WHO DO I THINK I AM?: EXPLAINING THE PROCESS OF WOMEN DECIDING TO APPLY TO MEDICAL SCHOOL

by

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ABSTRACT

This study describes the process used by women of deciding to apply to medical school. Based on applicant numbers, some geographic areas produce fewer women in the medical school applicant pool. From historical data provided by the Association of American Medical Colleges, this study explored the experiences of women as they decided to pursue this career.

A constructivist grounded theory methodology layered with a feminist perspective offered guidance in answering the question and in developing a substantive theory. Primary data were drawn through semistructured interviews with 16 women who were living in a geographic area in the western United States and who had considered medical school education. The first participants were selected from an open-sampling process that was later replaced by theoretical sampling to test various hypotheses that were emerging from these data. Trustworthiness was achieved through optional follow-up sessions with participants to review coding and preliminary findings.

The analysis produced a substantive theory that describes the process of deciding to apply to medical school for women. From this theoretical framework, four findings emerged. First, connectivity to multiple people was important for women. Second, ignoring subjective activities such as shadowing and conducting research for objective evaluation methods such as grades and test scores denied

women the opportunity to understand themselves as well as their future career. Third, women identified barriers that existed within the process. The fourth finding centered on the development of strategies to overcome barriers that resulted in women authorizing themselves to continue in the process of deciding.

All four findings inform practice, policy, and future research. First, practitioners should develop activities that connect women to women, encourage interaction with staff and faculty, and direct the focus to extracurricular activities. Second, this study offers information for policies that address listing premed as a major, increasing mentoring programs, and investigating the grading policy within certain disciplines. Third, the research methodology could be replicated to understand the experience of other underserved populations in medicine, to explore women's experiences in other geographic regions, or to explore women's experiences in other career fields dominated by men.

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CHAPTER 1

INTRODUCTION

My Personal Reality

It was a regular bimonthly meeting with Mary, the advising coordinator for preprofessional health students. It was spring 2005, and my position was Associate Dean for University College Advising. This period was the time of year when Mary updated me on the 2004 institutional application statistics for medical school provided by the Association of American Medical Colleges. In previous years, I found these particular data to be quite alarming. The state in which I was employed has historically produced a consistently low number of female applicants to medical school. The applicant pool from my institution also contained a low number of female applicants. Would applicant data for 2004 follow the same trend as in previous years?

As expected, Mary brought the 2004 medical school applicant data. One hundred sixty-four applicants were from this Rocky Mountain west university, but only 30 were women. Why was our medical school applicant pool only 18% female? How did these 30 women persist to the point of application when so many other women who enter this institution with the goal of applying to medical school do not obtain this goal? How could I lead an organization that did not attempt to identify ways to change this current phenomenon? Is there a model or strategy that

explains how women in this geographic area decide to apply to medical school?

I was consumed by these data on many levels since that meeting with Mary in May 2005. Yes, there is something I can do to understand the journey of women to medical school. I can develop a research study that focuses on this issue. The results will educate people and organizations about this process of deciding to apply to medical school for women. The results will be communicated through an inductive theory that is grounded in the lived experiences of women who have participated in the process of deciding to apply to medical school.

The above vignette illustrates a small portion of my personal journey that resulted in the identification of my research study. I developed a constructivist grounded theory study that explains how women decide to apply to medical school. Women who experienced this process of decision making provided the primary data source through semistructured interviews that focused on their lived experiences. I also drew upon my lived experience as a higher education administrator and academic advisor. I interacted with women who had identified this goal. This study reflected my interest to understand this process from a woman's perspective. This qualitative study also conveyed my interest in bridging my dual roles of researcher and practitioner in higher education to develop and implement strategies that impact students in achieving their success.

This research study, located within a feminist framework, advances not only identification of gender oppression within the process of deciding to apply to medical school but offers an emancipatory theory developed by women who have

made a decision concerning the medical school application process and live in a geographic area in the western United States. This study also impacts women in this area who are pursuing the goal of medical school admissions and a career as a physician.

