to physicians here and in Campus C and then one of the students from last year who went in urology to see what their advice was.”

A student from Campus D responded,

“I think it’s also kind of depends on the specialty you want to go into. I think maybe a more competitive specialty, let’s say plastics, maybe you do want the mentor so you can have guidance on what you can do to improve your resume so you can do better in finding a residency afterwards.”

A student from Campus E stated,

“Unless the success is determined by matching and some super, ridiculously hard specialty to get into, I mean there might be some benefit to it, it might be easier to achieve those goals that if she was wanting to do orthopedics or dermatology or something typically more historically difficult to get into, to have some type of advisor to do that. That would be my thought on it I guess.”

Students recognized that a mentor's experience, network, and specialty are important. Students from Campus C focused more on the specialty and students from Campus B focused more on the mentor's experience. The recognition of these qualities in a mentor is vital to valuing the mentoring relationship.

**Desiring multiple perspectives.**

The third code for research question four is “desiring multiple perspectives” and is defined as having different mentors can provide different perspectives on the situation. This code was in response to the focus group question, “Katie is a third year medical student and does not have mentor. Based on your expertise, what would you tell her are the major benefits of mentoring?”
These codes were prevalent in the focus group discussions on Campus A and Campus D. There were two comments at each campus.

On Campus A, a student stated, “But I mean me personally I like to bounce ideas off people and it’s nice to have the option available.” A different student on Campus A stated, “I think the benefit of mentoring for me that I found is that I tried to set up mentors that have similar views to mine and different views from mine.” Campus D had similar comments but went into a more detailed description. One student on Campus D stated,

“Multiple mentors helped me in choosing some of the programs I was applying to, and so because they know me as a person because I have kind of grown up with them so to speak, and so they are like I think you would really like this program because of X, Y, Z and so I think because they know you on a different level and I think that’s kind of helpful.”

Another student on Campus D stated,

“It’s okay to have mentors in other fields. They can still, I mean not necessarily be like oh so this is what you are going to do, but like help talk to you about kind of like other career guidance, maybe like talk to you about your personality, like do you think this is something, just be like a normal sounding board, just because you don’t want to do plastic surgery doesn’t mean that they can’t talk to you about pediatrics, you know what I mean. I think a mentor just because, I think they are just somebody who is a role model for you, and they can just be a great person to talk to about advice. And I would still want them to be somebody in the medical field, but they would know the process we are going through with applications and the matches and they are still a great person to talk to.”

These comments highlight the need of multiple mentors and different perspectives in the medical field. The need of multiple mentors has been noted in the mentoring literature. According to Bettemann (2009), one mentor cannot meet all of the needs of a mentee. These fourth year medical students have
recognized the value of multiple mentors’ and their perspectives, especially when it comes to professional growth.

**Mentoring is not essential.**

The last code for research question four, is mentoring is not essential and/or it may be helpful. This code is defined as “a mentor is not required to be successful in medical school and/or they can be helpful.” This code was in response to the focus group question, “Katie is a third year medical student and does not have mentor. Based on your expertise, does Katie need a mentor to be successful in medical school?” Responses that were coded this way were from all campuses. A total of 18 responses were coded as mentoring is not essential and/or it may be helpful. Campus A had 6 responses and Campus B, C, D only had two comments coded in with this theme. Campus E had four comments that met the requirement for this code.

Campus A had six comments coded this way as agreed upon by the two researchers. One student from Campus A states,

“I think she'll have an easier time if she has a mentor, at least someone she can bounce questions and ideas off of, but I have colleagues who I don't think really have identified a mentor in the third and fourth year and I think they will be successful, but maybe they have had a little bit harder time and maybe there less sure of their decisions than I feel having had a chance to talk it out with several different people.”

Another different student from Campus A states,

“I think we don't talk about it much in medical school but in this profession you do need mentors, maybe not in medical school. There is a lot of book learning to be done and a lot of tests to take, but I know most of my mentors said that they continued to contact their old mentors when they..."
have questions and especially when they were a new physician. They had things that came up in practice that they didn't feel comfortable asking their colleagues about or asking their superiors about, you know, this is a collaborative profession and building those relationships is important even if you are not going to continue working in that same physical place as that mentor, it's nice to have some kind of contact for the future.”

Students from this campus recognize that a mentor is not required to be successful, but the mentor’s success can assist in professional growth.

Campus B had 2 comments coded this way. The first comment is as follows, “I wouldn't say she needs one, I would say it is hugely beneficial for her to have a good mentor.” The following is the other comment from Campus B, “I didn’t necessarily have a mentor, but I just figured it out. I don’t know if all other specialties can just figure it out. I didn’t have a mentor until the end and the mentor that I did have was sort of toward my fellowship what I wanted to do.”

Students on this campus recognized that students can figure out how to be successful in medical school on their own; however, there are benefits to having a good mentor that will help them with their professional growth.

Campus C only had two comments and those focused on the term successful and what does successful mean to them. A student from Campus C stated, “I think it depends on what your definition of success is, because there is a difference between being successful and thriving in medical school. There are people who have done well in their grades but who have not thrived in medical school because they had their lives, so I do not think it's important to stop along the way. I don't think it's impossible without a mentor, but it's helpful.” The second comment was, “I don't think she needs a mentor probably until the exact same time she does. She figures out what she wants to do, I think a lot probably sought
out mentors, both students and other people, and said what do you do, things like that, and got their experiences.” The students from Campus C recognized that a mentor is not required to be successful but it can help them in their career.

Campus D had two comments in response to the question, “does Katie need a mentor to be successful in medical school?” This campus was not as detailed as the other campuses. The two comments were “no, not at all” and “no.” The students were stating that Katie did not need a mentor to be successful in medical school. The moderator of this focus group did not ask any follow up questions and this answer was not as thoroughly vetted.

Campus E had four comments coded as mentoring is helpful, but not required. One student on Campus E stated,

“I don’t think it’s necessary. I think it could be helpful. But generally there are people who usually fill that little bit of a void, even if it’s just kind of temporarily because I don’t know if I can say that I had a consistent mentor throughout the entire med school process, or even though years three and four, but during different rotations there will be somebody who can help or somebody who can give you a little bit of insight, rather than a faculty member that you can work with even for a couple of weeks so there’s these little kind of mini-mentors, not a traditional mentor, but I don’t think it is completely necessary.”

Another student states, “No, I don't think to be successful. If she has gotten to be a third year medical student she knows how to be a successful medical student.” The students on this campus recognize there are benefits to having a mentor but that in medical school it is not required in order to be successful.

Students responded on all campuses that a mentor was helpful but not needed to be successful in medical school. Students described the amount of “book learning” and the ways in which grades are calculated as a reason
students can be successful without a mentor. However, the same students suggested a mentor is helpful with their individual professional growth. The idea that mentoring in medical school is unnecessary has been documented by Kalen, Stebfors-Hayes, Hylin, Larm, Hindbeck, and Ponzer (2010). According to Kalen et al. (2010), some of the 118 third and fourth year medical students that participated in a mentoring program at Karolinska Institutet in Sweden described mentoring as unnecessary in medical school. In this dissertation, numerous benefits were identified by students from a mentor. Many students identified some of the benefits that a mentor can assist with, such as residency match processes, fellowships, and patient care.

**Summary of research question four.**

Overall, students on all campuses recognized that mentoring did contribute to their professional growth. Students stated that mentors provided guidance, role models, and emotional support. Students also stated they valued the experiences their mentors, the networks their mentors had access too, and the expertise the mentors had in their specialty. Students acknowledged that you did not need a mentor to be successful in medical school but a mentor was helpful for professional growth.

**Mentees Possess the Characteristics to Benefit from a Mentor**

Research question five inquired whether fourth year medical students possessed the characteristics to benefit from a mentoring program. This answer was sought out by two questions in the focus groups. The first question was
“Katie wants to know if she gets a mentor, what can she do to get the most of the relationship and time investment based upon your experiences and expertise?”

The second question was “Based upon your experiences, have you taken full advantage of any mentoring opportunities afforded to you?” A total of 55 comments were collected and analyzed for this question across all five campuses.

In the initial analysis the researcher identified 17 themes and the second researcher identified 8 themes to this question. After discussing and recoding themes, a final tally of 4 themes were identified and agreed upon by both researchers. All comments were then recoded separately by the two researchers. The inter-rater reliability of the codes was 0.557. After coding and inter-rater reliability calculations, any discrepancies in coding were discussed and a consensus reached. The Table 32, lists the four themes for research question five.

Table 32: Research Question Five Codes and Descriptions

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proactive Mentee</td>
<td>1</td>
<td>Utilizing proactive strategies such as taking initiative, seeking out personal mentors, and setting personal goals is important in successful mentoring relationships.</td>
<td>31</td>
</tr>
<tr>
<td>Having Intrinsic Qualities</td>
<td>2</td>
<td>Mentee needs to have personal intrinsic characteristics such as honesty and altruism.</td>
<td>3</td>
</tr>
</tbody>
</table>

FG: 4A, 4B
Table 32 (continued)

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structuring of Mentoring Program</td>
<td>3</td>
<td>The institutional structure of mentoring program/ relationship affected mentees commitment and success.</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>Unrelated responses: The mentee identified characteristics of mentor, did not answer the question, or described personal experiences not related.</td>
<td>8</td>
</tr>
</tbody>
</table>

**Proactive mentee.**

The first theme for the research question five comes from two questions during the focus groups: The first focus group question for this theme is as follows: “If Katie does get a mentor, what can she do to get the most out of the relationship and time investment, based upon your expertise?” The second focus group question for this theme is as follows: “Based upon your experiences, have you taken full advantage of the mentoring opportunities afforded to you?” After completing of the coding process, thirty-one responses from fourth year medical students were coded this way from across all five campuses.

Campus A had a total of nine responses to the two focus group questions. The first question, “What can Katie do to get the most out of the relationship and time investment, based upon your experiences and expertise?” had seven responses. A dominant thought from this campus was to develop a list of questions or an agenda. This thought can be seen through the following response from a student on Campus A:
“She should be proactive about meeting with her mentor and I know with mine there were sometimes that we met just for lunch and it felt like more of a social visit and we got to know each other well but as far as my career planning and residency planning and those kind of questions, I found it very helpful to come with a list of questions or just thoughts that kept popping up in my head and ask her opinion on it.”

Another example from Campus A that is similar:

“If you go with more of agenda I think that you will have better chance of them guiding you rather than just showing up and say hey, show me what to do. It’s a little bit less productive that way. Still can be meaningful and valuable to build that relationship but to get the most out of your time I think it helps to know what you want out of the relationship.”

A deviation noted but still coded as proactive mentee is investing in the relationship between a mentor and mentee. This deviation can be seen in the following comment from Campus A:

“It’s also important to remember I think we have all sort of mentioned it, but just sort of to spell it out, you get out of it what you put in and if you are willing to go to dinners and come with questions and talk about personal things like family and how did you deal with that, you will get a lot more out of it than if you are just trying to get in your quick 15 minutes and ask about match. It can be very superficial or it can be much more meaningful and the more you put yourself out there, the more that you try and the more that you invest the more you will get in return.”

This student is stating the mentee must be willing to invest professional and personal time with their mentor in order to maximize the relationship and opportunities afforded to them as a student. Another student from Campus A discussed this investment in the relationship with the following quote,

“And I think understanding the relationship. Like we have talked about making a list of questions and being proactive, you really have to take the initiative to form that relationship and understand that it is a relationship and that you need to put forth some effort too, you are not just gaining from them they are also getting something from you, so just making sure you invest enough time for that relationship.”
Campus A had two responses for the second focus group question, “Based upon your experiences, have you taken full advantage of any mentoring opportunities afforded to you?” Students described taking advantage of some opportunities but not taking full advantage of all the mentoring opportunities.

One student from Campus A stated,

“I think so. Like I said the one mentor I had she kind of adopted me and I kind of just ran with it, it was great, and I mean like she said you take advantage of what’s available to you, I mean there is numerous doctors here and numerous PhDs, numerous residents, you know, so it’s there, but you know, it’s up to you whether you are going to go ahead and grab the opportunity, but I mean I think that I have done that.”

However, another student from Campus A stated that it was difficult to know if they took full advantage. The quote from this student was:

“It is difficult to say whether I took full advantage. I feel like I have gotten several relationships that I really value personally and professionally out of the system at Campus A. I never had a problem approaching faculty. I think most of the people here are very willing to be a mentor and they get excited when medical students ask them questions and come to them for advice. But at the same time I think there were some relationships I could have fostered a little more and didn’t due to laziness or lack of time, who knows. So I have gotten a lot out of it but I can’t say that I have utilized it as much as I could have. There are a lot of opportunities for building relationships around here.”

Another student from Campus A stated,

“I think it’s hard to say because you know the mentor that Campus A assigned me was, sure she was in the same career field and we had a lot of similar beliefs, but she’s not the one that I have gone to over the years like the several mentors that I have assigned as my own personal mentors so I mean I feel like I took advantage as much as possible of that one they assigned me, but my fulfillment in mentoring has come from elsewhere, so it’s kind of hard to answer that question. Because I feel like I took advantage of the ones that I got personally.”
These students could not easily state they took advantage of every opportunity but did state they took advantage of some of the opportunities available to them.

Campus B had a total of seven student remarks coded as proactive mentee across both focus group questions. Four student remarks that were coded in response to the question, “What can Katie do to get the most out of the relationship and time investment, based upon your experiences and expertise?” The students from Campus B did think it was important to be prepared and proactive as described by the following example,

“You need to be a proactive student. You can’t just go to the meeting and say okay tell me what I need to do. Do some research, know what’s going on, have some ideas, have some thoughts, ask them their opinions and suggestions; don’t just sit there like a bump on a log trying to let them tell you what to do. You need to have some thought yourself.”

Another student from Campus B states similarly,

“I think it’s also important for her to realize that she’s going to have to put a fair amount of her own effort in to scheduling things and not just rely on a mentor to do all of it, she’s going to have to put her best foot forward as well.”

Both students described being proactive, but in a different way from Campus A. Campus A described making an agenda and investing in the relationship, however, Campus B is describing completing research prior to meeting with a mentor and being proactive about scheduling meetings with busy faculty members.

Campus B has three responses to the second focus group question coded proactive mentee. The dominant theme on this campus was students not taking
advantage of all opportunities afforded to them. One student from Campus B states,

“During our first few weeks of medical school we are given cards to fill out here where we can put three specialties we are interested in as early as our first week of medical school. I was assigned with a physician in the specialty that I wanted but I never actually met with him, it was more of student contacts that I had. It wasn’t any fault of his or mine that we never got together, we just never coordinated a visit. I felt comfortable enough that I could talk to other students or other faculty. Campus B has it but not all students are going to take advantage of it early on. And most don’t know what they are going to do at that point.”

This student states he did not take advantage of the assigned mentor but was proactive in finding his own mentors from other peers and faculty members. This student suggested that trying to match mentors based on desired specialty early on in medical school may be premature.

Another student from Campus B states,

“I went to my meeting with my mentor that we were assigned because I used to be interested in a different specialty, but then I never fully optimized what he suggested. Because he had a lot of opportunities, he was a really good mentor, you can come and follow me here and do this and that, but then I switched my specialty. And then I found sort of an informal physician mentor and she would like after work she would show me all her patients and tell me their stories, and like ethical issues that she faces. So I felt like that was a good experience. I don’t think I necessarily optimized it.”

This student described not optimizing all opportunities for mentoring but also described being proactive enough to find a different mentor in the desired specialty. This student re-emphasized that switching desired specialties is likely to occur during the course of medical school. Students on Campus B recognized that they could have potentially done more with their mentors but were proactive in finding mentors as they changed their desired specialty.
Campus C only had six comments from medical students coded proactive mentoring. Four comments involved the first focus group question regarding Katie. Students on this campus were focused on defining the relationship and setting up goals for this mentor/mentee relationship. One student from Campus C stated,

“I think being up front in the beginning about what your time constraints will be and how often you would want to meet, I guess just defining the relationship you are going to have with your mentor in the beginning is really important because you want to make sure that you are both on the same page. I want to meet every so often, I am going to need advice here, this is when I am going to be in crunch time when I am applying for residencies and so if you have a mentor who doesn’t really understand that, especially if it has been a while since they have been through this whole process, it might be more difficult to maintain that relationship.”

Another student from Campus C stated,

“I agree, and I think that it comes from communication from the beginning. Establishing what the goals are for the relationship and how you intend to meet them and I do think there is a little bit more pressure on the mentee than the mentor to pursue the relationship and to seek out that advice but if that initiative is taken and the mentor doesn’t respond then it is probably not going to be a very productive relationship.”

An additional student on Campus C made a deviation from these comments and thought of being proactive during the selection of a mentor by not choosing a big name mentor but one who shares similar interests. The student stated,

“I think it is important to up front evaluate who you are choosing as a mentor instead of just picking maybe the most prominent person in that field. As we alluded to earlier you need to almost match up with your mentor to get the most out of the relationship. It would be really important to not just go with the big name in the field or something like that but finding someone who aligns with you.”
Students on Campus C did agree that they did take full advantage of mentoring opportunities afforded to them in the two comments that were coded as a proactive mentee. One student stated,

“I think so. I think that if you’re going into a mentoring relationship you expect that you are going in because you have needs and if you are aggressive enough to find a mentor you are aggressive enough to get your needs met.”

The second comment was as follows:

“For me the Christian Medical Association was like, has been my community, some of my best friends graduated and the faculty or professionals who have gone on our mission trips with us have become my mentors and the group has become my peer group and the people older than me have become my mentors and so that was definitely assigned to me but it was something that I would say was vital in my success.”

Both students took advantage of the opportunity to get there mentoring needs met. This comment shows a different perspective from Campus A and B, where both campuses had students state they did not take advantage of all the opportunities provided to them or had difficulty coming to a decision.

Campus D had five focus group comments that were coded for proactive mentee. Three comments described how Katie could get the most out of her mentoring relationship and three comments described how students had taken advantage of the mentoring opportunities afforded to them. One comment described being a proactive mentee when discussing how to take full advantage of mentoring opportunities.

Students on Campus D students focused on finding a good mentor match, similarly to Campus B. However on Campus D, students discussed seeking out a
mentoring match from other peer students who had good mentors. The students discussed proactively seeking out to have mentors who were interested in the mentoring relationship. One student on Campus D states,

“I think a good start would be maybe ask her what her peers and see if they have mentors and see if they are good ones that she can actually seek out. I think there are good mentors and some who are not as invested in their students, so if she can find somebody who will be invested in her future maybe that would be best.”

One student on Campus D recognized that specialty mentors are important to build a relationship with to ensure a good letter of recommendation for residency applications. The student even mentioned knowing the specialty area that you would like to pursue as a career when you started medical school to have a longer time to build the mentoring relationship:

“I mean it would be even easier if they knew coming in, if they already knew so they could plan everything out because especially if you are going into a really competitive field, you want to go do your research early on. And then seek out a mentor early on so you can actually build on that relationship so by the time you are looking for a residency they actually know you and they will be able to write a letter for you or they will be comfortable talking to people that they know to recommend those people to get a residency.”

The issue of knowing the specialty early on in the medical career at Campus D was noted by a third student comment:

“It’s hard when you don’t know what you want to do. Because a lot of the relationships, you go to your specialty and you find somebody in that field, which is probably the best like way to do it. But it’s hard if she doesn’t know what she wants to do.”

Campus D only had one comment that was coded ‘proactive mentor’ in response to the focus group question inquiring if they took full advantage of the mentoring opportunities afforded to them. One student from Campus D stated,
“Find your own mentor.” This statement highlights the need for medical students to be proactive to find other mentors than an assigned mentor.

Campus E had four comments coded as proactive mentee to the two focus group questions that answer research question five. Campus E has three comments that were coded being a proactive mentee and one comment that was describing if they had taken full advantage of the mentoring opportunities afforded to them.

One student on Campus E states to tell Katie to be active and to not worry about being bothersome in the following comment:

“Be active. I always have that natural inclination of not wanting to be bothersome but not wanting to pester someone but kind of talking to people and seeing things like – everyone is always going to be busy and have things that fill up their time but it doesn’t necessarily mean they don’t want to help, it’s just being able to take the initiative of contacting them and wanting to set up a meeting, or a lunch, it’s just like making the time to have that connection and that relationship usually helps out a lot. For me it was like if I hadn’t necessarily taken some steps and had people pushing me I would not have gotten the offer extended from the other side, just because you are too busy otherwise or there are other things going on.”