In this chapter, I clarify my research direction. First, I provide national, state, and institutional data that support the need for research on this topic and clarify the process for applying to medical school. Second, I establish the significance of this study for women and for medical education in this geographic location. Third, I explain the main research questions, which suggest a constructivist grounded theory methodology that focuses on process identification (Charmaz, 2006; Creswell, 1998; Glaser & Strauss, 1967; Strauss & Corbin, 1998). I conclude this chapter with the limitations of the study. The goal of this chapter is to familiarize the reader with this qualitative study that explains the process of deciding to apply to medical school from a woman's stance.

Chapter 2 reviews previous literature that has focused on this topic and specific aspects of the medical school application process. The literature review offers guidance for the development of the study and analysis of data by locating the study within the context of previous research (Marshall & Rossman, 1999).

Chapter 3 explains the research design and my personal biography since I have selected to write this dissertation in the first person. Next, I familiarize the reader with the constructivist epistemology of knowledge, which is guided by a feminist framework in developing a grounded theory study. In addition, this

chapter focuses on details of sample selection, data collection, data analysis, trustworthiness, and ethical considerations as the study progresses in explaining this process. The goals of the first three chapters are to present a qualitative research study that is informed by scholarly literature, has been adequately designed to answer the research questions, and accommodates the emergent nature of qualitative research in addressing an issue that has significance not only for women but society as a whole.

Topic and Purpose

The number of women participating in higher education on a national level slightly surpassed men in 1979. By 2004, more than 9,885,000 women were enrolled in higher education compared with 7,388,000 men (National Center for Educational Statistics, 2004). However, this gender shift was not consistent in all areas of higher education. For instance, the matriculated population in U.S. medical schools in 2005 was divided into 51.5% male and 48.5% female (Association of American Medical Colleges, 2006a). Women have not surpassed men in medical school enrollment even though more women have enrolled in higher education since 1979. To contextualize this current enrollment situation in medical education, it is important to understand the medical school application process and numerical data that explain gender issues within the applicant pool for medical schools. The premed process pursued by students as they prepare to apply to medical school is a precursor to application, admissions, and enrollment.

In the following sections, I explain the premed preparation process and then focus on national, state, and institutional data. Both elements support this qualitative study within this geographic area. The preparation process has many locations for understanding the female experience of deciding to pursue or not to pursue medical education. These data suggest that women in this one geographic area are not applying and enrolling in medical school at the same rate as women in other states or on the national level. A study that offers an understanding of the female experience in deciding to apply to medical school in this western geographic area could offer guidance for women who identify medicine as a future goal.

Elements of the Premed Preparation Process for Application to Medical School

The application to medical school is a complex undertaking. Many individuals enroll at universities and colleges across the United States in anticipation of accomplishing the activities required for a medical school application. These individuals are referred to as *premed* students. Due to many factors, the nation's number of premed students has not been tracked. These factors include changing majors, the lack of premed designation within the major declaration field of higher education administrative software programs, and some individuals not pursuing this career track until they depart the higher education experience. My personal experience at one research university over a 4-year period has been that 25% of the entering class (i.e., 1,000) is considering a career in medicine and that female students comprise 40% of the new students within this

premed category (University of Utah Preprofessional Advising Office, 2006b).

The Preprofessional Advising Office at the University of Utah (2006a) published the following statement for individuals considering a medical school application:

> Preparation for medical school involves both academic coursework and extracurricular learning experiences, which demonstrate strong communication skills, leadership potential, commitment to volunteer community service, an understanding of research, and a knowledge and awareness of the medical profession and the role and responsibilities of a physician. The premedical college experience begins to prepare the student for the academic and personal rigors of medical education. (n.p.)