This comment is similar to one made by Campus A. Another student on Campus E stated: “Ask questions, take initiative to do things on your own. I think it is nice to have a mentor there but you can’t expect them to tell you like everything to do and how to do it and when.” Campus E had one comment that told Katie to take advantage of her opportunities given to them. This statement was as follows: “When they do provide opportunities, take advantage of those opportunities.”
Students on all campuses understood the need to be proactive in multiple ways. One way identified by students is to define the relationship by setting agendas and meeting times. Students stated the need to be upfront about goals and frequency of meetings with a potential mentor. This theme is identified in the mentoring literature as managing up. Zerzan et al., (2009) defines managing up as, “the mentees takes responsibility for ownership and directs the relationship.” Zerzan et al., (2009) continues by stating the mentee should set up meeting agendas, ask questions, complete assigned tasks, and request feedback.

Students stated that even though some had appointed mentors, they needed to proactive by finding their own mentor. Selecting an appropriate mentor with an interest and willingness to invest time is an important step in identifying traditional mentors. Some students stated that they used their peers to help identify these traditional mentors. Students stated a mentor in their desired specialty was important, and they realized the desired specialty may change throughout medical school. When a change in mentees’ specialty occurs, a student needs to find a new mentor.

Students on multiple campuses reflected on their past four years and stated it was difficult to determine if they had taken full advantage of all the opportunities afforded to them. Some students described situations where mentors made more activities available to them then they could attend due to busy schedules and timing. Other students described miscommunications and lack of interest from mentors and/or mentees as reason that they did not take full
advantage of every opportunity. A select few students stated they did take advantage of all of the mentoring opportunities afforded to them.

**Having intrinsic qualities.**

The second theme for research question five is “having intrinsic qualities.” There were two questions asked regarding this research questions in the focus group sessions. The first focus group question for this theme was “If Katie does get a mentor, what can she do to get the most out of the relationship and time investment, based upon your expertise?” The second focus group question for this theme was: “Based upon your experiences, have you taken full advantage of the mentoring opportunities afforded to you?” Having intrinsic qualities were defined as “mentee needs to have personal intrinsic characteristics such as honesty and altruism.” After the completion of the coding process, three responses from fourth year medical students on Campus A and E were coded this way.

The first comment coded as having intrinsic qualities is from the question about what Katie can do to make the most out of the mentoring relationship. The first comment from a student on Campus A was:

“I also think it’s important not to treat them like double speaker material, like when you are on the interview trail or when you are with other attendings, oh I love this medicine even though you’ll never, but when I meet with my mentor I am very honest about things that I wouldn’t necessarily admit to other people, like my struggle with family versus career and stuff like that, and so I think that’s important to realize that they should be as open as possible even if that is the type of thing you aren’t necessarily comfortable talking about with someone else, that’s like grading you or judging you.”
This student describes honesty and openness as qualities that mentee should possess. The student also stated that, in order to have the desired openness, there should not be grades associated with the mentor. A second student from Campus A stated in response to the question about Katie,

“...I think it’s also important to be open minded, if Katie finds a mentor to be open minded to suggestions and things like that because I know like she said my mentor has drug me to dinners that I absolutely did not want to go to but after I went I was like oh it was awesome, I’m glad I went. It wasn’t just for a good meal, I actually got something out of it. So it’s good to be open minded, and sometimes you have to kind of push yourself outside of your box.”

This student was describing an intrinsic quality of a mentee to be open to change and listening to suggestions from the mentor.

The student from Campus E, in response to the focus group question inquiring about whether the student had taken full advantage of the mentoring opportunities, described an intrinsic, necessary quality of mentee to continually be searching for ways to apply knowledge learned in the medical school classroom into the clinical setting.

“I had an advisor who is like a faculty member that would meet maybe once a year for 20 minutes, and I didn’t feel like that was very useful at all, but my preceptor was an internal medicine resident and I kind of had a little idea that that is what I actually wanted to do and so he was actually really good at spending time with me for a full afternoon, or whenever, it was usually a fairly substantial amount of time. He would ask what I was doing in the blocks that we were doing and try to also take me around to see some of the interesting cases and go around on rounds with the team, and so for me that was a little more useful, and maybe that was also because it was a resident who, you know, I didn’t feel like he was really grading me but he was really interested in teaching so that was beneficial.”
Having certain intrinsic qualities was one of the characteristics necessary to benefit from a mentoring program. While only two of the campus comments were coded this way, some students on these two campuses did demonstrate they possess intrinsic qualities like being honest, open minded, and desire to acquire additional knowledge.

**Structuring of mentoring programs.**

The third theme, structuring of mentoring programs, for the research question five comes from two questions during the focus groups: The first focus group question for this theme is as follows: “If Katie does get a mentor, what can she do to get the most out of the relationship and time investment, based upon your expertise?” The second focus group question for this theme is as follows: “Based upon your experiences, have you taken full advantage of the mentoring opportunities afforded to you?” Structuring of mentoring programs for this study is defined as “the institutional structure of mentoring program/relationship affected mentees commitment and success.” After completion of the coding process, thirteen responses were coded this way across all five campuses.

Campus A had one student’s comment coded as this theme. The student wrote:

“You have to recognize that there are going to be different degrees to mentoring too, it can be sometimes very short-lived, or it can be much of a longer relationship, just trying to gain what you can from each of those relationships on what level they are.”
This student is describing the variation in the length of the mentoring relationship will depend on how the mentoring program is designed. The student acknowledges the benefit of both types of relationships.

Campus B had two comments coded as “structuring of mentoring programs.” The first comment described the need for the mentor to have time carved out of their schedule to devote to being a mentor.

“I think it’s important to pick a person who wants to be available, not necessarily the most qualified or head of department but someone who wants to be available and helpful to her.”

The second comment from Campus B described the student's own experiences about having difficulties in getting a clinician to be a mentor. The comment was as follows:

“In my first year we were assigned mentors and I used my mentor to ask for certain books, to just kind of guide how I should study for preparation for step one, so I felt that was kind of a critical part just because it’s good to have a second opinion. But later on whenever I wanted a mentor, say a resident for internal medicine, it was a little bit tougher because they were a lot busier and so I didn’t get as much out of it as I would have liked to.”

Both comments were describing a scenario where clinicians were having difficulty in having time to devote to mentoring.

Campus C had two comments coded with the theme, structuring of mentoring programs. This student described a personal experience that, due to the structure of the program, was unsuccessful:

“There was something we tried here in Campus C. I don’t know if it was last summer, like S cubed or R cubed, do you have any idea what I am talking about? It was putting a first year, second year, third year and fourth year student together, and it was assigned and we filled out
evaluations and they matched us up and then the event was at Campus C, I think we met them at Campus B, and we like exchanged emails and we were supposed to help each other out. Well, I thought it was a big flop. I didn’t like the people that I was paired up with and, I don’t know, like the initial thought was good, but it just didn’t pan out for my cube, I think it was called a cube.”

The second student from Campus C stated:

“No, no, they were all medical students. Like the first and second year were like ones on the Campus C track, they are supposed to come here, which they are, and then my fourth year, it’s gone now. I mean the four of us didn't communicate at all the entire year.

This student was describing that, due to the structure of the mentoring program, their cube did not communicate throughout the year. The lack of communication led to this program being unsuccessful.

Campus D had three comments that were coded under this theme. The first comment suggested that the mentee should know their desired specialty by the end of the third year: “By the end of third year ideally. It would be easiest for them if they knew by the end of third year.” A mentoring program would need to develop structure that is flexible until then with mentoring program.

A second student was describing their personal experiences where a peer mentor was assigned to her, and that it was successful because they were interested in similar things. The mentoring program in which the student participated was specifically designed to match students with similar interests.

“My peer mentor was assigned to me. She was my big first year, so I feel like in very few instances like my little, I'm not even sure I actually remembered his name, but like for me it worked out that my big happened to be someone who was cool, and we got along and we were interested in similar things.”
The final comment for this theme describes another structural issue in assigning traditional mentors. The comment is as follows:

“I think assigning mentors would be a little bit superficial, especially in the beginning, especially if you don’t have anything in common with that person, so it’s just going to be like you are forced to kind of talk to that person. At the same time having somebody assigned to you is also kind of nice, especially for people who don’t seek them out. So maybe something like having a list of people who are willing to mentor people and are known to be good mentors would be helpful so people who don’t usually seek them out actually have some idea on who to talk to if they wanted to.”

The student is suggesting traditional mentors being assigned does not necessarily work in all situations. The student suggests having a list of potential good mentors to have the mentee seek out the ones they are interested in.

Campus E has five comments that were coded as “structuring of mentoring programs.” Campus E identified comments that described busy faculty members that did not have time to mentor students, similar to Campus B. The comment was as follows:

“I think this is kind of, I’m not sure if this is exactly mentors, but it’s kind of going back to that advisor that we were assigned, I think that was maybe the intent of like somebody you could ask questions of, somebody to talk to, like I don’t think I have ever actually met mine, it was always just like something was scheduled and then something came up, and then it was just getting an email that said okay well like how about if I just email you these questions that we were supposed to be talking about. I emailed back my answers and then I never had any contact again. It was like an ER doc, and I had no interest in it to begin with, it was just like a maybe not, but I do remember between first and second year I did a rotation and there was like a resident who I kind of connected with and was able to ask some questions and get a better idea kind of what fields I might want, so I think that it’s tough because a lot of times it comes up with, not necessarily always a faculty member but I think that you lose something, there is a little bit of a disconnect there sometimes, I’m not sure if it is just demands on time or if residents are more familiar with being a student but that was kind of the better resource that I had.”
Another idea identified by Campus E was that there needed to be flexibility to change mentors as the desired specialty of the mentee may change throughout medical school. This comment was similar as to a student comment from Campus D. The comment from the student on Campus E is as follows:

“Also at that point in time when they assigned those people, we had no clue what we wanted to do with our lives so it was really general having one doctor to someone who wanted to be a doctor rather than any specialty. I mean you can do so many different things in medicine and that may be closer and it may not.”

One additional variation from Campus E describes the value that residents have as mentors to medical students. The comment from the student is as follows:

“I think that is a really good idea if you were thinking about mentors because we were assigned to like residents – were you guys all assigned to like residents too – oh, well mine was a resident that I was assigned to for my first and second year and so it was kind of nice to actually have a resident because they are not far off from what you have done, so they can share really closely some of the things you are currently doing with like tests and stuff like that, and trying to decide what program you want to, so it could be pretty neat during your third and fourth year to get matched up maybe with like a resident here like around this area and like only if you hang out with them for maybe like an afternoon or something like once a month or like once every couple of months, and build a relationship like that because they are so close to what you are doing right now. So I think that would be kind of cool.”

Students in the focus group identified structural needs of mentoring programs that will affect the mentees’ commitment and success of the program. Students state that how they are assigned mentors, the experience level of their mentors, the amount of time for faculty to mentor, and the length of the mentoring relationship affects the mentees commitment to the mentoring program.
Other.

The fourth code for research question five was “other.” Other is defined for this research question as “Unrelated responses: The mentee identified characteristics of mentor, did not answer the question, or described personal experiences not related.” Each campus had at least one comment that was coded as other.

Campus A had a comment, “Definitely.” Campus B had three comments that were coded as other. One comment was “I would say all of that is the key to it.” This comment was not clear about what they were stating was important. Another comment, “I also had a student above me mentor, who helped out quite a bit but I did not at any point have a physician as a mentor, and I feel that having one might have been more helpful to me.” This comment was describing a personal experience but was not related to the research question.

Campus C had two comments coded as other, “Did you guys participate in it? I have no idea what you are talking about.” This comment described that the student was asking for clarification about a mentoring program and was not related to the research question. Another Campus C comment coded other included,

“I hung out with the fourth year because I did an extra year for the MPH so he was in classes to begin with, so I didn’t really see him as my mentor, but the other two, they never contacted me. But your original question was do you feel like you took the full advantage of, I feel like I did.”

This comment did answer the focus group question, but the student was not consistent in his response. This student had at least two mentors and did not
take advantage of those relationships but he stated that he felt like he took full advantage of mentoring opportunities. Therefore, inconsistent data was presented.

Campus D and E each had one comment coded as “other.” The student from Campus D stated, “I agree.” This comment was not specific to what they were agreeing to. They could have agreed with a single or multiple previous comments. A student from Campus E stated,

“If there was a way to have the mentor like emphasize to her that she doesn’t need to feel bad, like explain that people, like if it is a physician or maybe not be, but they are always busy and emphasize to her, like it may seem intimidating like to contact but maybe correspond well enough to like if you need anything like be any time contact me and make her feel comfortable to come to her. That is not really something she can do but that is something that the mentor could do.”

This comment did not state a characteristic of a mentee but what a mentor could do and therefore, did not answer the research question.

**Summary research question five.**

Research question five inquired as to whether the medical students possess the characteristics to benefit from a mentoring program. Three themes were identified that included the mentee being proactive, having intrinsic qualities, and commitment to participate in the structure of the mentoring program. A total of 55 comments were analyzed for this question and the students did possess the qualities such as being proactive, honesty, and adaptability to benefit from mentoring programs.
Mentees Understanding Characteristics of Mentoring

Research question six inquired whether fourth year medical students understand characteristics of mentoring as essential for successful mentoring. The first focus group question to address this research question was “based upon your understanding of mentoring, please describe what mentoring means to you?” The second focus group question addressing research question six was “At this point, what do you consider are the most important characteristics for a medical school mentor?” A total of 47 comments were collected and analyzed for this question across all five campuses.

In the initial analysis, the researcher identified 27 themes and the second researcher identified 2 themes to this question. After discussing and recoding themes, a final 4 themes were identified and agreed upon by both researchers. All comments were then recoded separately by the researcher and the second qualitative researcher. The inter-rater reliability of the codes was 0.899. After coding and inter-rater reliability calculations, any discrepancies in coding were discussed and a consensus reached. Table 33 lists the four themes for research question six.

Table 33: Research Question Six Codes and Descriptions

<table>
<thead>
<tr>
<th>FG: 1, 2</th>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentee Recognizes Professional Characteristics as Important</td>
<td>1</td>
<td>The mentor is experienced in their specialty, recognized as an expert in their field of study, share networks and seen as career role model.</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>
Table 33 (continued)

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mentee Recognizes Personal Characteristics as Important</td>
<td>2</td>
<td>These are characteristics that describe the mentors intrinsic qualities, investment of time into mentee, work/life balance, and religious interests.</td>
<td>17</td>
</tr>
<tr>
<td>Mentee Recognizes Peer Mentoring as Important</td>
<td>3</td>
<td>This is a mentor that is similar in age, power, and experience and has achieved academic success.</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>These are comments not related to the question or personal experiences not answering the question.</td>
<td>6</td>
</tr>
</tbody>
</table>

**Mentee recognized professional characteristics as important.**

The first theme, mentee recognizes professional characteristics as important, for the research question six comes from two questions during the focus groups: The first focus group question for this theme is as follows: “What does mentoring mean to you?” The second focus group question for this theme was as follows: “At this point, what do you consider are the most important characteristics for a medical school mentor?” Mentee recognized professional characteristics as important is defined as “the mentor is experienced in their specialty, recognized as an expert in their field of study, share networks and seen as career role model.” After completion of the coding process, twenty-two responses were coded this way across all five campuses.
Campus A had six comments coded in this manner. The dominant answer in Campus A for this theme stated that the mentor is someone who is successful in their career. One student from Campus A stated,

“I think a mentor is a person who has achieved the thing that I want to achieve in my career and I could get kind of specific advice from that person about how they accomplished what I am hoping to accomplish.”

A variation on this comment described the mentor’s past as having to be similar. The student from Campus A stated,

“I agree. I think in a mentor I look for all of those things, just someone who has been where I am, and someone I can relate to on some level, and they can relate to me. I think it makes their advice a little bit more, I'm trying to think of the word I am looking for, it makes it easier to take and it makes it easier to trust their advice.”

Another point that Campus A makes is that the mentors need to have good a network to introduce to their student. A student from Campus A stated,

“A good mentor can plug you into the right people and the right groups and so like I mean I made my own mentors along my four years of medical school and they would always take me to organizations they were involved in, or they would give me emails for people that I would be good hookups with and so that’s important too.”

Campus B has four comments with this theme. Three comments from this campus discussed the expertise of the mentor. A student from Campus B stated,

“Mentoring to me is someone who is in a position of expertise, who can get you interested.” Another student from Campus B adds, “I feel like mentoring is not only just offering guidance but offering other options outside of their expertise as well, just giving options.” The student wanted the mentor to give options outside their expertise.
Campus C has three comments coded with this theme. Two comments discussed the finding a mentor that has been along a path that you as a mentee would like to take. One of these comments states,

“I can start. I think that mentoring is kind of looking into your own future and seeing what you want yourself to become and kind of finding somebody who has been along a similar path that could help you make difficult decisions that might guide where you will end up in the future.”

The third comment is slightly different because it talks about offering career mentoring with guidance and support. The student from Campus C states,

“I think mentoring is a two way street and I think it’s, I see it kind of like guidance and a support system and there’s different kinds of mentoring from my perspective, there’s career mentoring versus finding a mentor, like you want a good marriage, you find someone who has a good marriage, you find someone to mentor you. So I think it is a two way street, the mentee has to seek it out from the mentor and agree to invest time and effort.”

Campus D like Campus A and B focused on the experience of the faculty member. Five comments on Campus D were related to the faculty having experience and expertise. One student from Campus D states, “Mentoring is like receiving guidance from somebody who has had more experience than you have in any given area.” When describing the most important characteristic of mentor a student on Campus D states, “People in fields of interest that I was interested in.” A student on Campus D described a mentor as a career role model with the following comment, “A mentor is somebody you want to emulate, it’s somebody who has the same values as you and like in the same field and you can get guidance from that as well and you can get guidance from.”
Campus E discussed the expertise and experience in all three comments coded with this theme. For example, a student on Campus E stated,

“I'll go first. Just generally mentoring is someone that you can look up to and someone that you can go to for advice. Somebody that probably in this situation has experienced what you are about to pursue and can like share common experiences with, I would say and someone that you can go to for advice.”

The highlighting experience and expertise is in agreement with Campus A, B, D, and E.

Many students when asked about the most important characteristic of a mentor in this theme suggested having the expertise and experience in their field. Milner and Bossers (2004) has documented student in the health professions emphasized knowledge and experience as desirable attributes of their mentor. A deviation that was noted for this theme was that students identified these mentors as career role models that they would want to emulate. Milner and Bossers (2004) identified that health professions students viewed their mentors as predominantly as a role model. Some students went on to describe that mentors need to have access to a broad network of colleagues to link and introduce to the students.

**Mentee recognizes personal characteristics as important.**

The second code for research question six is the mentee recognizes personal characteristics as important for the success of the mentor-mentee relationship. The responses from the focus group sessions came from two questions: “What does mentoring mean to you?” and “At this point, what do you
consider are the most important characteristics for a medical school mentor?"
The personal characteristics for this code are defined as “characteristics that
describe the mentor’s intrinsic qualities, investment of time into mentee, work/life
balance, and religious interests.” There were 17 comments coded and agreed
upon by the two researchers for this theme. These comments were from all five
of the campuses participating in this study.

Campus A had three comments that were coded as the mentee
recognizes personal characteristics as important. Three comments from students
involved the mentor making time for and wanting to invest time in the mentoring
relationship. One student from Campus A states,

“A mentor for me is somebody who takes an interest in me personally and
is really kind of invested in my career and even sometimes my personal
life, they really want to kind of guide me through that and hopefully help
me overcome hurdles that they have had to go through or even if they
didn’t.”

A different student from Campus A states,

“I agree, and I would just add that I think they would have to take a
somewhat active role every once in a while, to be active in your life, guide
you through something, other than just being there when you need them,
check up on you, something like that.”

The third comment from Campus A describes why the mentor did not take
interest in the relationship due to lacking dedicated time to mentor. The student
comment is as follows:

“I feel like the basic requirements are being interested and having time
and willingness to be honest. From there it might be like based on the
student. Like I my mentor and I didn’t get along off the bat because I think
his conduction of his career was very reimbursement based and mine was
not and so I found other mentors on my own, but for someone who is
maybe that was kind of their goal and that was what they were looking for in their career, that would have been a fantastic mentor."

Campus B had two comments for this theme. Again students here commented on the mentor's availability and investment in the mentor-mentee relationship just as in Campus A. One student on Campus B states: “Along with that, availability. It can be a challenge especially in medical school.” Another student states, “Approachable, and maybe they have to be somebody that has reached out or at least willing to accept a mentee.”