The statement actually identifies a number of elements that will be evaluated by a medical school within the application process. Students must research each medical school for specific application requirements, but there is a high probability that certain requirements will be universal to the process. A requirement that is universal is the premed curriculum. This curriculum is built on courses from disciplines within life and physical sciences. This curriculum requires 1 year of general chemistry with lab, 1 year of organic chemistry with lab, 1 year of general biology and 1 additional year of advanced biology, 1 year of physics, and 1 semester of math (Chanatry, 2006). Institutions might recommend specific courses to complement this science curriculum. Due to the sequential nature of these courses, it can take 2 or more years to complete this curriculum. In fact, many medical schools calculate a grade point average for this curriculum as well as a grade point average for the undergraduate degree (Chanatry).

Another example of a universal requirement for application to medical school is the standardized Medical College Admissions Test, also known as the MCAT. This exam evaluates knowledge within the physical and life sciences. Scores range from 1 (*low*) to 15 (*high*) in four separate sections, which evaluate verbal reasoning, physical sciences, biological sciences, and writing. Each medical school utilizes a specific range of scores and places a different emphasis on the importance of this exam for admissions to their program (Association of American Medical Colleges, 2003).

The premed student demonstrates specific academic knowledge within the sciences and participates in the MCAT as well as pursues leadership activities, develops professional relationships for recommendations, offers service to her or his community, and demonstrates knowledge of the profession by observing or "shadowing" a current physician. Some medical schools also require participation in hypothesis-based research (Chanatry, 2006). The process of preparing to apply to medical school is complex, rigorous, and time intensive for a premed student.

Medical School Application Data

In 2006, the Association of American Medical Colleges, an organization that tracks data for medical school applications and admission processes, reported that women submitted 49.3% of the applications to medical school compared with 42.6% of the applications in 1996 (Association of American Medical Colleges, 2008a). This numeric change appears to demonstrate a move towards parity for women with men as applicants to medical schools. However, a closer review of the

applicant numbers suggests a different conclusion.

In 1996, 20,028 women applied to medical school whereas 19,293 women applied in 2006. What allows the percentage of women applicants to increase by 6.7% is the comparison of women with men. Between 1996 and 2006, fewer men applied to medical school. The actual decrease over this 10-year period is 7,122 male applicants. One conclusion from these numbers is that nationally women have increased access to medical school enrollment due to the applicant phenomenon of fewer males to compete with during the admissions process. However, this national scenario does not exist across all states in the United States. Medical school applicant data, disaggregated to state and institutional levels, continue to produce signs of low female applicant numbers in some areas.

The Association of American Medical Colleges produces reports that disaggregate data in multiple ways. One report identifies state of residence and gender based on undergraduate enrollment. These data demonstrate the disparity among states. For example, the number of residents from Utah who applied to medical school in 2004 was 463, of which 74 were women (or 16%). However, data from Maryland indicate that 57% of its applicants to medical school are women (Association of American Medical Colleges, 2008b). Table 1 provides data for 3 years on states with the lowest and highest percentages of women applying to medical school (Association of American Medical Colleges). These data demonstrate the disparity among states within the United States.

Table 1

Association of American Medical Colleges Data: Lowest and Highest Percentages of Female Applicants, 2004 to 2006

State	2004	2005	2006
	Female	Female	Female
		Lowest	
Utah	74 (16.0%)	79 (16.5%)	87 (17.8%)
Idaho	37 (33.0%)	50 (31.0%)	49 (32.7%)
West Virginia	86 (39.6%)	90 (42.5%)	112 (46.5%)
Kentucky	181 (41.6%)	180 (42.8%)	195 (47.3%)
Alabama	196 (42.8%)	236 (49.3%)	244 (45.0%)
		Highest	
New York	1,402 (53.9%)	1,445 (53.4%)	1,437 (53.2%)
Massachusetts	436 (55.4%)	489 (56.4%)	490 (54.5%)
Virginia	509 (55.4%)	499 (53.4%)	474 (51.9%)
New Mexico	144 (55.6%)	130 (53.1%)	122 (51.3%)
Maryland	462 (57.0%)	510 (56.1%)	489 (53.5%)

Table 2 provides applicant data for other states in the intermountain western United States in 2004. These data demonstrate the disparity within a geographic region. For example, New Mexico has a greater percentage of women applying to medical school than Utah.

Table 3 documents applicant data from the University of Utah Preprofessional Office (2006b, 2008). These data indicate that applicants for the fall 2006 class represented 38 women and 131 men. These data are not unique to this 1 year, as Table 3 illustrates. A review of medical school applicant data from this institution illustrates, again, the gender differential that exists in various areas of the United States.

Gender differentials, such as the one described above, can impact gender diversity within a state medical school. One key source of a robust applicant pool

Table 2

Association of American Medical Colleges Data: Intermountain West, Applicants to Medical School in 2004

State	Female (% of total)	Male	Total applicants
Utah	74 (16.0)	389	463
Idaho	37 (33.0)	75	112
Wyoming	24 (40.0)	35	59
Arizona	228 (45.0)	274	502
Colorado	317 (50.0)	310	627
Nevada	84 (53.0)	74	158
New Mexico	144 (55.0)	115	259

Table 3

University of Utah Data: Medical School Applicants Since 1999

Year entering	Female	Male	Total applicants
1999	48	126	175
2000	40	130	170
2001	31	147	178
2002	36	141	177
2003	38	135	173
2004	30	134	164
2005	39	149	188
2006	38	131	169
2007	26	139	165

for a state medical school is the residents of the state. Residents find in-state institutions attractive due to the economic benefit of in-state tuition and proximity to support networks (Chanatry, 2006). The Association of American Medical Colleges (2006b) data include the number of applications, sorted by gender and processed by each medical school in the United States. In 2005, the University of Utah School of Medicine had the lowest percentage of female applicants in the United States at 29.9%. The Uniformed Services Medical School in Maryland, which provides physicians for branches of the U.S. military, with 36.6% female applicants, was the closest gender competitor. These data indicate that a shortage of women applicants in a state can impact gender diversity of a state medical institution.

The national data, demonstrating increased gender equity for medical school applications, are not apparent in various geographic areas of the United States. Women in certain geographic areas are not applying to medical school, which is documented in Table 1 and Table 2 through gender disparities in applicant data in various geographic locations. Table 3 evidences this phenomenon at the microlevel of one institution of higher education. By clarifying the national, state, and institutional data for medical school applications, I have demonstrated that there are locations in the United States that have significantly fewer women applying to medical school. In the next section, I identify how this research study offers an avenue to understand how women decide to apply to medical school. This study has primary relevance for geographical regions that experience challenges in developing a female applicant pool for medical school. This study is also significant for understanding how to maintain an adequate female applicant pool on the national level and adds to the literature that addresses women pursuing entry into traditionally male vocations.

Significance of Study

My analysis of national data indicates that women are important within the medical school applicant pool in 2008 due to a downward trend of male applicants. Another important factor is that one source for a strong applicant pool for a state medical school is generated from state residents (Chanatry, 2006). If these two factors are true, it would be logical to identify how women decide to apply to medical school in order to maintain and increase the number of women within the

applicant pool, especially in areas that have fewer female applicants than the national average. These data could be induced into a theory that would contribute to activities and policies that support women reaching the application stage for medical school. It is important to understand the significance of a study that explains the process of decision making for one population.

First, by locating this study in a geographic area that has a low percentage of female applicants to medical school, I provide a rich understanding of the experience from women who have experienced the process of deciding to apply to medical school. This study was conducted in a western geographic area. Some of the women have participated in the process of deciding to apply to medical school through a journey in an environment that places them in a minority. Other women have experienced the process of deciding in states and institutions that had larger female applicant pools. Data from these experiences offer an opportunity to identify the actions women are involved in that result in pursuing or not pursuing application to medical school. The small female applicant pool in this geographic area would indicate that this is an extreme environment for studying this topic, which will increase the rich detail of the lived experience.