Campus C had five comments coded as the mentee recognizes personal characteristics of mentors as important. These five comments showed three variations. The first variation had two comments that the mentor needs to be available and willing to invest in the relationship. This code was best demonstrated by the comment,

“Having availability. I know that was something I struggled with was just my mentor having time to meet with me, and then also important for me were the connections that he had and who he could put me in contact with.”

The second variation noted on Campus C pertained to having a mentor with work/life balance. The one comment from a student states,

“I think somebody that has a balanced life and I think in medicine that is very hard to find. It’s always very easy to find somebody that is very career oriented and has accomplished a lot in their career, but I think a mentor should be someone that you want to emulate, so if life outside medicine is important to you that is somebody that you should track down as well.”
The student described that many mentors were very successful career wise but did not have an adequate work/life balance and that it was important for their mentor to have this balance.

The third variation noted on Campus C pertained to religious views. A student describes his world view and religious perspectives as being important quality of a mentor. This student states,

“I would say like willingness for sure, but also for me like their world view and there, if it lines up with mine, is important to me because my world view affects my decisions and my career a lot and so if somebody has a completely different world view than I do I don’t think they are going to be mentoring me in the way that I would want to be mentored. I'm a Christian, to me that is a very important part of the plan, it shapes what I want to do with my life, and that is just one part of my world view, but it’s a big part of my world view. And somebody who at least didn’t understand that and didn’t understand the reasons why I want to do medical missions which is what I want to do, I don’t think they would necessarily understand how to steer me very well.”

The topic of religion surfaced occasionally throughout the focus group sessions, and the web-based survey did not include religion.

Campus D had two comments coded in as the mentee recognized personal characteristics of a mentor. Campus D offered two new variations on this theme. The first variation is that the length of time (level of commitment) a mentor is willing to serve as a mentor is important. The student from Campus D stated, “I think to be a true mentoring relationship it has to be a real relationship and sustained for a long time, not just for a few meetings or anything like that, so it is like a true relationship.” The second variation regarded trusting your mentor. The student stated, “And then also someone who you trust so you know they have your best interest at heart.”
Campus E has five comments coded as the mentee recognized personal characteristics of a mentor. Campus E had four comments that were describing the need for a mentor to be available and interested in the mentoring relationship. A good example from a student on Campus E was as follows: “I think someone who’s available for you, someone who is actually interested in giving you advice or helping to teach.” A variation on this campus was someone that is a motivator and encourages the mentee. The student comment is as follows: “Someone who is encouraging in their personality because a lot of doctors aren’t necessarily that way.”

All campuses recognized that personal characteristics of the mentor are important in the mentoring relationship. Campuses A, B, C, and E suggest the mentors need to be interested and available to be a part of the mentoring relationship. Some key variations of the theme included the mentor being a motivator, having similar world/religious views, and having trust in the mentee/mentor relationship.

**Mentee recognizes peer mentoring as important.**

The third code to emerge from analysis of the focus group sessions was mentee recognizes peer mentoring as important. The responses from the focus group sessions came from two questions: “What does mentoring mean to you?” and “At this point, what do you consider are the most important characteristics for a medical school mentor?” The code is defined as “this is mentor that is similar in age, power, and experience and have achieved academic success.” There were
only 2 comments coded in this way as agreed upon by the two researchers for this theme. These comments were from only Campus D.

Campus D recognized that peers provide another source of mentors since faculty have only a small amount of time to mentor. One student from Campus D stated,

“I found more so with other students than with faculty per se. I mean I have had older upper level students throughout medical school to give you advice or with any questions I can go to.”

Another student said, “I have found the same thing. There is a person a year above us, but no faculty.” The medical students on Campus D recognized that mentoring can come from multiple sources and sought out additional sources for mentors. It is important to note that no other campus mentioned peers as an additional sources of mentoring during the two questions.

Other.

Campuses A, B, C, and D each at least one comment coded as “other.” Other is defined for this theme as, “these are comments not related to the question or personal experiences not answering the question.” Two comments were from Campus C states, “Right” and “I agree.” These comments are not specific to what they were agreeing. They could have been agreeing with a single or multiple previous comments. A student from Campus A states,

“I definitely agree with that. I know I was lucky with my assigned mentor that we got along very well and we have similar career interests but I have just as many friends who met with their person for 15 minutes a semester because they had to and it didn’t really fulfill I think the potential of that mentorship relationship.”
This comment did not answer one of the two focus group questions asked and instead focused on a personal story. A student from Campus D states, “You have to be proactive in finding them.” This comment is another example of a statement that was not specific enough to answer either focus group question.

**Summary of research question six.**

Research question six inquired as to whether the fourth year medical students understand the characteristics of mentoring as essential for success. Two focus group questions were asked to assist with obtaining more data. The two questions were “What does mentoring mean to you?” and “At this point, what do you consider are the most important characteristics for a medical school mentor?” Students stated professional characteristics, personal characteristics, and peers as mentors were all essential in successful mentoring.

A total of 47 comments were analyzed for this question, and the students demonstrated they understood the characteristics of mentoring for a successful relationship.

**Mentee Preferences for Mentor Demographic Information**

Research question eight inquired whether fourth year medical students had mentoring experience, within what are the mentees preferences in regards to demographic information? The focus group sessions asked about gender, age, nationality, specialty, and sexuality. A total of 127 comments were collected and analyzed for this question across all five campuses.
In the initial analysis the researcher identified 51 themes, and the second researcher identified 12 themes to this question. After discussing and recoding themes, a final of 3 themes were identified and agreed upon by both researchers. All comments were then recoded separately by the researcher and the second qualitative researcher. The inter-rater reliability of the codes was 0.651. It should be noted that the inter-rater reliability was lower than desired, but there were only three themes identified. Since the overall inter-rater reliability was above 0.7, the researchers continued forward. Any discrepancies in coding were discussed and a consensus reached. Table 34 lists the four themes for research question eight.

Table 34: Research Question Eight Codes and Descriptions

<table>
<thead>
<tr>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic Preference in Selecting Mentors</td>
<td>1</td>
<td>Demographics information such as age, gender, religion, sexual orientation, national origin, and academic training may influence mentee selection of mentors.</td>
<td>104</td>
</tr>
<tr>
<td>Non Demographic Preferences in Selecting Mentors</td>
<td>2</td>
<td>The student prefers characteristics that are not demographics such as availability, intrinsic mentor characteristics, near-peer mentoring and personal mentoring (work/life balance).</td>
<td>8</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>The student did not answer the question but may have told their own experiences that were not related to research question.</td>
<td>15</td>
</tr>
</tbody>
</table>
Demographic preference in selecting mentors.

The first code to emerge from analysis of the focus group sessions was demographic preference in selecting mentors. The responses from the focus group sessions came from the following focus group question: “Do you have a preference for any of the following demographic characteristics age, gender, nationality, sexuality, and specialty? Why or why not?” The code is defined as “demographic information such as age, gender, religion, sexual orientation, national origin, and academic training may influence mentee selection of mentors.” This question had six parts and each part will be discussed for each campus.

Age.

The first subdivision of the code demographic preference in selecting mentors inquired whether the fourth year medical students had a preference about their mentor’s age. A total of 19 comments were made across all five campuses regarding a mentee’s preference for age. On Campus A, two students stated there were benefits to having an older and younger mentor. An example of this can be seen by the following comment:

“I think it matters less and there are pros and cons to either way you go. If you can only pick one mentor I don’t know which way I would go. I think it’s helpful to have maybe someone to talk to who is younger and has been through the process more recently, but someone who is older has more experience, they have seen more and they may have been at several different institutions and have that perspective to lend, so it’s more of a toss-up to me.”
The students recognize the benefits that both an older and younger mentor can offer. Students so thoroughly recognize the benefits that they find it hard to only narrow a mentor down to one. A variation of this theme also occurred on Campus A. The student stated that as long as the mentor was technologically savvy it was ok. The student specifically mentioned social media as a way to determine if a clinician is technologically savvy. The student states,

“It’s hard to say, because I wouldn’t mind if they were older as long as they were savvy with technology and knew what was up to date because I have had like older mentors that are like way cool and texting and knew what Facebook is and as long as they do that that's fine with me, but I have older mentors that are like really outdated, so I think there are pros and cons to both sides.”

On Campus B, two comments were made regarding age. A student from Campus B states, “They’re not practicing any more. I appreciate their advice but someone a little bit more current would be good.” The student is stating that they value advice of practicing clinicians rather than retired physicians because they would be more up to date. Another student on Campus B states that age would not matter as long as the clinician is up to date.

Campus C students describe that a mentor can be too old and when they do have the time to mentor that they may have less capacity to mentor. Students on Campus C acknowledged that defining the age of too old was difficult. One student on Campus C stated,

“I mean there’s obvious limits based on a person’s capacity, once they are a certain age they may have more time to mentor but then they have less capacity to mentor. It’s so – I mean age is a factor for me as well. There is probably some happy medium in the middle there, old enough and has enough experience, but not too old that I would feel he doesn’t have the
ability to see where I’m at any more. And I can’t necessarily define what is between these divisions, but those are the things I am looking for.”

Another student from Campus C said,

“I definitely think there is a thing as too old, because they can’t relate to you, I mean it is so far back in their life, and somebody that is closer to retirement I mean may have gone through their medical school and their residency training may have been completely different than what you are going to expect or go through. So I agree, I think there is a happy medium but I think it is really hard to define.”

Campus D had three comments coded about age. The students on this campus point out advantages of a younger mentor and older mentor. While the advantages for the younger mentor were the same as on Campus A, the students mentioned advantages of an older mentor as having more research ideas and they provided different life perspectives. One student from Campus D comments,

“At the same time the older ones would have more experience and they have more connections. They also have more ideas as far as research, maybe they have researches going on and you can help them out with that. So I think that is important as well. You can have both I guess.”

Another student from Campus D commented,

“The older ones have like different life perspectives. Like one older guy that I talked to and he’s like what do you want to do when you are 50, I think that’s what you should do. Whereas someone who is like a year older than me can’t really explain to me like my projection in life is what do I still want to do when I am 50. They have a different perspective.

Both students on Campus A and D stated that a mentee could see the benefit of having both older and younger clinicians as a mentor.
Campus E had seven comments related to age of the mentor. The students on Campus E described the same benefits of a younger mentor and older mentor as Campus A and D. As evidenced by the following comment:

“I think there’s different types of information you can get from, I think there’s benefits to both. Like if you have a mentor who is a resident, there are certain benefits to the recent, someone who was more recently in your shoes, versus someone who is older where you can get different types of information like this is the type of practice you could have so if you went to this program you might be able to get that type of training versus over here you would get this type of training, things like that. I know we probably had both young and older physicians and were able to get different types of information that way. I think there are benefits to both.”

They also stated it would be beneficial to have both a younger mentor and an older mentor. Campus E did suggest that a mentee’s level of training may influence which mentor is consulted more. The student stated,

“It depends on where you are in your training too. Because me personally I don’t think it would have mattered the first or second year, it may have been better to have someone who recently went through and then as I got closer to third and fourth year it would have been a lot better to have someone maybe older and has experience in their own practice and has been out doing it for a long time.”

In summary, students felt that age does matter. Several students recognized that with different age mentors had benefits. Younger mentors have been through the match process, had residency experience and understood the requirements of being a physician. Older clinical mentors bring experience, networks, research, and different life perspectives. A few students on multiple campuses suggested that having one mentor of an older age and one mentor of a younger age was ideal.
Gender.

The second subdivision of the code demographic preference for mentors is gender. The medical students were asked in the focus groups, “Do you have a preference for mentor’s gender? Why or why not?” The five campuses yielded 18 comments that were coded as demographic preference for mentor’s gender.

On Campus A, two female students preferred to have at least one mentor be female for work/life balance issues. One female student on Campus A stated,

“I had both male and female mentors and while I don’t think necessarily that it matters in the end, but I do think it’s important to have at least one mentor who is in my career because with work and family balance that is really important to me so I don’t think that all the mentors need to be female but at least one.”

Another student offered a differing view on why the same gender of mentor can be useful:

“The majority of mine are actually male. It’s only more recently that I have been searching out females and it’s not for family balance, it’s more I’m going into a field that has very few females and to understand kind of the nuances is what I have been looking for so I think it does matter in the end, I think it is important, as I have gone through the interview trail and interviewed with women surgeons I have been told that to have a female on your side is important to understand what is going to happen.”

This student suggested that very few females are in the surgery specialty, and a female mentor would help her ease into a male dominated field.

Like Campus A, Campus B suggested female mentees may want a female mentor for personal and work balance issues. One student on Campus A stated,

“No, but it might be useful for female students who want to be female physicians who also want to be wives and mothers it’s a little bit different because you have the residency and working afterwards for you to be the
mom and still have the drive to want to have that family life. It might be helpful to have that perspective from someone who has done it. While you can get great career advice from both male and female faculty, there’s just a little difference in how they might have gone through their education and the first part of their careers.”

On Campus C there were 4 comments. One male student preferred to have a male mentor, because he feared if he had a female mentor attraction may occur. His comment is as follows,

“I think to an extent it does. You know, as a male, if I was looking for a mentor and there was a very young attractive mentor possibility who was a woman I may shy away from that because I don’t want that temptation. [Students in the room started laughing.] Enjoy laughing, but I mean that seriously.”

A different male student from Campus C describes not having a female mentor because of his world view. This student states,

“It did for me. I mean I don’t think I ever really considered, but it was probably just the way I was brought up and the way, my world view, I would just think that the mentorship role I would seek out a male, I don’t think I would even consider a female mentor, not because I am sexist but because that is the way I see it working.”

Another student from Campus C suggests that gender does not matter. This student states, “Not a thought I had. Gender did not come into play when I was thinking about my mentor, but that may just have to do with my personality as well.” The final comment from Campus C stated that since many fields in medicine are predominantly male, a female may have to select a male mentor. The female student from Campus C stated,

“I think I was kind of biased by – I mean I want to end up going into cardiology and 95% of the field is male dominated, so I think the choice was made for me, but I would like to think that that wouldn’t influence my decision. But for me a mentor is more career, I don’t really have a personal mentor as far as like a life advisor or a life coach, but I consider
my mentor very career oriented thing, so as long as they are successful in
the direction I want to go that’s what matters the most.”

On Campus D, seven comments were coded as Demographic Preference
in Selecting Mentors that related to gender. Four of the seven comments stated
that they did not have a preference in their mentor. For example, a student
stated, “I don’t have any preference.” One female on this campus preferred a
female mentor because of child issues. One female student on Campus D stated,
“The only way I would have a preference is if you were seeking information about
like maybe getting pregnant in your residency or during medical school or things
where gender would be more important.” Another female was annoyed to think
the only reason a female would prefer a female mentor was to procreate. She
spoke:

“I think it is kind of annoying that they suggest like girls, like they think
everyone who does emergency medicine they think are doing it so you
can have like babies, so oh this person can talk to you about having a
family, I’m like I would rather just talk about the specialty, not like how to
procreate. I think that would be the only instance where gender would
make a difference.”

Campus E had two comments coded with the subsection of gender. Both
comments related to females having preferences for female due to family
planning. One of the comments is as follows:

“My initial thought is oh no, it doesn’t, because I have had a mentor who is
a woman but then I have also had one that was a man and a different type
of relationship there but that went beyond just medicine, it was the whole
idea of like well just being a doctor and balancing family life and balancing
having kids and everything else, it was this is how my mind set changed
because getting that information and having that relationship was really
good, which I am not sure I could give in the same way, even though I got
really good information. So kind of, it kind of matters.”
Majority of students preferred to have the same gender for a mentor. This preference was documented by Frey and Noller (1986). For females, this preference was due to discuss work/life balance issues and transitioning to male dominated specialties. Males stated they preferred having other males as to not have to worry about sexual feelings between the two people in the mentoring relationship. It should be noted that since some specialties are male dominated, females student may have trouble locating another female in that specialty. One exception to these preferences is noted on Campus D; the majority of the students did not have a preference for gender. It should be noted here that no students on any campus thought of same-sex gender leading to sexual feelings.

**Nationality.**

Nationality is a subdivision of the demographic preferences for a mentor. There were a total of 10 comments across campuses A, C, D and E. Opinions regarding nationality varied quite a bit and brought up other issues such as race and religion.

On Campus A there were three comments regarding nationality, and all three were quite different. The first comment described a student who would not like a mentor from another nationality than American due to the training of physicians being different in each country. The comment is as follows:

“"I think from my perspective nationality doesn’t matter but sort of their career experience to me, if they hadn’t gone to medical school in the United States, I think that would have been difficult to really address some of my career goals because the experience in international medical grads is very different from the U.S., is that true?"
A different twist on nationality is that being able to speak both English and Spanish was important to this student. The second student stated,

“I guess for me like ethnicity would be important but I have a lot of goals in the Latino community and so someone who spoke Spanish is important. I’m Latino, I don’t look Latino, but my grandma is from Mexico and it was really important to me to have a mentor that spoke Spanish and a lot of ties to the Latino community.”

Finally another student on Campus A equated nationality with race. This student describes that the mentor does not have to be of the same race as they are, but simply had to be a minority. This student from Campus A stated,

“It’s important because I am a minority myself so I would, like she was saying when you are a woman in a field you are a minority and you would want to be able to speak with someone and I mean they don’t have to be necessarily black, but at least a minority for me is where race becomes an issue. I would prefer one who is at least a minority.”

Campus B did not have any comments for nationality that were coded as demographic preference in selecting mentors. However, Campus C had two comments that pertained to communication issues and religion. One student on Campus C stated,

“I think since communication is such a big part of mentorship, people that are first generation or immigrants to this country, since English is their second language it is harder for them to communicate with younger people that are brought up here, even though they may be just as successful in their careers and in life I think it would be very difficult for them to relate to you or your situation. I think that would play a role. There are attendings that I have had that are brilliant but you can tell that English is their second language and I mean it’s very difficult to understand what they are telling you on rounds, I can only imagine what a mentorship conversation would be like.”

A second student on Campus C suggested that religion was important. The student states,
“It shouldn’t matter, but it might matter to me. I’m Jewish, I couldn’t have an exceedingly Christian mentor who was part of the same DA and very active on mission trips because it wouldn’t really jive with my ability not to think about them, not so much that their race would matter but I think their religious background would matter to me. I’m not saying they would have to be Jewish but somewhere in the middle ground.”

Religion was not addressed in the web-based survey, or directly with the focus group questions, but students consistently brought religion up.

Campus D and E each had one comment each. On Campus D a student states, “Nationality doesn’t matter.” On Campus E a student describes if a mentee is a minority ethnicity may matter, recognizing he is not a minority. The comment is as follows: “Doesn’t matter to me, but if I was a minority it might.”

Students used the term nationality to bring up religion, language, and race. The majority of students thought nationality preferences could exist among mentees. It should be noted, each student had their own needs and their own preferences. For example, students who spoke Spanish wanted a mentor who spoke Spanish as well. Some students did not want to have someone who did not train in the United States Medical System. Additionally, students stated that nationality did not matter as long as the person spoke fluent, easily understood English. Bickel and Rosenthal (2011) documented oral communication barriers between mentor and mentee due to the primary communication means being verbal.

**Sexuality.**

During the focus group sessions students were asked, “Do you have a preference for a mentor’s sexuality?” A total of 21 comments from students were
collected on their preferences in sexuality of the mentor. The dominant thought was that sexuality did not matter, however there were a wide range of preferences.

On Campus B, three students stated they did not have a preference for sexuality in their mentor. One student made a slight variation in this by saying, “I can’t see myself asking.” On Campus C, the opinions were very different. One student stated,

“Choosing a mentor is a very individual thing and it’s choosing somebody that you are personally comfortable with. It’s going to vary, based on person to person. If that’s something that doesn’t matter to someone then obviously it’s not going to play a role. If you have a mentor that you can’t relate to it’s very difficult for you to develop a healthy mentor/mentee relationship with them.”

The strongest reaction to any questions in the focus group came from the next comment on Campus C. One student stated,

“To me just based on the way I view a mentor it wouldn’t work out for me. It would matter to me because the way they see the world is very different from the way I see the world. I would like to be friends and do all sorts of things, and I don’t necessarily just want it to be a mentoring relationship.”

The focus group moderator noted the student looked down at the ground the entire time he was commenting about this question and started to shake a little as he was talking. This comment is from the same student that stated how important his world view was and having the Christian Association was so important to him. His tone was different for this question and was having an emotional reaction to the question. He almost seemed to want to clarify his preference by stating he could do social things with a mentor but not respect the
mentor based upon their sexual preferences. It should be noted that Campus C is a regional campus and has a focus on community medicine.

Campus D had five comments that stated there was not a preference for sexuality in their mentor. However one student had a variation on this preference. The student states, “Hopefully I would know before meeting that person what their sexual orientation would be so it would matter.” The student did not explain how he would know the orientation of a potential mentor. It should be noted on this campus a student states, “We’re all pretty liberal here.” This starts to bring up political preferences.

Campus E had five comments related to preferences in sexuality of their mentor. This campus suggested sexuality may matter to someone who is in the minority. One student states, “Not to me, but once again if I was in the minority, it probably would.” Another student described that a mentee has to be comfortable with their mentor, so if a mentor was slanted one way or another it may affect the relationship. This student stated,

“I think that it gets back to feeling comfortable with your mentor, feeling like it’s an open environment and accepting environment because I feel like no one wants to feel judged or feel like they are somehow being looked down on, not graded in the sense of med school, you don’t want to feel like you’re being, a judge is the only thing I can think of in terms of a mentor so I would want someone who was open and accepting overall, I think that would definitely cover sexual orientation because that, I don’t think you would have a comfortable relationship and the ability to have that good communication if there was always that barrier there. So I think it would be important.”
Another student stated that sexuality was not the only preference that students may have for their mentors. One student describes a preference for religion in the following comment:

“This is a little off topic but one of my attendings had a negative view towards specific religions so that was uncomfortable, I didn’t feel like he could be a mentor because it was very uncomfortable hearing someone speak so negatively about a certain population.”

A different student from Campus E describes that political views has an impact on their preference as well as sexuality. This student states,

“And hitting on that I had faculty that I worked with who were very up-front in their views and I had opposite views from them and that immediately changes the relationship of the learning environment and the entire experience with them because I feel like I can’t necessarily talk about everything when I am constantly having to worry about something and then wondering like well, you just don’t mesh, that’s not a good relationship for me to learn, not a good environment for me to learn so it kind of shuts it down, so I think if you were trying to develop a mentoring relationship there it would be a failure to watch, you wouldn’t even get close. Well, this specifically was about sexual orientation, but specifics don’t matter. For that particular case, it was sexual orientation, it was politics, it was everything. It was views on medicine and how doctors should act, it was everything, it was a bad situation.”

This theme was even brought up again by yet a different student on this campus. The student stated:

“Even politics, I mean there is no way that you could match everybody up to someone who is similarly minded, but it does make a difference because medicine in general is a very political hot topic and the changes that are happening, and so like I have had a lot of attendings who are just very strong and open and vocal in political views that I don’t necessarily agree with, and so if you are trying to talk to them about the future of medicine and what to expect and what kind of practice would be best and reimbursement plan type things, I don’t know, it just can be interesting. It can be a barrier.”
The majority of the students concluded that sexuality of their mentor would not matter to them. However, a few students stated sexuality would matter. This question elicited very thoughtful and emotional responses from students. To those who it would matter, the student may have preferences due to the student themselves being homosexual and desiring a homosexual mentor or a student may have bias against homosexual mentors due to their world views. This question on preference of the mentor’s sexuality brought up religion and political views which were not mentioned in the survey or focus group questions.

**Academic training.**

The last demographic preference to be obtained from the focus groups pertains to the academic training of the mentor. The students responded to the following two questions regarding academic training: “What characteristics do you prefer in a mentor?” and “Do you have a preference in regards to your mentor’s specialty?” Students responded with 39 comments coded as a subgroup under demographic preferences.

Campus A had a total of nine comments coded as academic training preference. When students were asked about their preference in their mentor’s characteristics, the dominant response from students included a preference for MD trained physician. One student from Campus A states,

“I think when you get to your third and fourth year, even if it is just a secondary mentor or someone else that you identify should be MD just because like the process of finding a residency and the decisions you have to make are extremely hard, not like any other field. So like I would have been fine if I hadn’t had a mentor, I would have definitely wanted
someone who was an MD that could help me address the things I was struggling with specific to that.”

One variation on this campus A states that academic training did not matter to them because they had a person to mentor them in the student center. This student states,

“For me it really didn’t matter. My two, I will say two mentors, one is a surgeon and I don’t want to be a surgeon but I mean she was in my society and kind of adopted me because even the mentor that I was assigned she adopted me anyway, the person from the society I was assigned and another person isn’t an MD nor a PhD, she works in the student center but she has insight that I can always appreciate because I mean my life isn’t always going to be about medicine, it’s about a lot of other things, so even if she couldn’t tell me something medically related she could still help me figure things out about life and work balance.”

Another student on this campus states that MD/PhD would be useful as a mentor. The student’s direct quote is as follows:

“I think it also depends on your career goals. Me being an MD/PhD I need to have both of those and even if I have somebody who is an MD/PhD that is even better for me but I found that for me personally depending on where I am in my schooling each of those different people have been involved, but for other people I think that’s different. I think it’s dependent on what you want to do totally.”

On Campus A, when asked about preference in regards to mentor’s specialty, the dominant response was there was a preference for a mentor to have the same specialty the student planned to enter. An example of this thought is as follows:

“Again if you can only pick one I think it would be helpful to have a mentor in your field. Like going to the AAP, the American Academy of Pediatrics meetings would be less exciting if I wanted to do neurosurgery. I mean you won’t make the proper connections and while it might be interesting for a couple of lectures, it’s ultimately not really related to what you want to do. So you might fall short as far as what you are getting out of that relationship.”
The only variation on this theme was by one student who had a surgeon as a mentor and they did not want to be a surgeon. His response was as follows: “For me it wasn’t necessarily important, my mentor is a surgeon and I don’t want to be a surgeon.”

On Campus B, a total of eight comments were coded as having a preference for a mentor with specific academic training. Similarly to Campus A, Campus B dominant response preferred for their mentor to be a MD trained physician when asked about characteristic preferences of their mentor. One student stated,

“I think also probably because the road you are going to take as a med school student is to go through third and fourth year and get into a residency that is the main goal of med school, and I believe that person probably best suited to help you out is someone who has traveled that road.”

One variation on this theme was that a MD or DO could be a useful mentor. One student on Campus B stated, “I would prefer an MD or a DO because their training is similar.” Another variation on Campus B was a preference for a PhD. A student stated, “I think first and second year that would be appropriate as well to have a PhD that would know the classes you were taking more.” The final variation on preferences for characteristics of mentor included students not desiring a specific degree as long as they could help guide them. The student stated, “Just as long as they have the connections that could help me end up somewhere useful, it wouldn’t matter to me what their degree was, as long as they could turn me in the right way.”
On Campus B, when asked about preferences for their mentor’s specialty, students stated it mattered a lot. One student on Campus B states,

“That matters a lot to me because I want to be mentored by someone who’s in the same specialty that I want to go into just because their advice is so much more relevant to what you are trying to do. You can get good advice from all areas but their advice is going to be a lot more specifically tailored to what you need to know.”

Campus B did not have a variation on their specialty preference.

When asked about preferences in characteristics of their mentor, Campus C had a preference for an MD of DO degree. One student stated,

“I think since medical students’ goals are so career oriented throughout medical school you have to have somebody that has been where you are at and is going where you want to end up going so I think at least, I mean nothing against people with PhDs, but I think they at least have to have an MD or a DO behind their name, just because you want somebody that has connections with programs that you want to go to.”

There was recognition by students that a personal mentor may be important in medical school and that personal mentor did not have to have a MD or DO degree. The student stated, “But for a personal mentor which I think has been more important for me in medical school, if it happens to be an MD, I would not care either way, if there are letters after their name or not.” Another variation on this campus is that name recognition in a mentor matters. A student stated,

“I disagree. I guess there are different mentors, there are personal mentors and med school mentor and there is a career mentor. Obviously for career mentoring I would want someone who was in the field I was going into, a big name or a good name or something like that to help me figure out where I want to go.”

A student on this campus also disagreed with the big name recognition due to their specialty they were entering. This comment also provided a good summary
of the discussion back and forth regarding preferences for their mentor on Campus C. The student states,

“For me there were different mentors for different stages of my life, or different aspects of my life and I had one all the way through, I have had a mentor since college, more of a personal mentor that I talked to all the way through, but we haven’t talked about med school like this is how you succeed in med school. How is med school going, do you like your life right now, that kind of mentorship rather than this is what you need to do to get into the program you want to be in. And so as far as medical like from like medical internship, for me the field wasn’t as important because I’m doing primary care and I felt like I could learn from anybody who had gone through the process just because I didn’t need big names on my resume to get into the residency program, it’s much different than urology or other fields and I just needed somebody who could encourage me really and tell me the process.”

When asked about preferences, the dominant response was that they had preferences for specialty. One student stated,

“Professionally it does. Especially as specialized as I want to go, they would need to be in the field that I want to go into, yeah. Personally I don’t think it matters. When you decide what you want to do it does matter.”

There were not any variations of this preference on this campus.

On Campus D, students had a preference for MD physicians to be their mentor. There were not any other variations of this preference. One student stated,

“Medical school is like a very special beast, and like only if you are someone who has gone through it can really probably understand what you are going through. I don’t think anybody who is like I know what it’s like to go to med school, you have to study really hard, work like long hours, exactly, there’s nothing special to it. It’s like the whole culture is very different and unless you are in that, it is hard to understand.”
Students on Campus D did not directly address the specialty preference during this time. However, it did resurface during additional comments section of the focus group.

On Campus E, thirteen comments were coded as part of the academic training subgroup. The dominant responses to preferences in characteristics of a mentor were to be a MD or DO trained physician. One student stated,

“I think since I have always known that I wanted to go into clinical medicine then MD or DO would be preferred over the PhD for me since I enjoy doing research but I don’t think it’s something that I would carry on, so just something that is similar to what I would want to do in the future.”

A variation on this theme is the distinction of how researchers (PhD’s) think about things differently than MDs;

“I remember getting lectures from PhDs and they just think about things a little differently than MDs and I think it’s important to have someone who has been through medical school because it is kind of a --It’s a different beast.”

A second variation is the preference for a resident as a mentor because they still knew the basic science curriculum and clinical curriculum. A student on Campus E stated,

“I thought it was useful and I felt like my mentor at that time would have been the resident who I was paired up with but yeah, he having his MD and someone who was going through the clinical portion but yet still knew everything I was going through in the basic science years, for me it was like oh this is the light at the end of the tunnel that I get to get to after all this. He could still provide some advice for where I was currently.”

Another variation of Campus E students was a preference for third and fourth years to mentor them as well. A student stated,
“I think it would be good for first and second year to probably have maybe a third or fourth year medical student might be nice because then you can relate because you’re -- you have no idea what to expect when you start medical school, you have no clue what you are going to do. You kind of like just jump into a deep sea and you are just hoping you survive and so it would be nice to have somebody who just did it and can tell you about the professors, what every professor expects, what the tests will be like because that’s kind of what you are doing immediately. I don’t know, that’s what I think would be kind of nice. And how to live your life and how to time management, like trying to have somewhat of a normal life and going to medical school which is kind of hard during first and second year, but if they have any advice I would have taken it.”

A final variation to the student responses on characteristics in a mentor is the preference for MD to emphasize what is important in the curriculum to remember. A student on Campus E states, “But even just like an MD in those first couple years to remind you or tell you, that what you are learning you never need to remember that.”

On Campus E, students stated they had preferences for their mentor to be in a certain specialty:

“Different specialties have different kind of personalities associated with them, I have found. Honestly if I was required to have a surgeon as my mentor, it would be terrible. Once you start to get specialized things are so different and lifestyles are so different too in practice, so if you are looking for what your lifestyle is going to be and I am trying to go into psychiatry and I go talk to a surgeon about what to expect, it’s not going to match.”

There were no variations of this theme from Campus E.

Students from each campus identified academic training preferences for their mentor. The students’ preferences included MD, DO, MD/PhD, PhD and non-terminal degree preferences. Students identified that there was a difference between personal mentoring and career mentoring. Most students identified, in
the focus groups, having a specialty mentor to guide you through medical school is important. The preference towards a specialty mentor was also identified in the quantitative portion of this research study as statistically significant with a p-value of 0.002.

**Non-demographic preferences in selecting mentors.**

While discussing the demographic preferences of their mentor in the focus group session, students also described some non-demographic preferences for their mentor. There were only eight comments coded this way and only on two campuses (Campus A and D). The definition for the code is that students prefer characteristics that are not demographics such as availability, intrinsic mentor characteristics, near-peer mentoring and personal mentoring (work/life balance).

Campus A had three comments that identified availability of mentor as a key characteristic in selecting a mentor. One student identified texting and Facebook as important means of communicating with a mentor. The student on Campus A stated,

“Well, we would have to be able to get in touch with them, so like I mean we are a social media generation but we like to be able to text our mentor and say can you meet up for coffee at three or email, no that’s not a good time, or call them and maybe not then, but also like to be able to have access in person is essential because I want to be able to meet with them for coffee and talk for an hour, or go to their office, or whatever is convenient for them and myself. So I think we’re kind of a mixed generation where like we do schedule things whatever is assigned, but we still do need some face to face, that is important.”

Another student described understanding the mentor’s busy schedule and trying to connect with them during clinic or surgeries. The student on Campus A stated,
“Mine is a little bit different. I was more recently getting a lot of mentorship from surgeons who don’t have a lot of time, so I kind of had to figure out where they were and I went to them. I knew their clinic schedules and I knew their surgery schedules and I basically stalked them and if I needed to talk to them I would go find them and they like that, so you have to understand who you are trying to connect with and understand what their schedule is and understand what their limitations are and try to overcome those for yourself if you want that. So I think just understanding those nuances about who you are trying to be with is important.”

Another student on Campus A described working through a physician’s secretary to obtain a meeting time. The student stated,

“And sometimes you don’t get a chance to really talk to the person, like I know several times I had to talk to her secretary because I knew that was the best way because I know the secretary knows the schedule better than she does. Hey, it’s mean again, when is she available, can you put me in or something like that.

On Campus C, students described their mentors as dependable, accessible, similar personalities, and willing to invest time into a mentoring relationship. One student on Campus D states, “Dependable. Maybe they’ll answer your emails more readily.” A different student on Campus D states, “Accessible.” A third student identified personalities that were similar. The third student stated,

“As far as matching personalities, I think that’s a good thing because if you are a go-getter you want a mentor who is actually a go-getter as well so you have the same goals, and if you are laid back, you don’t want a go-getter because you’ll just get stressed out. And the other way around if you are a go-getter and your mentor is kind of laid back then it’s kind of conflicting, so I think you have to have similar personalities.”

A different student on Campus D indicated the need for a list of good mentors who are willing to mentor would help in the student identify a mentor. The student stated,
“I think assigning mentors would be a little bit superficial, especially in the beginning, especially if you don’t have anything in common with that person, so it’s just going to be like you are forced to kind of talk to that person. At the same time having somebody assigned to you is also kind of nice, especially for people who don’t seek them out. So maybe something like having a list of people who are willing to mentor people and are known to be good mentors would be helpful so people who don’t usually seek them out actually have some idea on who to talk to if they wanted to.”

Overall, only eight of the comments were about non-demographic preferences in selecting a mentor. The dominant response is about mentor availability. Students describe a variety of methods of communication with the mentor such as social media, texting, clinical schedules, and communication with a mentor’s secretary. Students also described that a mentor needed to be dependable and have similar personalities.

**Other.**

The third code for research question six was “other.” Other is defined for this research question as “The student did not answer the question but may have told their own experiences that were not related to research question.” A total of 15 comments were coded as other. Each campus had at least one comment that was coded as other.

Some of the comments that were coded “other” were about personal stories. A student on Campus E states, “I met my little sib once and it was the most awkward lunch I have ever had, and I thought I will not do that again.” This student described their own personal experiences and did not answer the question that was being asked of them. Another situation that fell under “other” was when a student response was vague. A student from Campus C stated, “I
don’t think so.” Another student from Campus A stated, “Yes.” These responses were too vague to determine what they meant. Finally, political views came up during this portion of the focus group session and those comments were coded as “other:”

“Even politics, I mean there is no way that you could match everybody up to someone who is similarly minded, but it does make a difference because medicine in general is a very political hot topic and the changes that are happening, and so like I have had a lot of attendings who are just very strong and open and vocal in political views that I don’t necessarily agree with, and so if you are trying to talk to them about the future of medicine and what to expect and what kind of practice would be best and reimbursement plan type things, I don’t know, it just can be interesting. It can be a barrier.”

Another student from Campus D suggested, “We’re all pretty liberal around here.”

**Summary research question eight.**

Research question 8 inquired whether students had preferences for demographic characteristics (age, gender, nationality, specialty, and sexuality). Fourth year medical students had a wide variety of demographic preferences. One hundred and ten comments were coded and agreed upon by two researchers for demographic preferences in selecting mentors. For many students, the demographic preferences were individual, varying from student to student. Students identified having preferences for age, gender, religion, sexual orientation, national origin, and academic training/specialty. While the quantitative survey identified only specialty as having a statistical significance, some students had very strong preferences for sexual orientation, academic training, national origin and gender. Non-demographic characteristics emerged
from the focus group session such as intrinsic mentor characteristics (availability, dependability, and similar personalities). Students also mentioned that religion and political views played a role in selection of a mentor, and these were not investigated in the quantitative portion of this research.

**Additional Comments from Focus Groups**

At the end of each focus group, the students were asked if they had anything else they would like to say about the topic of mentoring. A total of 78 comments were collected and analyzed for this question across all five campuses. In the initial analysis, the researcher identified 36 themes. After discussing and recoding themes, a final of 9 themes were identified and agreed upon by both researchers. All of the comments were then recoded separately by the researcher and the second qualitative researcher. The inter-rater reliability of the codes was 0.949. This Kappa was the highest inter-rater reliability of all questions, and it should be noted that it had the most themes of any question. Any discrepancies in coding were discussed and a consensus reached. Table 35 lists the nine themes for additional comments provided by students from the focus group sessions.
Table 35: Additional Comments Codes and Descriptions

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<thead>
<tr>
<th>FG: 7</th>
<th>Theme Code</th>
<th>Theme Number</th>
<th>Description of Theme</th>
<th>Frequency</th>
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<tr>
<td></td>
<td>Mentee Suggesting New Ways to Match with Mentors</td>
<td>1</td>
<td>Students want to match mentors through social media outlets, interests groups, on their own, finding them from a list, and through a first mentor acting as a matchmaker.</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Mentees Suggesting More Flexibility is Needed</td>
<td>2</td>
<td>Students want flexibility within mentoring programs.</td>
<td>10</td>
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<tr>
<td></td>
<td>Mentees Suggesting They Need to be More Proactive</td>
<td>3</td>
<td>Students recognize a need to be proactive to develop mentoring relationships.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mentees Suggesting Training Needed for Mentors</td>
<td>4</td>
<td>Students want all types of mentors trained.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mentees Suggested Multiple Length of Mentor Relationships</td>
<td>5</td>
<td>Mentor length of time needed varies from short to long and ending relationship is important.</td>
<td>5</td>
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<td>Response Rates on Survey Questions</td>
<td>6</td>
<td>Students state the type of survey questions affects if they respond to the survey.</td>
<td>4</td>
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<td>Mentee Recognizes One Mentor Can Not Be Everything</td>
<td>7</td>
<td>The mentee understands that one mentor cannot assist them with all of their needs and multiple mentors are needed.</td>
<td>2</td>
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<td></td>
<td>Other</td>
<td>8</td>
<td>Student shared personal mentoring experiences or did not offer additional information.</td>
<td>15</td>
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Mentee suggesting new ways to match with mentors.

The first theme, mentee suggesting new ways to match with mentors was addressed by the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme of mentee suggesting new ways to match with mentors is defined as “students want to match mentors through social media outlets, interests groups, on their own, finding them from a list, and through a first mentor acting as a matchmaker.”

After completion of the coding process, thirty-two responses were coded with this theme across all five campuses.

On Campus A, there were three comments that were focused on matching mentors and mentees. The students identified that specialty was not the only thing that mentors should be matched with. One student on Campus A stated,

“I don’t know how I got my assigned mentor but I think it would be useful and we could do like some kind of survey to see so you can match personality types a lot better, rather than and like I said it doesn’t have to be a specialty but I think that would be better than just randomly putting you with people that you may not on a personal level want to be bothered with.”