The feminist framework within the constructivist epistemology established a research environment that allowed women to share their knowledge through their lived experiences. Their lived experiences were shaped by events that were oppressive and emancipatory to women as they pursued their premed preparations. The geographic location for developing a sample population coupled with the

feminist direction of this interpretive study offered insight at a rich, deep level concerning women's advancement for education in a male-dominated vocation. This study enhances the feminist conversation on career progression for women.

The participants were from a western geographic area at the time of study. Their lived experiences were pursued inside and outside of this geographic region. The understanding and knowledge from these women offer this geographic area as well as other locations in the United States an opportunity in the future to positively impact women who pursue premed studies to reach the point of medical school application. Developing a theory that outlines key concepts and their relationships within the process of arriving at the medical school application point could identify activities that higher education organizations should pursue to support women as they progress through this process of deciding on applying to medical school. If these activities were successful on the premed studies level, there is the potential to increase not only the female applicant pool on a state and national level but also the number of female medical students who apply to state-sponsored medical schools.

Even though this qualitative study focused on the state level, research in this area becomes critical at a national level for a competent pool of medical school applicants. The applicant pool to medical school has become more reliant on women applicants as fewer men apply. Historically, this phenomenon of women entering male careers is apparent in other educational activities and occupations. In 1870, only 10 women were secretaries in the United States because of the "mental

pressure" within the occupation. By 1980, the field was 95% female (Wolfe, 2006). In the 1990s, women moved from a token presence in veterinary medicine schools to exceeding male enrollment in many institutions (Gose, 1998).

Analysis of national data identifies stagnation in the number of women who have applied to medical school in the last 10 years. Research that explores the journey of female medical applicants in one geographic area could produce a theory or model that identifies challenges that discourage women and suggests actions that will support women in achieving their medical application goal. I do not suggest that this qualitative study is generalizable. Instead, I initiated a study that provides a thick, rich description for theory development. This study has implications for future research. This study could be reproduced in other states that are facing challenges in attracting a diverse applicant pool. The study could also be reproduced within other professional schools to understand what happens to a particular population as a student pursues the process of application. The coordination of data from other studies could contribute items for a national quantitative survey to develop a grand theory that is generalizable and addresses the stagnation of the female applicant pool.

By analyzing various pieces of data, I have proven that there is a need for this study. I have clarified the significance of this study on institutional, state, and national levels for the field of medicine. The research questions focus this study and contribute to the selection of a research methodology and design.

Research Questions

The research questions explore how women who have reached the point of application to medical school have negotiated their experience. Since admission to medical school is a long and rigorous process, the point for beginning this research is to accumulate and understand the stories of women who have negotiated both their educational and personal life experiences to arrive at a decision on applying to medical school. The research questions are as follows:

1. How do premed undergraduate women decide to apply to medical school?
2. How does the undergraduate experience influence women's progression in deciding to apply to medical school?
3. How do personal life experiences influence women's progression in deciding to apply to medical school?

These broad questions focus the study on the process of deciding and how the lived experiences of women influence this process. By focusing on the undergraduate experience, I explored with women aspects of the medical school application criteria (e.g., the life and physical science curriculum) to identify opportunities and impediments to the process of deciding. Further understanding of the life experiences beyond undergraduate education offers a more holistic approach to this study. Attributes of the process that culminate in deciding to apply to medical school for women could be present in many parts of each participant's life. The research strategy for this qualitative study, which I selected to identify the process

of deciding to apply to medical school for women, is constructivist grounded theory.

Framework, Epistemology, and Methodology

I selected the constructivist grounded theory research strategy (Charmaz, 2006) to explain the process women use in deciding to apply to medical school. A feminist perspective guided all aspects of this research study.

Feminist Perspective

A feminist perspective focuses on the identification of activities that are oppressive within the lived experience of women (Marshall & Rossman, 1999). This source of oppression is a location of knowledge for women and is socially situated with a particular location and context. The researcher is a participant within the study who is reflexive of each lived experience and her own lived experience as an attempt is made at understanding multiple realities and truths (Olesen, 2003). In addition to identifying oppression, this framework acknowledges the actions of resistance and advocates for action that emancipates women (Harding, 2004, 2006; Hartsock, 1983; Marshall & Rossman, 1999; Naples, 2003). This study identifies issues of oppression within the premedical studies experience. The theory developed from the lived experiences of many women empowers other women to resist oppressive acts and negotiate barriers to attain their medical school application goal.

Constructivist Epistemology

The scholarly work of Charmaz (2003, 2006) was significant to the development of this study and my development as a researcher. Charmaz's constructivist grounded theory identified knowledge as socially constructed based on individual context and location within her grounded theory research. In many ways, constructivist grounded theory moves away from the objectivist grounded theory methodology followed by Glaser and Strauss (1967), Glaser (1978), and Strauss and Corbin (1998). Objectivist grounded theory brackets the researcher outside the research experience so as to maintain an objective, unbiased location.

Charmaz (2003, 2006) stated that a researcher is subjective in her or his research agenda; acknowledging this bias is crucial as knowledge is socially constructed in a study. Another claim Charmaz made is that if one does not draw upon her or his lived experience as interaction occurs with respondents, limits will be placed on access to full understanding, which will negatively impact theory production. Basically, in constructivist grounded theory, the researcher utilizes her or his lived experience to insure full understanding of data drawn from participants. The "bracketing" of the researcher outside the research within objectivist grounded theory is employed as a way to avoid researcher bias and basically ignores the existence of bias. A third claim that Charmaz offered is that a constructivist grounded theory will result in revisiting and refining theories due to a belief in multiple realities that are jointly constructed and constantly emerging.

Through the writings of Charmaz (2003, 2006) as well as others, I was comfortable in referring to the researcher as "I," understanding that I enter the research with a background that impacts the research, and by understanding my biases and lived experience, I contributed to this study in beneficial ways (Charmaz, 2006; Coffey, 1999; Delgado-Gaitan, 1993; Ellis & Bocher, 2003; Lincoln & Guba, 2003; Punch, 1994). I share my personal biography in Chapter 3, which is critical to this research study due to my constructivist epistemology and feminist framework. In each chapter, I share the lived experiences of the participants and me through the vignette. Each vignette provides "voice" for all because information is shared and knowledge is constructed. This technique adds depth and detail as the study progressed and a theory emerged based on these data.

As Charmaz (2003, 2006) indicated, I, as the researcher, was interested in how my respondents interpreted questions and concepts and believed that I would discover many different experiences. The analysis of data in grounded theory provides a space for the researcher to abstract various experiences from data to codes to categories to concepts that form relationships and result in a substantive theory. Through Charmaz's guidance, I found grounded theory, as a methodology, to be compatible with a feminist framework and a constructivist epistemology in accomplishing my research goal of developing a theory for women reaching the point of medical school application.

Overview of Research Strategy

A grounded theory methodology has a process orientation (Strauss & Corbin, 1998). The goal was to develop a theory or model that explains how women decide to apply to medical school. The results of this study could impact future applicant pools for medical school by offering an understanding of the process women employ in deciding on their participation in medical education. Grounded theory methodology allowed me to utilize data as I gathered them to develop hypotheses and then test these hypotheses through future data collection. Having selected interviews as my primary source of data, I, along with the women who participated, worked together to answer the research questions without the bias of a preestablished theory or model. For developing and testing these participant-based hypotheses, I used two foundational elements of grounded theory: (a) theoretical sampling and (b) comparative analysis.

Theoretical sampling requires that respondents involved in the interview process be selected based on emerging codes and categories that impact theory development. Each participant in the sample contributes to developing the theory due to simultaneous data collection and analysis by the researcher. It is important to know who is in the participant sample pool to achieve theoretical sampling. Comparative method techniques utilize data drawn from women to compare and contrast experiences. This process is significant to the analysis stage as conclusions concerning the theory or model are finalized to address the research question (Charmaz, 2006; Creswell, 1998; Glaser & Strauss, 1967; Strauss & Corbin,

1998).