Another student suggested having a matchmaker match students and mentors up:

“One suggestion I have that actually is an idea that I am going to steal from a program I interviewed at, everyone is assigned a mentor to begin with, but that mentor’s only job is to help them find a mentor that will actually be a good fit for them. So they get to know a student, initially make sure things are going okay, understand their goals and their personality and then they’re well connected, and we’ll connect you within
KU and identify a couple different people that might be a good mentor for a lot of students, and then basically graduate to that mentor, and I feel like that could be really successful here because then you have got a formal thing that everybody is supposed to do and then that will hopefully lead to what we all did kind of organically which is find a mentor that was better for us.”

The match making idea could potentially solve a problem identified by a student on Campus A, who commented on a situation where the student did not know what their specialty was going to be before becoming a medical student and the student got a random mentor. The student states,

“I do remember filling out a survey before medical school and it was like do you know what specialty you want to go into, and thankfully I already knew I wanted to go into pediatrics, but I think a lot of my peers were like I don’t know, no way, no idea, and so they got a random mentor so that is a terrible way to give somebody a mentor because most people don’t know what they want to go into when they start medical school.”

On Campus B, students suggested linking interest groups with mentors and mentees:

“I was thinking, I don’t know how much work this would be, but really connecting the mentoring with the interest groups here. Because I know the internal medicine group tried it but we need something a little more solid where here you have students who are taking the time to go to interest groups and from there have the mentors associated with the interest groups and they can contact them via there, or at least the group can say these people are available, if you want to shadow them, if you want to chat with them, these are whose interested. Have that continued relationship with the interest group. And there they can arrange activities or lunches or whatever they want to do. Just not keeping them as two separate things.”

Another student on Campus B described having a list of potential mentors and having students be proactive and reaching out to see if they are a match. This student stated:
“I think what would be most helpful is if they had a list of people who wanted to be mentors in their specialty and then it would be the student’s responsibility to contact them, like if they wanted advice or research opportunities or whatever the need is, but to have a list of people that they can go to and those people would be helpful. And then they can go to them when they feel like they need them.”

A different student agreed with having a list of already-vetted faculty:

“I really like the idea of having a list of faculty members that are interested, and residents maybe too, that are interested in mentoring students. Not all have time, not all have ability, not all have compassion to work, even though we are at a teaching hospital, it’s not everyone’s personality or characteristic that they can match up, so having a list of approved mentors that they would allow to be distributed to the students would be very helpful.

Another student from Campus B suggests having a profile to highlight mentor’s activities and personality. This student stated,

“But like having a profile, kind of having an idea of what the mentor is like, activities they are interested in, I would like to know what kind of personality they are because it is important to be able to get along with your mentor, to have some kind of common ground.”

On Campus C, a student made a comment similar to the profile comment from Campus B. The student on Campus C suggested having a matching program similar to eHarmony. eHarmony is a website designed to match single members for potential long term relationships using a Compatibility Matching System (eHarmony, 2014). This student stated,

“I think mentors are really hard to keep. I think we saw that when we were first and second years when we came up here, our mentors weren’t from Campus C, they weren’t here when we got here. They stayed there and they graduated. So our first and second year student mentors were gone. I think that was difficult and I think they are trying to remedy that now. I have gone down there a few times to the dinners and stuff for the students. But even then I haven’t found that a mentorship role is really what they are looking for. I think they are just there to eat free food. And
they do ask some good questions. They ask personal questions but I don’t think they are looking for anything outside of that. I think if something more regimented was set up it may be more beneficial, or if there was like an eHarmony for mentorship where you could match mentors based on their personality traits. That would be pretty fantastic.

Another student followed that comment by saying “eMentor.com.”

Another suggestion on Campus C was to have multiple mentor/mentee mingle s. One student described having a series of lunches with a mentor and having time so that upperclassmen can interact with lower classmen. This student on Campus C stated,

“I would say for me it would have been better to have multiple events, and it could have been with assigned people or not, but setting up this lunch hour each mod is going to meet with their whoever mentor and then seeing if anything blooms from that. Then having some other mixer where maybe you are trying to get an upper classman paired with a lower classman and letting the people find each other instead of all right this is the person you are assigned to.”

Another student on Campus C followed this comment by suggesting “speed dating.” Speed dating has been defined in the literature as a series of brief (3 – 8 minutes) dates between people looking for potential romantic partners. An individual may have up to 12 dates in one event. After the event, each individual declares yes or no to the whether they would like an additional date. If both individuals say yes, they are given the individual’s contact information to presumably go on another date (Finkel, Eastwick, & Matthews, 2007). The student in this focus group session suggested that this matching process could be used for mentor-mentee matches not based on romantic interests but academic interests.
On Campus D, students suggested having a list of who is willing to mentor and allowing the mentee to make connections. This idea was similar on Campus B. The Campus D student stated,

“And they should have a list of who’s willing to be a mentor and then all the different specialties, whatever you are interested in you can just sit down and talk to somebody and find out maybe more about that specialty or if they think it is right for you, and what kind of things you are looking for, and even that can get the ball rolling.”

Students on Campus D also suggested linking the interest groups up with potential mentors. This idea is the same as on Campus B. The student from Campus D stated, “Because those people who goes to those meetings [interest groups] are actually the ones who are also more open to mentoring people, so it’s a good idea to join them.” Another student from Campus D stated,

“The Emergency Medicine [interest] group actually assigns people. But you go like the first meeting or whatever, does anybody want to mentor and you like actually email physicians and get people’s, like who is interested in doing it, like that student organizations are good at setting you up with mentors. Because it is hard to get into. So they kind of understand that.”

On Campus E, students suggested a list and eHarmony similar to Campus B:

“It would be cool to have a list of people who were willing to be mentors and then say have a list of them, where they were at in their training, in what field and have the students be able to maybe pick and say oh I would be interested in going to talk to them and seeing if a relationship develops, I think that would be so cool.”

A different student stated,

“You could set up like an eHarmony for medical students to get matches, you could get some data system that matches up like a mentee and a
mentor. You’re 97% matched. Really. That would be cool. That would be fun.”

Campus E offers one variation that is different from the rest. The student suggests having a mini-match process where mentees interview multiple potential mentors and have the mentors and mentees select their top choice. The student from Campus E stated,

“This actually sounds real strange but a program that I interviewed at went to kind of establish who their faculty mentor advisor was going to be through the duration of the residency was they set up, this is what I am looking for, this is what I am interested in and then they had a thing like where they went and met with these four people and like interviewed these potential mentors and then they kind of did like a mini match, that was what it was and so like the resident said this is who I would pick and then the mentor said like yeah I would be okay with that person or no I wouldn’t, I didn’t think we meshed well. We really want you to get something out of this process for these three years, let’s try to make it, you know, a better match. And I was like what? And then the more I thought about it, it kind of made sense. It would be a lot of work and you would have to have those people who were really committed. I think that seems to be the biggest barrier is just the time element and everybody is busy, everybody has something going on and no one’s schedule is really set up very well.”

Another student from Campus E stated,

“Like if you got assigned to an orthopedic surgery guy and you were like I think I really want to do family medicine, like great. If anything I think it sounds like a better idea than just committing to someone initially without being able to change, and then maybe you get a little more time to get to know them where you get your feet underneath you during the first semester of med school where you feel like you are a little bit more balanced or sane, after the first couple months.”

A key component for this student is the recognition that your specialty will change over the course of your medical school career and the matching process for mentors is good as long as it can accommodate that change.
Students on all campuses identified multiple ways to improve the match processes. These ways to match mentors with mentees include a list of approved and available mentors, an electronic profile similar to eHarmony.com, and linking the mentors with specialty interest groups. However, one idea that was mentioned at only one campus was to create a mini-match process where mentors and mentees both interview each other and turn in their match. These ideas are valuable and could potentially solve issues like changing specialty after entering medical school and having available and approved mentors.

**Mentees suggesting more flexibility is needed.**

The second theme, mentee suggesting more flexibility is needed, was inquired by the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme is defined as “students want flexibility within mentoring programs.” After the completion of the coding process, ten responses were coded with this theme across Campuses A, B, and E.

Campus A had a total of six comments requesting more flexibility within their mentoring program. The majority of the comments reflected that the process of changing a mentor was difficult. One student on Campus A stated,

“I think minimally the process to change to a different mentor should be easier and the administration should be a little more flexible with that. I know a lot of people who really wanted to switch mentors either to someone else they found or they just didn’t feel like they clicked with their mentor, not that they had a better suggestion, but they wanted to try someone else and it was a larger task than most of them were willing to see through so they stuck with this sort of useless mentoring relationship
and wasted some time with it and I don’t think either party got anything out of it.”

A slight variation of this theme is that a student wanted to have a mentor outside of Campus A and was denied. The student states, “A willingness, but should be open to having mentors outside of their institution because I mean an institution is finite and we can find people anywhere really.”

Students on Campus A also suggested the mentee needed to be flexible with their time to make the mentoring relationship work. A student stated,

“I mean I didn’t need formalized sitdowns to get what I wanted out of relationships so if it was just a question here or there I could get that answered, or if it was me they would grab me after a conference or whatever. I think if you want more formalized setting yes, but that can be challenging depending on who you are trying to meet with but I think it’s definitely possible if you are proactive.”

A student went on to state that they could not get answers from their mentor in a few weeks and that the mentee would need to plan on not waiting to the last minute to get responses from their mentor. This student stated,

“I never really had a mentor give me an answer immediately, it was usually a couple of weeks, I would email them and give them a really wide range of when I was available and generally that worked pretty well, but if you waited until the last minute that would be different.”

On Campus B, a student stated that students often change their minds about their desired specialty and would like to change mentors to a one within the specialty. The student described that the mentor could help facilitate in this process but the student could take initiative to find a new mentor as well. The student stated,
“It would be helpful the first and second year to have a faculty mentor, kind of like the program we have set up here, even if you choose not to go into that specialty it would be great if that person could forward you on to someone in another specialty, but that’s putting a lot on them, I think it says a lot about the student who changes their mind and picks someone out and develops a new relationship versus oh I’m really not interested in X, Y and Z anymore, can you forward me to one of your friends or colleagues and set up the meeting and let me know what’s going on. I think it shows some more about the student’s character if they were the one to pursue a different relationship at the point where they change their mind.”

On Campus E, there were three comments about mentees wanting more flexibility in their mentoring program. All three comments discussed having the flexibility to change their mentor, especially their specialty mentor. A student stated,

“Yeah, like the whole time we have been talking I have been thinking when we started out first year I was assigned to a family medicine faculty up in Campus A and I said you know so many people change their mind on what they want to do in the four years of medical school, you could maybe go along a year and then have the option to change to someone of a certain specialty, to not even meet a mentor, like I said there just need to be options. Like in Campus A you are with that person all four years, regardless of what happens. I was getting emails accidentally from the same mentor thinking that we needed to meet last year, but I just think there should be options in place, autonomy on the student’s part.”

Students have identified the need to have flexibility in the mentoring programs in which they participate. Students described the need to change specialty mentors as they change their mind on what specialty they would like to pursue as a career. Students also recognized that, when they had busy mentors, they need to be flexible about when and how often they meet with them. The students also described being proactive as well as planning in advance to meet with their mentors.
Mentees suggesting they need to be more proactive.

The third theme, mentee suggesting they need to be more proactive was inquired by the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme is defined as “students recognize a need to be proactive to develop mentoring relationships.” After the completion of the coding process, seven responses were coded with this theme across Campuses B, C, and D.

On campus B, two students stated they were proactive in finding a mentor and one student states they were not proactive and did not get a faculty mentor. One of them stated:

“I knew one of my mentors going into school, I had had that contact before I even started medical school so I just pursued that and had lots of meetings going into interviews and whatnot to get some of that final advice.”

The one student who was not proactive responded,

“It seems like there are several good ideas of things they want to do, but it just seems like a lot of it just kind of falls through the cracks. I know I personally was one of those who fell through the cracks, never heard anything from a faculty. They had a program where you can sign up for and get an attending to be your mentor. I signed up for that. I never heard anything, never received anything. And yeah, maybe it’s on me to be a little bit proactive as well, and go ahead and find someone which I eventually did in my third year, but it just seems like there’s opportunities to fall through the cracks and maybe they could shore those up a little bit better.”

Campus C had three comments related to the mentee needing to be proactive. Two students described that the mentee has the responsibility to engage in the mentoring relationship. One student on Campus C stated,
“I think like understanding the idea of mentorship is like the personal choice of whether you want to engage in it or not. So education on the values of it may be more beneficial than just even putting you with somebody because time, like educating somebody about the fact that this can be helpful and these are the ways it can be helpful, this is what you need to do, you need to seek one out on your own. I think that is going to lead to more productive relationships than just assigning somebody and seeing what happens from there.”

Another student on Campus C provided a variation by suggesting educating students on how to find a mentor rather than just assigning a mentor. This student stated,

“Right, but what I am saying is if we educate students on how to find a mentor within this medical setting that fits your needs rather than here’s somebody, hope you get along, see you later, I think we would have better results.”

On Campus D, one student’s comment was similar to those on Campus B and C. The student stated that a mentee needs to be proactive in meeting, finding, and getting to know new mentors. This student stated, “At the same time you have to be proactive and go up and introduce yourself after the meeting and get to know them that way.”

Students on Campuses B, C, and D described the need to be proactive in finding new mentors. Students recognized that if they were not proactive their needs might not be met. One student did suggest having some training for the mentee on how to find a mentor rather than assigning a mentor that doesn’t work.
Mentees suggesting training needed for mentors.

The fourth theme, mentee suggesting training needed for mentors, was addressed by the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme is defined as “Students want all types of mentors trained.” After the completion of the coding process, three responses were coded with this theme across Campuses B and D.

On Campus B, one student described that the pediatrics mentors may not know how to mentor. The student stated,

“The other idea that came up that I thought was interesting, that pediatrics thought about doing in the next day or two was training to be a mentor. We got some comments that they weren’t sure that the mentors really knew how to mentor.”

Another student on Campus B described that her mentor did not know how to mentor but she was definitely trying and recognized her limitations. This student stated,

“My mentor does not know how to mentor, it was very clear. But she is very, very nice and she has taught me a lot, but I know that she doesn’t necessarily know what she's doing because she tells me that and she does lead me to some places that I feel like she feels not necessarily equipped to guide me in the best way, but she still has been helpful to the best of her ability.”

On Campus D, the fourth year students had seen changes made in the mentoring program since they started their training. The mentors were together for all four years and the mentor wrote the Medical School Performance Evaluation (MSPE letter). The current fourth year students liked this idea even
though it would not happen for them. In order for the mentor to write the MSPE, additional training must occur. Here is the student’s response,

“I think what they have set up now is pretty good, I think they assign them the very first year, like somebody is going to write their MSPE at the end. And then they just kind of meet with that person for the whole four years. There’s actually, that person actually has a group of people to tell like a small group and then you kind of like, so you have that mentor and also the students above you within that group as a mentor as well. I think that is great. Unfortunately we didn’t have that, but that is good for the future.”

Students identified that mentors may not necessarily know how to mentor.

On Campus B, some students suggested that mentors should have some training. Students on Campus D have noticed changes in the mentoring program and recognize the value of having the same mentor over 4 years to write the MSPE letter and this change requires additional training. The need for additional training is consistent with the mentoring literature by Pfund (2006). At the University of Wisconsin-Madison, the mentors who went through this training provided time management strategies, expectations of the mentee, constructive feedback, and diversity issues to the mentee more frequently than non-trained mentors.

**Mentee suggesting multiple lengths of mentor relationships.**

The fifth theme, mentee suggesting multiple lengths of mentoring relationships was approached with the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme was defined as “students recognize a need to be proactive to develop mentoring relationships.” After the completion of the coding process, five responses were coded with this theme across Campuses C and D.
On Campus C, most of the comments centered on how mentoring relationships are time limited and how those should relationships end. One student on Campus C stated,

“I think in the third year it’s like your peers become your mentors because it’s not who, you know, like career choices or whatever, you are thinking how do I pass this exam, who took it last, okay did you get an A, tell me what you did, that’s what you and I think that happens a lot in medical school and that’s why I say my needs change but also my mentors, things change, situations change as you move along in practice. To me especially, like coming into Campus C I came and did an MPH for a year before I started my third year and I was completely removed from the medical school community, it was just like all of my needs completely changed and then coming back into it, it’s like oh, I need to be a medical student again. It was a big shift. And so I think like continuity is great but students need to, I think it is important to understand that mentorship is, just like most relationships, for a time. There are some relationships that are for your whole life and there are some that are just for a time and I think that’s important to remember.”

Another variation from this campus described how a mentee would like a relationship with their mentor to end. This student stated,

“I’ve never had anything like okay you can never contact me again, it’s over, we’re done, but I think there’s times where it’s like we are kind of working together for a common goal and when that common goal is achieved then there is like natural lessening of the intensity of the relationship. So I think it would be nice if the mentor said okay this is like, this is what I helped you get through and now we’re done, you can contact me anytime but our relationship is going to change. I think that would be really nice but no one ever said that to me. I’ve never said that to anyone I have mentored either so.”

On Campus D, the focus was on too many mentors. The student describes having changed a mentor every three months and how the relationship was too short to get any meaning out of it. The student on Campus D states,

“They changed our mentors like every three months for like a year. Every, it was like meet with this person, no, no, not any more, meet with this
person, no, no, no, meet with this like so at that point you’re just like I’m not meeting with anybody because all of it is going to be a wash.”

Students on two campuses, C and D, describe comments coded that multiple lengths of mentoring relationships are needed. Students on Campus D stated that three months was not long enough to make a mentoring relationship. Students on Campus C described having multiple mentors for multiple lengths of time depending on the goals of the relationship. The students on Campus C also stated a desire for closing the mentoring relationship by stating the goals had been achieved and the relationship was going to change.

**Response rates on survey questions.**

The sixth theme, response rates on survey questions identified from the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme was defined as “students state the type of survey questions affects if they respond to the survey.” After completing the coding process, four responses were coded with this theme only on Campus A.

Students on Campus A provided very detailed feedback regarding the quantitative web-based survey for this dissertation. Students stated that they preferred the open ended questions to be at the end and not at the beginning. Students stated they were intimidated by having the first question be open ended and did not complete the survey. A student on Campus A stated,

“I think with an open ended question is maybe a better idea just because if you opened it up and you realized you would have to think further about it, then you were initially intimidated, that might cause you to think you will do it later and then never get back to it. Whereas multiple choice, leading up
to an open ended question probably would be, because once you are drawn in you are going to finish.”

A variation on this theme was the importance of the email reminders and time of year the survey was distributed. A student from Campus A described opening the survey, detecting the first open ended question and closing the survey. It was only because he had received an email reminder and had some down time that they decided to complete the survey. The student states,

“I think I had initially opened it and then I thought oh my god I got to type something, then I closed it and then I think it came up again like you still have this survey. So I thought I don’t have anything else to do, let me go ahead and do it. Initially like I said I was like, I don’t want feel like typing, I got other things to do.”

The final variation to this theme is that students want the desire to complete the survey on their phone. A student from Campus A stated,

“I didn’t actually open my laptop during the third and fourth year, I was maybe on some computers here but I think if the ability to do it on your phone would be key and then to have multiple choice.”

Students on Campus A provided useful information to the researcher about open ended questions, the importance of the timing of the survey, and the ability to complete the survey on their phone. This information is similar to the statistics collected in the quantitative portion where thirty-three students agreed to take the survey but did not answer a single question. The focus group sessions identified that the first question being open-ended intimidated the students and therefore, they did not complete the survey even with a small monetary incentive ($5 gift card) provided.
Mentee recognizes one mentor cannot be everything.

The seventh theme, the mentee recognizes one mentor cannot be everything was identified from the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme is defined as “the mentee understands that one mentor cannot assist them with all of their needs and multiple mentors are needed.” After completing the coding process, two responses were coded with this theme on Campuses B and E.

On Campus B, a student described needing a resident mentor, an attending mentor, and a peer mentor. The student described it is unacceptable to focus only on one of these mentors. The student stated,

“Going back to that question where you asked if we had preference of a resident mentor or attending mentor or someone who is our same age, we need all of those. To just focus, or just to have an attending mentor, you’re losing out.”

On Campus D, a student describes structuring a mentoring program where students get access to a naturally developed mentoring relationship in addition to any assigned mentors. This student states, “If you could find a way for everyone to get a naturally developed mentor but structure it so that everyone gets one that would be perfect.”

Students on Campuses A and D identified that having more than one mentor was necessary during the focus group question related to mentoring contributing to their professional growth. Again this idea reemerged in the additional comment section for Campuses A and D as well. Kram (1985) stated that many students think that one mentor is better for them than a network of
mentors. Fourth year medical students participating in this study did not agree with the mentoring literature documented by Kram.

**Other.**

The eighth theme, other, was identified from the following question: “Do you have any further comments/suggestions about mentoring in medical school?” The theme is defined as “student shared personal mentoring experiences or did not offer additional information.” After completing of the coding process, fifteen responses were coded with this theme on across all campuses.

On Campus A, seven comments were coded as other. Most comments labeled as other on this campus offered personal experiences of mentoring. In one example, a student stated, “Then I would also have to have a peer mentor on top of that.” In another:

“I think it’s what you are looking for. I think I have done all of those and probably none of them worked. So if you value it and you define it the way you want, I think you will find it.”

There were not any key variations to the rest of the comments.

On Campus B, three comments were coded as other. All three comments were personal experiences described by students. An example from this Campus is as follows:

“I think we have something like that in place here at Campus B with student mentors, but again it’s hit or miss because you’re assigned a mentor and nobody ever asked you if you wanted to be a mentor, so you may send out an email or you may not even do that, you’re just assigned a student somewhere and you know, it’s kind of a difficult thing because I saw some students with mentors and they became great friends and like
they always used to hang out together, and so there was obviously value there. I saw others that never made contact with their mentees or attempted to make contact with their mentees and never received any responses, so some of the pitfalls with assigning a mentor, you got to figure out if the mentor wants to be a mentor first.”

Again there were no key variations on this campus.

On Campus C, there were two comments coded as other. One comment described being too busy to seek out a mentor in the third and fourth year of medical school. This student stated,

“I think that would be really good. And in third and fourth year I think you’re so busy third year it’s probably hard to seek out a mentor in school, and then your fourth year we are so busy in the first part of the year we are not going to find anybody, and the second part of the year we don’t care anymore.”

The second comment from Campus C offered a variation of the lack of follow up from administrators in evaluating the success of the program. This student stated,

“I think going back to your earlier question of just general advice for administration, I think when people start medical school, medical administrators are really gung ho about starting mentor/mentee programs and they will assign you a mentor and they will assign your mod a mentor but there is absolutely no follow up on any of that, so I think an understanding that unless you really harbor the mentorship at regular time intervals, I mean some of them will thrive, but most of them won’t, so just starting the program and assigning somebody a mentor is not enough.”

The importance of evaluating the mentoring program was documented as a key step by Caffarella (2002). Caffarella recommends evaluation of the mentoring program as a key step for continuous improvement and addressing new and changing student needs.
On Campus D, two comments were coded as other. One student remarks about their personal experience with Emergency Medicine Interest Group. This student stated,

“If I had gone into Emergency Medicine I would have. Because one of the physicians there like tried but I was like I’m not actually going to do that so I’m not wasting your time.”

Another student remarked about their specialty mentoring program and the lack of organization. This student stated, “So I think the specialty specific advising could be a lot more organized. Right now it’s not really organized.”

On Campus E, there is only one comment coded as other. This comment stated, “I think that’s not a bad idea. As long as all the mentors know each other.” However, it was not detailed or specific enough to know exactly with what the student agreed.

Many student comments labeled as “other” were recorded. A total of fifteen comments were coded in this manner. Students identified personal experiences, lack of follow up on the mentoring program, and being too busy to search for a mentor in the third or fourth year.

Additional comment summary.

While this section did not answer a specific research question, students used this opportunity to provide good information to the researcher regarding how to match mentees with mentors, the need for flexibility within the mentoring program, the need for mentors to be trained, the desire for multiple mentors with multiple relationship lengths, and how to increase participation in future web-
based surveys. This rich data should not be lost and needed to be analyzed as it carried so much data from across all aspects of this research project. This section did allow students to contribute information that they wanted to share about how their needs were or were not being met.

**Results Summary**

A total of eight research questions were addressed by this sequential explanatory mixed method study. These eight research questions are listed in Table 7 and 10 of this dissertation. This research study was conducted in two phases. In Phase I, a web-based survey was validated and administered to 432 fourth year medical students across five medical campuses. The preceding quantitative results were from 153 usable responses from fourth year medical students. The web-based survey provided data for all eight research questions.

In Phase II, a focus group session was held on each of the five campuses to investigate further the analysis from Phase I of this study. A total of twenty-nine students participated in the focus groups. The focus groups yielded qualitative results to research questions two, four, five, six and eight. An additional comment section was analyzed that addressed a wide range of topics not related to each individual research question. The data analyzed in Phase II helped clarify and explain the answers in Phase I of the research study. All research questions were answered in this study.
CHAPTER FIVE: SUMMARY OF FINDINGS AND IMPLICATIONS FOR PRACTICE

The purpose of this study was to assess the needs of 4th year medical students in regards to mentoring. This mentoring needs assessment was accomplished during two phases. Phase I data was collected through a validated, web-based survey and Phase II data was gained from a series of focus group sessions held at each participating campus. The participating campuses included three large state supported medical school as well as two regional medical campuses in the United States of America (USA).

Fourth year medical students were selected as the participants in this study as they have been through the majority of the curricula at each participating institution. This study aimed to answer eight research questions regarding the fourth year medical students’ perceptions of the mentoring that they received throughout their undergraduate medical experience. The eight research questions are as follows:

1. To what frequency have fourth year medical students had a mentoring experience?
2. If fourth year medical students have had a mentoring experience, within what type of mentoring did they participate?
3. What do fourth year medical students perceive as the needs related to mentoring for preparing the medical student during their academic
training (1\textsuperscript{st} two years), their clinical training (last two years), for their professional growth?

4. According to fourth year medical students, to what frequency did mentoring contribute to their preparation for their professional growth?

5. To what frequency have fourth year medical students indicate that they possess the characteristics to benefit from a mentoring program?

6. To what frequency do fourth year medical students understand characteristics of mentoring as essential for successful mentoring?

7. To what frequency have fourth year medical students experienced characteristics of mentoring?

8. What are mentee preferences in regards to demographic information (gender, ages, nationality, specialty, and sexuality)?

**Method Summary**

This sequential explanatory mixed methods research project was conducted across five medical school campuses to assess the needs of fourth year medical students as they related to mentoring. There was a total population of 432 potential respondents across the five campuses to the web-based survey. A total of 202 fourth year medical students agreed to participate in this phase of the research study. However, only 153 medical students’ responses to the survey were usable for a 35.4% response rate. Data from the web survey was collected and then analyzed. Phase II of the research consisted of conducting five focus group sessions. A single focus group session was held at each participating campus. A total of 29 fourth year medical students participated in focus groups.
held on their campuses. The findings from this study are presented in detail by research question in the Summary of Findings section of Chapter Five.

Summary of Findings

There are eight research questions in this study related to mentoring that this needs assessment sought to answer. Data were analyzed from both the web-based survey questions and the focus group transcripts. The summary of the findings for each research question appears in this section of the dissertation. It is important to note that not all breakdowns will be included in the discussion of each question; the omittance of data is because data may not have been statistically significant.

Research question one.

Research question one asked what frequency have fourth year medical students had mentoring experiences. Data to answer this question was collected during the quantitative portion of this study using web-based survey questions three, nine, and fifteen. The web-based survey revealed that students on most campuses identified having participated in some mentoring experience. The median number of mentors for traditional mentoring is two, peer mentoring is two, and group mentoring is zero. Participation in mentoring experiences was not unexpected as each campus is required by accreditation standards to have some type of advising/mentoring program on campus that students participate in. However, what was unexpected was the perception that students did not
participate in group mentoring. Each campus has a group mentoring program on their campus.

**Research question two.**

Research question two inquired about what types of mentoring experiences medical students had during their undergraduate medical education experience. Both the quantitative and qualitative portions of this study collected data on this research question. Data from the web-based survey comes from questions three, four, five, nine, ten, eleven, fifteen, sixteen, seventeen, twenty-one, twenty-two, twenty-three, thirty and thirty-one. Data from the focus group questions were from question four C.

Students identified in the qualitative portion of this study as participating in informal mentoring, formal mentoring, or both informal and formal mentoring. Fourth year medical students reported in the web-based survey as participating in traditional mentoring (p=<0.001) more than peer or group mentoring. It should be noted that 63.4% of students responded that they did not participate in a group mentoring experience, even though a group mentoring program was implemented on each campus.

The majority of students responded on the web-based survey that they identified their mentor/s on their own despite being assigned a mentor/advisor. This data indicates that most students participated in informal mentoring more than formal mentoring. For this study, informal mentoring is a mentoring relationship defined as a relationship that that is not assigned by the institution.
During the qualitative portion, students described a preference for informal mentoring. The preference for informal mentoring was not a surprise to the researcher because informal mentoring relationships yield less interpersonal conflicts and greater commitment from both the mentor and mentee, as documented in the mentoring literature by Noe (1988).

Students identified participating in traditional mentoring the longest (52.11%), followed by peer mentoring (40.85%), and then group mentoring (2.11%). It should be noted that each campus had group mentoring that spanned the entire undergraduate medical education experience; however not all students and assigned mentors participated throughout the four years. During the qualitative portion of the needs assessment, medical students identified having mentors prior to their enrollment in medical that continued throughout the undergraduate medical school experience.

**Research question three.**

Research question three pertained to the medical students’ perceived need related to mentoring during their academic training (first two years of undergraduate medical education) and their clinical years (last two years of undergraduate medical education). Data from medical students were collected using questions eight, fourteen, and twenty of the web-based survey.

Medical students identified that all three types of mentoring (traditional, peer, and group) could be helpful during their academic training. Overall, medical students identified that a traditional mentor in the first two years can be beneficial
by finding research projects, professional networking, developing career goals, developing a Curriculum Vitae, and refining test taking strategies. Medical students identified a peer mentor as assisting in finding organizations to participate, managing time, personal growth, and reflecting critically on the first two years of medical school. These perceived needs all were statistically significant at $p = \leq 0.001$ for traditional and peer mentoring using a Pearson’s Chi Square. Students identified group mentoring as helping build teamwork skills with other health professionals. This group mentoring preference was statistically significant using a Pearson’s Chi Square ($p=0.009$).

Students identified all three types of mentoring (traditional, peer, and group) as helpful in their clinical years. However, only traditional and peer mentoring was identified as being statistically significant. Students indicated that a traditional mentor can be beneficial during the clinical years by assisting with finding research projects, making ethical decisions, professional networking, developing career goals, developing a Curriculum Vitae, growing personally, reflecting critically, and working with teams in other health professions. The functions that a traditional mentor can provide a mentee are different in the clinical years. The students stated that a traditional mentor in the clinical years can help make ethical decisions, grow professionally, reflect critically, and help build teamwork skills with other health professions. These functions were not selected for a traditional mentor in the first two years of undergraduate medical education, but were selected for peer mentors and group mentoring. The medical students identified a peer mentor as beneficial during the clinical years
by assisting with refining test taking strategies, participating in organizations, managing stress, and managing time in the last two years. These perceived needs all were statistically significant at $p = \leq 0.001$ for traditional and peer mentoring.

When comparing students’ responses by campus, small variations were noted. For example, reflecting critically with peer mentors was identified as being helpful in the first two years on Campuses A, B, and D. Campus C was split evenly, and Campus E found reflecting critically being more useful in the last two years. It should be noted that Campus C has a small response rate (six students). Another example of differences by campuses pertained to group mentoring. Students on Campuses A and D identified group mentoring as useful to provide ethics guidance in the first two years and Campuses B, C, and E found it to be useful to provide ethic guidance in the last two years. Group mentoring also differed by campus in regards to time management. Students on Campuses A, B, D, and E suggested that group mentoring could be useful to help with time management. Campus C did not identify that group mentoring could help with time management. It is important to remember that Campus C only had six respondents. These variations could be explained by the variations in mentoring programs on each campus.

**Research question four.**

Research question four sought to answer whether mentoring contributed to the medical students’ preparation for their professional growth. Data from both
the quantitative and qualitative phases were collected. Data for this research question were collected from the web-based survey using questions six, seven, twelve, thirteen, eighteen, and nineteen. Focus group questions three A and three B were used to answer research question four.

Overall, students identified all three types of mentoring (traditional mentoring, peer mentoring, and group mentoring) as contributing to their own professional growth (see Table 20 in Chapter 4) on the web-based survey. When a Pearson’s Chi Square was conducted, organized by campus, one statistically significant campus was identified, Campus C. Campus C had two of five responses that stated traditional mentoring did not contribute to professional growth. It should be noted that the number of respondents on Campus C was small.

When students were asked about research question four in the focus groups, students reported that mentors do contribute to professional growth. Medical students describe mentors as filling roles such as a model, guide, general advisor, and counselor. The medical students described their mentors as having experience, broad networks, and expertise in a specialty. The medical students reported that having multiple mentors provided multiple perspectives on situations.

It should be noted that students on all campuses stated that mentors were not required to be successful in medical school and/or they could be helpful. Students described the structure of medical school by the amount of “book
learning” and the ways in which grades are calculated as reasons for a mentor not to be required. These results confirm the findings of Kalen et al. (2010); they reported that some of the 118 undergraduate medical students (in Switzerland) surveyed described mentoring as unnecessary. However, it should be noted that in the United States, many medical schools are turning to mentors to develop the attitudes, values, and behaviors of the medical student (Cooke, et al., 2010). Therefore, it is important to continue to study mentoring in medical education as this study found that mentoring may not be required but it does help the student with their professional formation.

**Research question five.**

Research question five inquired whether fourth year medical students possessed the characteristics to benefit from a mentoring program. Data were collected on question thirty-nine from the web-based survey and from questions four A and four B from the focus group sessions. Most students identified having the characteristics to benefit from a mentoring program.

Students identified finding their longest mentoring relationship on their own (113 students), taking responsibility for the mentoring relationship (116 students), being able to self-assess knowledge and skill gaps (116 students), and being able to accept criticism well (122 students). When comparing the results across campuses, only Campus D had a statistically significant result. Campus D indicated their mentor accepted their weaknesses better than any other campus.
However, data are sparse from Campus D and results may be unreliable due to a low sample size.

When asked about research question five, students responded they possessed the characteristics to benefit from a mentoring program. Students were able to describe being proactive and managing up. The students described taking initiative, seeking out informal mentors, and setting personal goals. The students described being honest, trustworthy, adaptable, and altruistic. Some students described taking advantage of all mentoring opportunities afforded to them while others described not taking full advantage. Many of those who did not take full advantage of the mentoring opportunities stated it was the structure of the mentoring program that affected their commitment to the relationship and success of the mentoring program. This theme was expected by the researcher as Sambunjak, Straus, and Marusic (2009) documented in their research that structural and institutional barriers can lead to dysfunctional mentoring programs.

**Research question six.**

Research question six sought to understand if medical students understand characteristics of mentoring as essential for successful mentoring. Both qualitative and quantitative phases of research were used to answer this research question. Quantitative data was asked in questions two and forty-six on the web-based survey and qualitative data was asked about in focus group questions one and two.
Medical students were asked to describe what a mentor meant to them on the web-based survey. Numerous responses (113 total) were collected, but students described mentors filling ten essential characteristics of a mentor. The most frequent characteristics described by medical students were guide (66 responses, 58.4%), advisor (59 responses, 52.2%), and expert (57 responses, 50.4%). Medical students described mentors as a teacher (30 responses, 26.5%), role model (24 responses, 21.2%), supporter (17 responses, 15.0%) and motivator (9 responses, 8.0%).

Medical students identified having low levels of need in making ethical decisions, refining test taking strategies, and managing stress on the web-based survey. Therefore, the medical students’ perception indicated at the end of the undergraduate medical education they possess these characteristics. A Chi Square was completed by campus and identified ethical decision making (p = 0.025) and managing stress (p = 0.024) were statistically different for Campus C. However, Campus C only had six responses so data are sparse. Over fifty-seven percent of all medical students identified at the end of their fourth year needing help in finding research projects, publishing research, professional networking, and developing career goals as areas of high need which meant they were lacking these characteristics. Over thirty-five percent of all medical students identified needing help at the end of their undergraduate medical education with building self-confidence, developing a CV, personal growth, and finding evidenced based medicine.
When asked about understanding characteristics of mentoring in the focus group sessions, students recognized professional characteristics are important in mentoring. These characteristics included experience in their specialty, expertise in their field of study, having broad networks, and being a career role model. The students also recognized certain personal characteristics that were important, such as investment of time, work/life balance, and religious interests. Medical students recognized that other peers with similar age, power, and experiences are important as mentors.

In this research, the participating medical students demonstrated they understood characteristics of mentoring for a successful relationship. They described personal characteristics, professional characteristics, and peers as mentors. Medical students identified essential characteristics of a mentor such as guide, advisor, expert, teacher, role model, and supporter and motivator. According to students’ perceptions, these components are all essential in successful mentoring relationships.

**Research question seven.**

Research question seven inquired whether fourth year medical students experienced characteristics of mentoring. Data for research question seven was collected using question number thirty-eight on the web-based survey.

Almost half of the students (59 students, 46.1%) reported not meeting with their mentor at least once a month and that they did not receive guidance on time management from a mentor (57 students, 45.6%). Medical students indicated
their mentors were knowledgeable in their content areas (126 students, 98.5%), provided constructive feedback (116 students, 91.4%) and gave valuable career guidance (120 students, 93.7%). Medical students did suggest their mentor/s demonstrated interest in the mentoring relationship (114 students, 90.4%) and their mentor challenged themselves to grow professionally (113 students, 89.6%).

The researcher anticipated that students sometimes did not meet with their mentor at least once a month because of the busy nature of faculty members. However, even the mentees who could not meet with their mentors monthly still felt the mentors were interested in the relationship and challenged the mentee to grow professionally.

Research question eight.

Research question eight inquired whether students had demographic preferences for age, gender, nationality, sexuality and specialty. Data for research question eight were derived from the web-based survey questions 40, 41, 42, 43, 44, and 45. In addition, relevant data were collected from focus group questions five and six.

During the quantitative phase, some students stated they had preferences for all demographic characteristics. The only dominant demographic characteristic that had preferences was specialty. A chi square by campus analysis revealed that Campus B responded with a preference for specialty more than any other campus (p=0.002).
Demographic preferences were also dissected out by male and female respondents. The only statistically significant finding was that males had a preference regarding their mentor’s sexuality (p=0.013). This preference was explored during the qualitative portion of the dissertations. A preference in sexuality was remarkably stronger in heterosexual males. Heterosexual males stated they could relate to heterosexual males better, males stated their personal values and world views must match their mentors, and males stated that they could not discuss personal matters with a mentor with sexuality different than their own.

During the quantitative portions of the study, participants responded that they had a preference for a mentor with a MD degree (86% of respondents). Medical students indicated the preference for the MD degree was being met (p=0.033).

During the focus group sessions, students described having preferences for age, gender, sexual orientation, nationality, and academic training. Medical students had preferences for non-demographic preferences such as availability, intrinsic mentor characteristics, and personal mentoring. It should be noted that students mentioned religion and politics numerous times in the focus group sessions; items which were not covered on the web-based survey. Preferences during the focus group sessions were specific to each individual and inaccurate to generalize across gender, race, ethnicity, and sexual orientation. Some students had very strong reactions physically and emotionally. The need to individualize mentor-mentee matching to accommodate for individual preferences
was documented in the mentoring literature as well (Syed, Goza, Chemers, and Zurbriggen, 2012). For example, the moderator observed one student whose tone of voice changed when asked about preference for a mentor’s sexuality. This student stated he could not respect a mentor who did not share the same world views as he did. The same student avoided eye contact with the moderator throughout the response and started to shake when asked about his preference for mentor’s sexuality. This description is just one example; more were described in Chapter 4. These preferences should be accounted for when designing a mentoring program.

**Additional comments.**

A question was asked at the end of the focus group sessions, “Do you have any additional comments regarding mentoring?” This question was not a research question, but the results obtained during this session should not be ignored. Participants during these sessions contributed ideas on how to match mentors with mentees, stated they lacked flexibility in their current mentoring program, suggested the mentee needed to be more proactive in the mentoring relationship, suggested training for mentors, recognized the mentees need more than one mentor, and described that starting with an open ended question on a web-based survey detoured them from completing the survey. The data in this study allowed students to contribute information they wanted to share about how their needs were or were not being met in the study and regarding mentoring.
Recommendations for Immediate Practice

Based on these research findings, several recommendations for immediate practice are discussed in this section. Fourth year medical students demonstrated throughout both phases of this study that they possess the characteristics to participate and benefit from a mentoring program during their undergraduate medical education experience. All of the campuses that participated in this study have had at minimum a formal group mentoring program and a peer mentoring program. This section will provide administrators and faculty members some ways to improve on current mentoring programs.