The participant sample for the study included women who participated in the process of deciding to apply to medical school within the last 10 years and lived in the study state at the time of data collection. Selection was based on theory development. The primary data sources were semistructured interviews that were transcribed and analyzed using the data management tool of Atlas.ti. The data analysis method resulted in identifying codes, categories, concepts, and relationships that contributed to theory development. Trustworthiness of the study was achieved through triangulation of field notes, reflexive journal, and optional member checking of results. In Chapter 3, I offer additional details on the research epistemology, design, and methods of this study. At this point, I clarify the limitations of this study.

Limitations of This Study

Marshall and Rossman (1999) stated that establishing the limitations of a study is imperative for quality research. These limitations situate the study so that false conclusions are not developed and the breadth and depth of the study are not overstated beyond the appropriate context and population. With this in mind, there were three specific limitations to this study: (a) gender, (b) race and ethnicity, and (c) geographic location.

This study addressed the female experience. Women were interviewed as the primary data sources. The goal was to understand the process women negotiate in deciding to apply to medical school. Grounded theory uses a comparative

method as a theory is developed from these data. Many options were identified for comparison, including men who apply to medical school. Historically, men have been in the majority for medical school applications and within the field of medicine. Even though it might be interesting to understand the male experience in applying to medical school, this experience is not located in the same place as that of a female. Historically, women have been discouraged from the practice of medicine (Quinn, 1992). Thus, the comparison between men and women in developing this theory of medical school application would be equivalent to comparing apples and oranges, as they become fruit. In both situations, the destination is the same but the journey has some distinct differences.

This study explored the experiences of women who were deciding to apply to medical school and currently lived in one geographical location. These sampling decisions were based on the need to understand more about the female experience since the actual number of women applying to medical school across the United States has not changed in 10 years. This study does not immediately impact the national application phenomenon but initiates research that could be expanded to address the stagnation of women applying to medical school on a national level. There are also issues of stagnation in men applying to medical school, but this study was focused on the female experience, which limited the population scope concerning gender.

The sample within the study included a wide variety of women from different racial and ethnic backgrounds. This study did not differentiate between

the journeys of women based on race, ethnicity, or both. The Association of American Medical Colleges has nationally normed data on women of color applying to medical school, but this information had not been disaggregated to state and medical school levels at the time this study was developed. Future research should refine this study to identify nuances among women with diverse demographic attributes.

Finally, this study was situated in a specific geographic location: one state in the western United States. The goal was to understand how women at the research site frame the process of deciding to apply to medical school. The results of this study are not generalizable to other states or national populations but offer direction for future research in other geographic locations.

The limitations of gender, race and ethnicity, and geographic location do not lessen the need for this study as evidenced in the literature review. I am fully aware that the theory was developed through the lived experiences of women in one geographical location. The acknowledgment of these limitations situated the focus for the current study and provided direction for a future research agenda within this topic.

Conclusion

This study explored the experiences of women involved in the process of deciding to apply to medical school. This study was informed by my lived experiences as an administrator responsible for the advising of undergraduate students and national data that identified certain geographic areas as experiencing

fewer women in the medical school applicant pool compared with men. My personal experiences coupled with national data indicated a need for this study.

The theory was developed through utilization of constructivist grounded theory. The method for primary data collection was semistructured interviews with women who had pursued premed studies. The research strategy was coupled with a feminist perspective to gather information drawn from the lived experiences of women and identified knowing from the standpoint of oppression. Simultaneous data collection and analysis require theoretical sampling to select future participants as codes, categories, concepts, and relationships emerge from these data. More detailed information on the researcher and the study is outlined in Chapter 3.