While numerous campuses provided mentoring programs to medical students, not all programs provided formal mentoring programs that touched each of the three types of mentoring (traditional, peer, and group). Medical students identified benefits of each type of formal mentoring in this study. Final year medical students identified that in the first two years a traditional mentor can help with finding research projects, professional networking, developing career goals, developing a CV, and refining test taking strategies. In this study, medical students described the use of the traditional mentor in the clinical years as providing assistance with the same roles along with the additions of reflecting critically, growing personally, and Interprofessional education.

In this research, participants identified peer mentoring as important. Medical students recognized that peer mentoring was essential in the undergraduate medical education. Medical students described peer mentoring as
beneficial because these mentors provide potential organizations to participate in, time management skills, personal growth opportunities, and reflection opportunities in the first two years. In the clinical years, medical students described peer mentoring assisting with refining test taking strategies, managing stress, managing time, and providing organizations in which to participate. All campuses in this study have a formal peer mentoring program of some kind. These programs received mixed reviews from the medical students and were dependent on the investment of peer mentors and the follow-up on evaluations of these programs.

Throughout this study, participating medical students suggested that one mentor was not enough to meet their needs. The mentoring literature has documented a preference for a network of mentors not just one-on-one mentoring (Kram, 2004). A third type of mentoring, group mentoring, can accommodate multiple mentors. Medical students perceived group mentoring as essential. All campuses have a formal group mentoring program on their campuses. However, numerous medical students throughout each campus did not recognize these mentoring programs as group mentoring. In the future, faculty and administrators need to fully educate the medical students about the three types of mentoring (traditional, peer, and group) and discuss where these mentoring programs are occurring on their campuses.

Fourth year medical students recognized the value of informal mentoring as essential to their growth personally and professionally. Several students suggested that these relationships were not accepted by administrators and
faculty members on their campuses. While informal mentoring is hard to evaluate and track (Taherian & Shekarchain, 2008), mentoring programs should be designed to allow for informal mentoring to occur and to make the process easier to gather information for evaluation of mentees and mentors.

Throughout the focus group sessions, participants provided additional perceptions that are useful to implement for mentoring programs. Flexibility is needed within any mentoring program to accommodate the mentees needs as it relates to several preferences. Many medical students suggested that they have changed their desired specialty of medicine as they progressed throughout the undergraduate medical education. Participants perceived that administrators and faculty members did not provide easy and time efficient ways to change their mentor in formalized mentoring programs. Students also described preferences for not only specialty but demographic information (age, gender, nationality, sexuality, and academic training) and non-demographic information (intrinsic characteristics, political affiliation, and religious beliefs).

The medical students provided a perception that mentors in these formal programs were not being trained. Medical students also stated that a few of them could be more proactive in their existing mentoring relationships. Both mentors and mentees should receive formalized training to help them maximize the mentoring relationships. To further maximize the mentoring relationships, mentors and mentees need scheduled protected time to meet, train, and interact.
Participants provided recommendations on research methodology to the researcher. Many students described being intimidated by starting a web-based survey with an open-ended question. The students suggested moving the open-ended question towards the end of the survey. This change would reduce students’ anxiety about the length and complexity of the survey. Many medical students suggested that the response rate on the survey would have been higher had this change occurred.

New Model of Mentoring

In the perfect world a needs assessment would have been completed before the creation of a mentoring program. This situation was not true of every mentoring program in this study. Due to financial contributors and alumni investment, starting a new mentoring program on many of the campuses in this study is not advised. However, recommendations for practice were described in the preceding sessions to improve upon those mentoring programs.

A new model of mentoring may be appropriate for select campuses in this study after many students were not able to describe the mentoring program, stated they did not participate in this required program, and stated there had not been any evaluation or follow up from faculty and administrators of the mentoring program’s impact. A proposed new model of a mentoring program based upon student perceptions is displayed in Figures 7 and 8. Figure 7 is a model of formal group mentoring.
This model assigns students into groups of up to eight. These eight students will be peer mentors to each other as they go throughout the four years of the undergraduate medical education journey. Students should have the opportunity to build relationships with each other during orientation to medical school and throughout the first semester. Students are then educated regarding the roles the peer mentors will play throughout the undergraduate medical education journey. For this model of mentoring, peer mentors will help with finding organizations in which to participate, managing time, and cultivating
personal growth. Students could suggest preferences for their group at the end of the first month of classes. Throughout this study, students stated their preference for mentors in which they selected and this time would allow them to get to know their classmates.

This process could be facilitated by using a match scenario where each student confidentially submits their requests for up to eight group members. Students are then assigned into groups of eight, accommodating as many matches as possible. Occasionally, there may be such major issues that a student desires to switch groups. This scenario should not be taken lightly, but given a compelling reason, students should have the flexibility to switch groups throughout the undergraduate medical education experience.

Once students have been grouped with their peer mentors, faculty mentors need to be selected. In this model, there are three faculty mentors for a group of eight students. These mentors should be made up of one PhD, one MD, and one interprofessional faculty member. These mentors can be selected by the group in multiple ways. Faculty can self-select in trios and the group of students can have a speed dating experience with each set of potential mentors. In this speed dating experience, the students can have up to 10 minutes to get to know the trio of mentors. Groups at the end of the event can rank their preferences. These group mentors should meet with the students once a week after being assigned. The group mentors should build relationships with their students and help them find additional advisors and coaches to meet their needs during the first semester of undergraduate medical school.
Weekly meetings are very important after the assignment of groups has occurred due to the intense transition from layperson to medical student. The weekly meetings would help facilitate the attitudes, values, and behaviors that need to be developed along this path. According to Cooke, et al. (2010), this professional formation development can occur in the form of longitudinal mentoring and advising. Therefore, two hours a week should be reserved for students and mentors to meet during the first semester. These meetings should be aimed at teamwork and team building activities. This time will allow the faculty mentors to get to know each student’s personalities, their strengths and their needs. The trio of faculty members will need time specifically allocated on being a group mentor, planning team building activities, and reflecting on students' needs. The group mentors will need to discuss the individual student’s needs with the appropriate coach and/or advisor as well as help facilitate introductions.

After the first semester, the group of eight students will still meet weekly, but the group mentors may start to allow the group more time to meet without them. The group mentors will work with the group to determine the frequency they need to meet throughout the second semester. The main assignment for the group mentors in the second semester is to assist students with finding and locating at least one research project, one research coach, continued transition to medical school, and a traditional mentor. The interprofessional group mentor would facilitate interactions with their group and other health professional students and professionals throughout the first two years of medical school.
By the end of the first year, medical students will have made many clinical, peer, and basic science connections through student-led clinics, clinical preceptors, research opportunities, course instructors, specialty interest groups, and networks from group and peer mentors. Students at the beginning of the second year can rely on and contact self-selected informal coaches and/or advisors electronically through a website. Students may select many types of informal advisors and coaches. These types of advisors or coaches can be, but are not limited to, a personal/life coach, a near-peer coach (medical student in years 3 and 4), resident coach, educational coach, research coach, specialty advisor, interprofessional advisor, and student affairs advisor. This information can be used to create an electronic database that can track and evaluate these informal relationships as they progress throughout the undergraduate medical education journey. Figure 8 illustrates these informal relationships for students A, B, and C. The remaining students would have the same types of informal relationships.

However, based on this research, what is most important during first semester of the second year is that a student must submit a request for a specific formal traditional mentor through this electronic database. Data from this study revealed that more students needed a traditional mentor for their third year. By selecting a traditional mentor at the end of the first semester of the second year, this situation allows for development of mentor-mentee relationship prior to the third year.
This traditional mentor will be someone the students have interacted with in the past and both parties must agree to the relationship. Medical students will have had a year to find and match with this person. The delayed matching process allows the students to develop a network of faculty members, accommodate for their demographic and non-demographic preferences, and to get to know the personalities of potential traditional mentors. The traditional mentor will have the following responsibilities: assisting students with locating research opportunities, professional networking, developing career goals, making ethical decisions, reflecting critically, and assisting with the creation of a CV. Students may change their traditional mentor as their own individual needs evolve, but notification should be made through the website/database. Literature provides evidence that electronic submissions provide more accurate and consistent data, allow for updates to be made easier, allow for flexibility of when forms are completed, and assist with work flow (Microsoft, 2014). It would be ideal to have this mentor be consistent for years 2, 3, and 4 of the medical school curriculum. This mentor would then be able to contribute to the Medical Student Performance Evaluation (MSPE) letter.
By the end of year two, students should be able to facilitate their small group without faculty there for a month at a time. In the third and fourth years, group mentoring should occur at least once a month. During these sessions, faculty and students can facilitate discussions of ethical cases, professional networking opportunities, work/life balance, interprofessional education, and stress management.
In the third year and fourth year, informal coaches, advisors, and traditional mentors will likely change. The medical students will likely change their minds about the specialty and residency that they desire. Students will have access to the website to make changes as needed. If the students change their mentors, coaches and advisors in the database, this information can be used for evaluation of the mentoring program and individual relationship. However, this model does require a director and coordinator to follow up on these relationships each semester and to design and administer semester evaluation.

Limitations

This study had several limitations. First, this study only sought fourth year medical students’ perceptions of mentoring. In addition, this study did not obtain faculty and administrators perceptions of mentoring. Administrators and faculty members have different needs that were not explored in this study. An additional limitation was the number of respondents to the web-based survey. While 202 students (46.8% of the population surveyed) agreed to participate in the research project, 49 responses were dropped due to completing less than half of the survey or inconsistent data. Therefore, only 153 respondents (35.4%) submitted usable data and this response rate fell short of the desired 267 respondents necessary to reach a confidence interval of 90%. According to Sivamalai, Murthy, Gupta, and Woolley (2011), response rates from medical students are around 33%. The response rate for this study did exceed the 33% mark. Additional medical schools throughout the country were contacted to participate in this, but they either did not respond or declined the invitation.
Another limitation of this study was that at each site for focus group sessions an administrator or staff member from that institution was present. The students may have censored themselves by not saying their true feelings because an administrator or staff was present. However, having an administrator on each campus in the focus group sessions was the only way the researcher could gain access to conduct these sessions at each campus. This situation was documented by Krueger and Casey (2009), where they stated if a second individual with local prominence or respected position is in the focus group session with the moderator, the participants may be reluctant to provide candid feedback.

The final limitation of this study was the researcher’s experience level. The researcher had not conducted a focus group session prior to this study and at times could have asked follow up questions on more comments that students described in the sessions. According to Beyea and Nicoll (2000), moderators must remain flexible to clarify responses or probe into a topic identified by a participant.

**Future Research**

This study should be duplicated in different medical schools throughout the nation to see if this needs assessment is valid and reliable. A larger sample size is needed to help increase the confidence interval of the quantitative portion of this study. Undergraduate medical education curricula and mentoring programs are unique on each medical campus. While each campus in this study
had a group mentoring program and a peer mentoring program, the structures of these programs, the participation and investment from students, faculty and administrators differed. This needs assessment should be administered on these campuses to see if it indeed works for all the different existing mentoring programs.

This study only sought the perspectives of mentoring from the fourth year medical students' points of view. The perceptions of mentoring from the administrators and faculty on these campuses need to be considered. Two mixed method studies should be designed to capture perceptions of these other two stakeholders in mentoring programs. These perceptions may change or alter the purposed model of mentoring recommended in this dissertation.

**Summary Statement**

This sequential mixed-methods research study investigated medical students' perspectives of mentoring through a web-based needs assessment and focus group sessions. This needs assessment was created, peer reviewed, and validated. The information obtained from this study was used to inform administrators of the medical students' perceptions of the mentoring programs on each campus. A list of suggested strategic recommendations was created for existing programs and a new model of mentoring was proposed for two campuses. In addition to the list of recommendations and the new model of mentoring, the significance of this study includes the validated assessment tool
that is able to inform administrators and faculty members about their perspectives of their mentoring programs.
References


Arrieta, J. (2010). Flexner report. Retrieved from https://docs.google.com/viewer?a=v&q=cache:dc_2wm_5CdEJ:www.u21health.org/meetings/monterrey2010/docs/Flexner_Report_Overview.pdf+&hl=en&gl=us&pid=bl&srcid=ADGEESidM-dyFSXpf0-J1Lq2HeR8hKrn-oCxILyQ_fGSBsKz0mvkPWqDaivBpWsGFDdb9LorVwJ7Tv-CMYC07PmQeTi4s03v4CRibW75ke-Zo-fWgo18_uDVwRxXjcZ3Lp-4iOQOQu&sig=AHIEtbQBfYH-8eAOrr1XcrkbRFDYycseYA


Appendices

Appendix A: Mentoring Survey

Medical School Mentoring Survey

Mentoring Survey Introduction

We are contacting you about a research study. This study is being conducted as part of a dissertation project at the University of South Florida, in collaboration with the __________ and the __________. The purpose of this study is to inform administrators about the perceptions of mentoring from 4th year medical students. The results will be used to develop of a validated assessment tool able to be used by other schools for program improvement. Your email address was obtained from The Associate Dean for Student Affairs at your campus.

This brief survey should take about 15 minutes to complete and your participation is completely voluntary and greatly appreciated. The study information will be kept in strict confidence and no identifiers will be collected. You can choose not to respond. If you start the survey, you may discontinue at any time. Your grade will not be affected whether you choose to participate or choose not to participate. You may choose not to answer any question which makes you uncomfortable. If you have any questions regarding this study, please contact Stephen Charles, PhD at scharles2@kumo.edu.

1. I will participate in this survey.
   - Yes
   - No

Define Mentor

2. What does the term “mentor” mean to you?

Number of Traditional Mentors

3. A traditional mentor is defined as someone who is of advanced rank that guides, teaches, and develops a mentee (Zerzan et al, 2009). How many traditional mentors did you have in medical school?

Traditional Mentor
Medical School Mentoring Survey

4. If you had traditional mentors in medical school, how did you identify them? (check all that apply)
   - □ Assigned randomly by institution
   - □ Assigned using criteria by institution
   - □ Identified on my own based on mentor's specialty
   - □ Identified on my own based on mentor's research interest(s)
   - □ Identified on my own based on mentor's demographic characteristics (e.g., gender, nationality)
   Other (please specify)

5. During what years of medical school did you have a traditional mentor(s)? (mark all that apply)
   - □ 1st year
   - □ 2nd year
   - □ 3rd year
   - □ 4th year

Traditional Mentor and Professional Growth

6. Did you perceive any of the traditional mentoring relationships as a key factor in professional growth?
   - □ Yes
   - □ No

7. Why or why not?

Traditional Mentor Helpful

Please answer the following regardless of your previous experience with a traditional mentor in medical school. Answer based on what you would have WANTED from a mentor.
## Medical School Mentoring Survey

8. How could a traditional mentor have been helpful to you in the basic science (FIRST TWO) years and the clinical (LAST TWO) years of medical school? (Please check all that apply.)

<table>
<thead>
<tr>
<th>Finding research projects</th>
<th>First 2 Years</th>
<th>Last 2 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Making ethical decisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing career goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refining test taking strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing Curriculum Vita (CV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating in organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing stress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balancing work/life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managing time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflecting critically</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working with teams in other health professions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Peer Mentor

9. Peer mentoring is a helping relationship among two similar experienced students pursuing career-related or psychological assistance (Kram, 1983). Using this definition, how many peer mentors did you have during medical school?

## Assigned Peer Mentor
Medical School Mentoring Survey

10. If you had peer mentors in medical school, how did you identify them? (check all that apply)
   - Assigned randomly by institution
   - Assigned using criteria by institution
   - Identified on my own based on peer’s career path
   - Identified on my own based on peer’s research interest(s)
   - Identified on my own based on peer’s demographic characteristics (e.g. gender, nationality)
   Other (please specify)

11. During what years of medical school did you have a peer mentor(s)? (mark all that apply)
   - 1st year
   - 2nd year
   - 3rd year
   - 4th year

Peer Mentor and Professional Growth

12. Did you perceive any of the peer mentoring relationships as a key factor in professional growth?
   - Yes
   - No

13. Why or why not?

Peer Mentor Helpful

Please answer the following regardless of your previous experience with a peer mentor in medical school. Answer based on what you would have WANTED from a mentor.
14. How could a peer mentor have been helpful to you in the basic science (FIRST TWO) years and the clinical (LAST TWO) years of medical school? (Please check all that apply.)

- Finding research projects
- Making ethical decisions
- Professional networking
- Developing career goals
- Refining test taking strategies
- Developing Curriculum Vita (CV)
- Participating in organizations
- Managing stress
- Balancing work/life
- Managing time
- Personal growth
- Reflecting critically
- Working with teams in other health professions
- Other (please specify)

15. In Group mentoring or mentoring circles, both students and mentor serve in mentoring roles (Darwin & Palmer, 2009). How many group mentoring circles did you participate in during medical school?

16. If you had Group mentoring in medical school, how did you identify them? (check all that apply)

- Assigned randomly by institution
- Assigned using criteria by institution
- Identified on my own based on group's specialty (e.g. surgery, family medicine)
- Identified on my own based on group's demographic characteristics (e.g. gender, nationality)

Other (please specify)
<table>
<thead>
<tr>
<th><strong>Medical School Mentoring Survey</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>17. During what years of medical school did you have a group mentor(s)? (mark all that apply)</strong></td>
</tr>
<tr>
<td>☐ 1st year</td>
</tr>
<tr>
<td>☐ 2nd year</td>
</tr>
<tr>
<td>☐ 3rd year</td>
</tr>
<tr>
<td>☐ 4th year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Group Mentoring and Professional Growth</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>18. Did you perceive any of the Group mentoring relationships as a key factor in your professional growth?</strong></td>
</tr>
<tr>
<td>☐ Yes</td>
</tr>
<tr>
<td>☐ No</td>
</tr>
<tr>
<td><strong>19. Why or why not?</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Group Mentor Helpful</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Please answer the following regardless of your previous experience with a group mentor in medical school. Answer based on what you would have WANTED from a mentor.</td>
</tr>
</tbody>
</table>
### Medical School Mentoring Survey

20. How could a group mentor have been helpful to you in the basic science (FIRST TWO) years and the clinical (LAST TWO) years of medical school? (Please check all that apply.)

- Finding research projects
- Ethics guidance
- Professional networking
- Developing career goals
- Test taking strategies
- Developing Curriculum Vita (CV)
- Participation in organizations
- Stress management
- Work/Life balance
- Time management
- Personal growth
- Critical reflection
- Teamwork with other health professionals

Other (please specify):

### Length of Mentoring

21. Which type of mentor did you have for the longest period of time in all years of medical school?

- Traditional
- Peer
- Group
- I did not experience any of these types of mentoring

### Mentor Description - Traditional or Peer

22. Was the mentor you had for the greatest length of time in medical school assigned by the institution?

- Yes
- No
23. Think about the mentor you had for the greatest length of time in medical school. How did you identify this mentor?

- Assigned randomly by institution
- Assigned using criteria by institution
- Identified on my own based on mentor’s specialty
- Identified on my own based on mentor’s research interest(s)
- Identified on my own based on mentor’s demographic characteristics (e.g., gender, nationality)

Other (please specify)

Please identify the mentor’s demographic information to the best of your ability.

24. Mentor’s Gender

- Male
- Female

25. Mentor’s Nationality

26. Mentor’s Age

- <30
- 30-39
- 40-49
- 50-59
- 60-69
- >70

27. Mentor’s Degree held

- MD
- DO
- MS
- MRE
- MA

Other (please specify)

28. Mentor’s Specialty


Medical School Mentoring Survey

29. Mentor's Sexuality

- heterosexual
- gay
- lesbian
- bisexual
- transgendered
- other
- unknown

Mentor Description - Group

30. Think about the mentor you had for the greatest length of time in medical school. How did you identify this mentor?

- Assigned randomly by institution
- Assigned using criteria by institution
- Identified on my own based on group’s specialty (e.g. surgery, family medicine)
- Identified on my own based on group’s demographic characteristics (e.g. gender, nationality)

Other (please specify)

31. For the group that was your longest mentoring relationship, which of the following characteristics was group membership based on? (mark all that apply)

- Gender
- Nationality
- Age
- Specialty
- Sexuality
- None of the above

Other (please specify)

Mentor Characteristic Preferences

Do you have preferences regarding mentor characteristics on the following items?
Medical School Mentoring Survey

32. Mentor's Gender?
- Yes
- No

Please explain why or why not

33. Mentor's Nationality?
- Yes
- No

Please explain why or why not

34. Mentor's Age?
- Yes
- No

Please explain why or why not

35. Mentor's Specialty?
- Yes
- No

Please explain why or why not
Medical School Mentoring Survey

36. Mentor’s Sexuality?

- [ ] Yes
- [x] No

Please explain why or why not

37. Which of the following degrees would you prefer your mentor to have?

- [ ] MD
- [ ] DO
- [x] Other
- [ ] MD PhD
- [ ] MS
- [ ] PhD
- [ ] MA

Please explain why

Mentoring Characteristics

Please answer the following based on your longest mentoring relationship from medical school.
### Medical School Mentoring Survey

#### 38. My mentor(s)...

- met with me at least once a month.
- were knowledgeable in their content area.
- gave constructive feedback.
- gave valuable career guidance.
- provided professional direction/guidance (e.g., Networking).
- recognized my lack of experience.
- included me in professional activities.
- provided guidance on time management.
- provided guidance on professional ethics.
- provided strategies for coping with stress.
- critically reflected on clinical cases with me.
- demonstrated interest in our mentoring relationship.
- motivated me to challenge myself professionally.
- suggested other resources when questions were outside their area of expertise.

#### 39. I...

- found a mentor's on my own.
- took responsibility for the relationship with the mentor(s) (plan meetings, ask questions, active listening and completed assigned tasks).
- demonstrated that I was able to self-assess knowledge and skill gaps.
- accepted criticism well.
- accepted my mentor's weaknesses.
- sought assistance from other resources when my mentor could not provide the information or guidance that was needed.
- demonstrated appreciation of mentors' time.
- discussed future steps for personal growth with my mentor.
- discussed when to end the mentoring relationship(s).

### Mentor Characteristic Preferences - No Mentor

Do you have preferences regarding mentor characteristics on the following items?
40. Do you have preferences regarding your mentor’s gender?

- Yes
- No

Please explain why or why not

41. Do you have preferences regarding your mentor’s nationality?

- Yes
- No

Please explain why or why not

42. Do you have preferences regarding your mentor’s age?

- Yes
- No

Please explain why or why not

43. Do you have preferences regarding your mentor’s specialty?

- Yes
- No

Please explain why or why not
Medical School Mentoring Survey

44. Do you have preferences regarding your mentor’s sexuality?

☐ Yes
☐ No

Please explain why or why not

45. Which of the following degrees would you prefer your mentor to have?

☐ MD
☐ MD PhD
☐ PhD
☐ DC
☐ MS
☐ MA
☐ Other

Please explain why
### Medical School Mentoring Survey

**46. Please rate your level of need in the mentoring areas below.**

<table>
<thead>
<tr>
<th>Area</th>
<th>1 low</th>
<th>2</th>
<th>3 moderate</th>
<th>4</th>
<th>5 high</th>
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<tr>
<td>Finding research projects</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Publishing research</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Making ethical decisions</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Professional networking</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Developing career goals</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Building self-confidence</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Refining test taking strategies</td>
<td>○</td>
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<td>○</td>
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</tr>
<tr>
<td>Developing CV</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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</tr>
<tr>
<td>Participating in organizations</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Managing stress</td>
<td>○</td>
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<tr>
<td>Balancing work/life</td>
<td>○</td>
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<td>○</td>
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<tr>
<td>Managing time</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Personal growth</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Finding evidence based medicine resources</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Reflecting critically</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Working with teams in other health professions</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### Respondent Demographics

**47. What is your gender?**

- ○ Female
- ○ Male

**48. What is your age?**

[ ]

**49. What is your marital status?**

- ○ Single
- ○ Married
- ○ Divorced
- ○ Partnered
- ○ Widowed
Medical School Mentoring Survey

50. How many children do you have?

51. What are the ages of your children? Mark all that apply.
   - N/A - I don't have kids
   - Less than 1 year
   - 1-5 years
   - 6-11 years
   - 12-16 years
   - Over 18 years

52. What is your sexuality?
   - Heterosexual
   - Gay
   - Lesbian
   - Bisexual
   - Transgender
   - Other
   - Prefer not to answer

Thank you!

Thank you for participating in the survey.

To receive you gift card and to learn more about participating in a focus group, please click the following link:

LINK HERE

The following references have been used in this survey:


Appendix B: Mentoring Survey Addendum

**Gift Card and Focus Group Sign Up**

Thank you for participating in our study.

1. Which of the following $5 gift cards would you like for participating in the survey?
   - [ ] Amazon.com
   - [ ] Starbucks
   - [ ] Target
   - [ ] I do not wish to receive a gift card.

2. Please provide your e-mail address to receive your e-gift card.

3. Are you interested in participating in the focus group?
   - [ ] Yes
   - [ ] No

Thank you.
Appendix C: Focus Group Script

Good (morning/afternoon/evening) and welcome to our session. Thank you for taking the time to join our discussion. My name is Stephen Charles. I am with the KU School of Medicine-Wichita and I am doing this research for my dissertation at the University of South Florida.

As a 4th year medical student, you have been invited to share your thoughts and opinions about mentoring you received during medical school. The purpose of this study is to inform administrators about 4th year medical students’ perceptions of mentoring. The results will be used to develop of a validated assessment tool able to be used by other schools for program improvement.

This group session will last approximately one hour. We will be audio tape recording our discussions and keep the tapes for five years, but your name will not be used in any reports related to this session and your confidentiality will be protected. This means that your identifying information will not be shared outside of this study and no one will know you took part in the study.

Now, let me share some ground rules for our discussion. Please remember that there are no wrong answers, only different thoughts and ideas. None of your grades will be affected by anything you say here today. You are free to leave at any time. We want to make sure that everyone is comfortable speaking up. All we ask is that you are respectful of everyone by: (1) listening to one another and (2) waiting until the person speaking has finished before you begin. Because everything said is important, we also ask that you try not to have a side conversation with your neighbor during the discussion. What you are saying may be something that everyone could talk about and could give us helpful information as well. In addition, it can be very hard to determine what is being said on the tapes if more than one person is talking at once.

Please remember to keep our discussion today private, and not share what we talk about today with anyone. Let’s begin

1. Medical education has often included mentoring as part of the transition from layperson to physician whether informally or formally. Based upon your understanding of mentoring, please describe what mentoring means to you?

2. At this point what do you consider are the most important characteristics for a medical school mentor?
3. Katie is a 3rd year medical student and does not have a mentor.
   a. Based on your expertise, does Katie need a mentor to be successful in medical school?

   b. What would you tell her are the major benefits of mentoring?

4. Katie wants to know if she does get a mentor:
   a) What can she do to get the most out of the relationship and time investment, based upon your experiences and expertise?

   b) Based upon your experiences, have you taken full advantage of any mentoring opportunities afforded to you? Why or why not?

   c) The mentoring survey in phase I of this study described three types of mentoring (traditional, peer, and group). Which type/types of mentoring have you participated in during your undergraduate medical education program?

5. What characteristics do you prefer in a mentor?

6. Here are the results of the mentoring survey in which many of you have participated. (handout of results will be provided)

   In general, what are you reactions to the following results:

   a. ______ % value gender

   b. ______ % value age

   c. ______% value nationality

   d. ______% value specialty

   e. ______% value sexuality

7. Do you have any further comments/suggestions about mentoring in medical school?
Appendix D: Research Grant Award

January 24, 2014

To Whom It May Concern:

On May 18, 2012 Stephen Charles was awarded a University of Kansas School of Medicine – Wichita Dean’s F&A Pilot Research Activity Funds Award in the amount of $1,000. The project submitted by Mr. Charles was titled “Perceptions of Mentoring from Fourth Year Medical Students.”

The purpose of this award is to provide departments with seed funds for faculty research projects which will include resident research or scholarly activity for the university.

Sincerely,

M. Michele Mariscalco, M.D.
Associate Dean for Research
Appendix E: Letters of Support

September 27, 2012

Stephen Charles, MA, MS, PhD
Director of Medical Education
Teaching Associate
Department of Medical Sciences
1010 N Kansas
Wichita, KS 67214

Dear Stephen Charles,

We have reviewed your proposed research project for your dissertation with the University of South Florida College of Education. We understand that you are seeking the support from the Department of Medical Sciences for this proposal by providing access to fourth year medical students for voluntary completion of a web-based survey and potential interviewees for focus group sessions.

We will be pleased to provide you the assistance requested and support the involvement of our offices in this project. We look forward to working with you.

Sincerely,

Sheila Crow, PhD
Associate Professor, Pediatrics
Assistant Dean for Curriculum & Evaluation
February 7, 2012

Dear Stephen Charles,

We have reviewed your proposed research project for your dissertation with USF College of Education. We understand that you are seeking the support of the Office of Medical Education and the Office of Student Affairs for this proposal by providing access to fourth year medical students for voluntary completion of a web-based survey and potential interviewees for a single focus group session on campus. We will be pleased to provide you the assistance requested and support the involvement of our offices in this project. We look forward to working with you.

Sincerely,

Giulia Bonaminio, PhD
Associate Dean for Medical Education

Mark Meyer, MD
Associate Dean for Student Affairs
February 27, 2012

Stephen Charles
Director of Medical Education
KU School of Medicine-Wichita
1010 N. Kansas
Wichita, KS 67214

Dear Stephen Charles:

We have reviewed your proposed research project for your dissertation with USF College of Education. We understand that you are seeking the support of the Academic and Student Affairs Office for this proposal by providing access to fourth year medical students for voluntary completion of a web-based survey and potential interviewees for a single focus group session on campus. We will be pleased to provide you the assistance requested and support the involvement of our offices in this project. We look forward to working with you.

Sincerely,

[Signature]
Garold O Minns, MD
Professor
Associate Dean for Academic and Student Affairs

GOM
February 16, 2012

Stephen Charles, MA, MS, PhDc
Director of Medical Education
Teaching Associate
Department of Medical Sciences
1010 N Kansas
Wichita, KS 67214

Dear Stephen,

I have reviewed your proposed research project for your dissertation with USF College of Education. I understand that you are seeking the support of the Office of Educational Affairs and the Office of Student Affairs for this proposal by providing access to fourth year medical students for voluntary completion of a web-based survey and potential interviewees for a single focus group session on campus. I am pleased to provide you the assistance requested and support the involvement of our offices in this project. I look forward to continuing the opportunity to work with you.

Sincerely,

Steven Specter, PhD
Associate Dean for Student Affairs
February 15, 2012

Dear Stephen Charles,

We have reviewed your proposed research project for your dissertation with USF College of Education. We understand that you are seeking the support of the Office of Educational Affairs and the Office of Student Affairs for this proposal by providing access to fourth year medical students for voluntary completion of a web-based survey and potential interviewees for a single focus group session on campus. We will be pleased to provide you the assistance requested and support the involvement of our offices in this project. We look forward to working with you.

Sincerely,

[Signature]
Appendix F: CITI Completion Report

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)
HUMAN RESEARCH CURRICULUM COMPLETION REPORT
Printed on 01/19/2014

Stephen Charles (ID: 3244726)
201 South Saint Francis
Apt 103
Wichita
KS 67202
United States

PHONE
3366840011

EMAIL
scharles2@kumc.edu

INSTITUTION
University of South Florida

EXPIRATION DATE
12/14/2014

SOCIAL / BEHAVIORAL INVESTIGATORS AND KEY PERSONNEL

COURSE/STAGE: Refresher Course/2
PASSED ON: 12/14/2012
REFERENCE ID: 9331785

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</tr>
</thead>
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<tr>
<td>SBE Refresher 1 – History and Ethical Principles</td>
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</tr>
<tr>
<td>SBE Refresher 1 – Federal Regulations for Protecting Research Subjects</td>
<td>12/14/12</td>
</tr>
<tr>
<td>SBE Refresher 1 – Informed Consent</td>
<td>12/14/12</td>
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<td>SBE Refresher 1 – Research with Prisoners</td>
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<td>SBE Refresher 1 – Research in Educational Settings</td>
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For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator
Appendix G: IRB Approvals for All Campuses

October 22, 2012

HSC Number: 220121540
Primary Investigator: Charles, Stephen PhD
Title: Perceptions of Mentoring from Fourth Year Medical Students
Protocol: March 2012
Sponsor: WCGME KBA Grant
Study Action: Amendment Request
Type of Review: Expedited Review under §46.110
Approval Date: HSC2 Approved
10/19/2012
Meeting Date: 11/19/2012
Expiration Date: 08/21/2013

Dear Investigator:
Your amendment request, detailed below, was reviewed and APPROVED by the Human Subjects Committee 2. Therefore, you are approved to incorporate the revisions listed below. Any subsequent revisions must be reported to, and approved by, the HSC2 prior to implementation.

Protocol Revision
Location of the study has changed from ___________________________. Protocol, survey introduction email and actual survey have been revised to reflect this change. Additionally, researchers were granted an exception by the Research Institute from collecting social security numbers for payment purposes.

If applicable to this amendment, a new copy of the stamped consent form that supersedes any previously approved consent form is enclosed. Use this most current HSC2 approved stamped consent to consent subjects and retain a copy with all research documentation.

If you have any questions or need assistance, please contact me at ___________________________ or ___________________________.

Sincerely,

______________________________
Jason M. Rush, RS, CIP
IRB Administrator
October 4, 2012

Stephen Charles, PhDc

RE: Expedited Approval for Initial Review
IRB#: Pro00007237
Title: Perceptions of Mentoring from Fourth Year Medical Students

Dear Dr. Charles:

On 10/4/2012, the Institutional Review Board (IRB) reviewed and APPROVED the above referenced protocol. Please note that your approval for this study will expire on 10/4/2013.

Approved Items:
Protocol Document(s):

Protocol 9-20-12 clean
Protocol 9-20-12 tracked

Consent/Assent Documents:

Combined Adult Online with Focus Group ICF granted a Waiver of Informed Consent Documentation

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review categories:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural
beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your study qualifies for a waiver of the requirements for the documentation of informed consent as outlined in the federal regulations at 45 CFR 46.117 (c): An IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either: (1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject’s wishes will govern; or (2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the [redacted] and your continued commitment to human research protections. If you have any questions regarding this matter, please call [redacted]

Sincerely,

[V. Jorgensen MD]

E. Verena Jorgensen, M.D., Chairperson

Institutional Review Board
October 22, 2012

Stephen Charles

RE: Approved Amendment Request
IRB#: MS1_Pro00007237
Title: Perceptions of Mentoring from Fourth Year Medical Students

Dear Mr. Charles:

On 10/19/2012 the Institutional Review Board (IRB) reviewed and approved your Amendment by expedited review procedures.

The submitted request has been approved from date: 10/19/2012 to date: 10/4/2013 for the following:

1. Change in consent form: Revised introduction email/online consent form dated 10/17/12.
2. Change in instruments: The introduction paragraph on the survey was updated to remove [redacted] and add [redacted]. Also, at the end of the survey participants are asked to click a link that takes them to another screen which asks them to specify which gift card they want, the email address to send it to and if they would like to participate in the focus group.

We appreciate your dedication to the ethical conduct of human subject research at the [redacted] and your continued commitment to human research protections. If you have any questions regarding this matter, please call [redacted]

Sincerely,

John Schinka, PhD, Chairperson
Institutional Review Board
9/11/2013

Mr. Stephen Charles

RE: Expedited Approval for Continuing Review
IRB#: CR1_Pro00007237
Title: Perceptions of Mentoring from Fourth Year Medical Students

Dear Mr. Charles:

On 9/10/2013 2:22 PM, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents outlined below.

Approved Item(s):
Protocol Document(s):
Protocol 9-20-12 clean

The IRB determined that your study qualified for expedited review based on federal expedited category number(s):

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.
We appreciate your dedication to the ethical conduct of human subject research at the [ Obliterated ] and your continued commitment to human research protections. If you have any questions regarding this matter, please call [ Obliterated ]

Sincerely,

[ Signature ]

John Schinka, Ph.D., Chairperson
Institutional Review Board
Institutional Review Board for the Protection of Human Subjects
Initial Submission – Expedited Approval

Date: November 12, 2012
IRB#: 1386

To: Dr. Sheila Crow, PhD
Approval Date: 11/07/2012
Expiration Date: 10/31/2013

Study Title: Perceptions of Mentoring from Fourth Year Medical Students
Reference Number: 378359
Collection/Use of PHI: No

Expedited Criteria: Expedited Category 7 - Low risk behavioral research

On behalf of the Institutional Review Board (IRB), I have reviewed and granted expedited approval of the above-referenced research study. Study documents (e.g. protocol, consent, survey, etc.) associated with this submission are listed on page 2 of this letter. To review and/or access the submission forms (e.g. application, review response form) as well as the study documents approved for this submission, open this study from the My Studies option, go to Submission History, go to Completed Submissions tab and then click the Details icon.

If this study required routing through the Office of Research Administration (ORA), you may not begin your study yet as per institutional policy, until the contract through ORA is finalized and signed.

As principal investigator of this research study, you are responsible to:
• Conduct the research study in a manner consistent with the requirements of the IRB and federal regulations 45 CFR 46 and/or 21 CFR 50 and 56.
• Obtain informed consent and research privacy authorization using the currently approved, stamped forms and retain all original, signed forms, if applicable.
• Request approval from the IRB prior to implementing any/all modifications.
• Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
• Maintain accurate and complete study records for evaluation by the HRPP Quality Improvement Program and, if applicable, inspection by regulatory agencies and/or the study sponsor.
• Promptly submit continuing review documents to the IRB upon notification approximately 60 days prior to the expiration date indicated above.

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

Sincerely,

[Signature]
Martha Jetley, MA, MSPH
Chairperson, Institutional Review Board
Initial Submission – Expedited Approval [cont'd.]

Study documents associated with this submission:

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Study Consent From

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Appendix H: Sample Student Survey Introduction Email

Greetings,

On behalf of Stephen Charles, PhD, I am inviting you to complete a survey for a study titled Perceptions of Mentoring from Fourth Year Medical Students (eIRB#7237). The results of this survey will be used to develop a validated assessment tool and to inform administrators on campus about your needs as it relates to the topic of mentoring. This research study is being conducted as part of a dissertation project at the [institution] in collaboration with the [collaboration].

Your participation is completely voluntary and your academic standing will not be affected whether you choose to participate or choose not to participate. You may also choose not to answer any question that makes you uncomfortable. For completing this 15 minute survey, you will be given a $5 gift card as compensation for your time. It may take up to 7 days for your gift card to arrive.

At the end of the survey, you will have the opportunity to sign up for a one time follow up focus group that will be audio-taped. The focus group session will be conducted by Stephen Charles, will be one hour in length, food will be provided, and an additional gift card of $25 will be distributed.

The anonymous surveys, without any linking information, will be stored in a secured web based system and the taped focus group data will be kept at the [location] in a locked office. The [Institutional Review Board] and the Department of Health and Human Services can review all research records to make sure the study is done properly and safely. You can contact the [Institutional Review Board] by calling [phone number] if you have any concerns.

To take the survey, please click the link below:
http://www.surveymonkey.com/s/3OF9L3F

Thank you for your time. If you have any questions regarding this study, please contact Stephen Charles, PhD at scharles2@ [email].

Sincerely,

Steven Spritzer, PhD
Associate Dean for Student Affairs
Professor, Molecular Medicine
ABOUT THE AUTHOR

Stephen C. Charles was born in Goldsboro, North Carolina and earned a B.A. Degree in Secondary Biology Education from Elon University. He also earned two masters degrees: one from North Carolina Agricultural and Technical State University in Adult Education (M.S.), and one from the Univeristy of South Florida in Bioethics and Medical Humanities (M.A.B.M.H.). He is currently an instructor for the Department of Medical Sciences at the University of Kansas School of Medicine – Wichita (KUSM – W). Stephen holds two administrative roles at KUSM – W, director of medical education and administrative director of the standardized patient center. Stephen has a voluntary assistant professor appointment at the University of Kansas School of Pharamacy – Wichita. He also serves as an Interprofessional Education Leader for the Mid-Continent Center for Healthcare Simulation. Stephen received Elon University’s Top 10 Under 10 Award in 2012 and Education Management Solution’s Pioneer Award in 2013.