This study has implications for practice and policy, and it also contributes to the conversation on women participating in traditional male occupations by addressing one source of gatekeeping to a profession: entrance to training. On a state and institutional level, this study developed a theory that outlines a process that promotes goal attainment for women in premed studies. Nationally, this study promotes action in identifying activities that not only address stagnation in the female applicant pool but encourage further research activities so that the female applicant pool does not digress in the next 10 years. However, this study has limitations. This study does not focus on the male experience, the experience of women of color, or women living outside this geographic area at the time of study. These limitations provided this study with focus and offered avenues for future research within the topic of medical school admissions. Vignette 1 introduces a real

situation that exists for women in this geographic location. This study develops a theory and then communicates this theory for the purpose of change for women who have a goal of applying to medical school.

CHAPTER 2

REVIEW OF RELATED LITERATURE

A Reality Communicated Through Art

I walked through the third floor hall of the health sciences building, a new facility for applied and natural science courses, in March 2006. I stopped to reflect upon the murals that graced the walls outside the lounges established for undergraduate and graduate students in pharmacy, nursing, and medicine. As I observed the murals, I noticed many hegemonic symbols, which emphasized culture and reified positions within health care. People of color were represented as primitive. Florence Nightingale was the only recognizable woman, but her name had been misspelled. A picture of a male ecclesiastical leader was hanging on the wall of a sparsely decorated room. Next, I gazed upon the largest mural, which represented medicine. The mural had symbols that referenced empirical science and elements of the Hippocratic oath; a surgical scene was in the middle. In the mural, a group of five people are standing over a patient and are involved in the surgery. Four of the five people have eyes and arms with characteristics that suggest they are male. They are active in this medical process. The fifth person has no eyes or arms that are visible to the audience. This individual is smaller in stature even though the body is closer to the audience. This individual is a nurse and most probably female.

I walked away from the murals as if I had just driven away from an automobile accident questioning my observations and interpretations. Human nature results in people slowing down, looking at dented cars and injured people when accidents occur. I often question if what I think I observed was real. What did I observe from these murals in a building that houses the educational facilities for undergraduate women and men who have identified careers in health care? Did I see patriarchy that encourages marginalization? Were certain groups of people essentialized within certain roles? Did this set of murals reify inequalities and injustices that exist in the health-care system? Did the murals reify cultures that are present in one geographic location or in medicine? How would undergraduate women respond to these murals concerning health care as they traverse this corridor routinely within their educational experience? Would these murals impact women as they make decisions about future careers?

This chapter focuses on concepts and previous research that inform this study as a theory is developed that addresses the process of women deciding to apply to medical school. Aspects of the premed undergraduate experience could be examined from a feminist perspective to identify issues of hegemony, inequality, resistance, and oppression toward diverse applicants. As I developed this study, I utilized opportunities to discuss the research topic with colleagues and interested parties. I received instant responses from them on how women decide to apply to medical school. One set of responses centered on the connection of medicine to the discipline of science. Literature clearly demonstrates that the culture of science is

historically androcentric. Thus, careers with a strong association to science such as medicine could communicate hostile messages that discourage women from participating.

Another common answer to the research topic centered on the socialization of women to accept their role within the household and family. Women are praised for practicing altruism and avoiding "the cult of career" that is referenced later in Chapter 3 by 1 participant. The discipline of economics offers interesting insight into women, households, and choice through the concept of household altruism.

Chapter 2 expands upon these ideas from colleagues to offer a review of literature on the culture of science and the concept of household altruism. In addition to exploring these two concepts, a brief review of research that focuses on the issue of women pursuing a career as a physician is discussed to inform this study. Due to the nature of a grounded theory study being emergent based on data from participants, this chapter does not describe concepts or theories that are tested or explored with participants. This chapter explores concepts that offer breadth and depth as the study is developed and highlights previous research in this area (Charmaz, 2006; Glaser & Strauss, 1967; Strauss & Corbin, 1998).

The Culture of Science as Hegemonic

Schein (1992) defined culture as

> a pattern of basic assumptions that are invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new

> members as the correct way to perceive, think, and feel in relation to those problems. (p. 9)

This definition of culture provided a starting point to dissect the discipline of science and to address the concern that it excludes women through basic assumptions, values, and artifacts. If medicine has a close connection to science, does it replicate the principles of androcentrism?

The Medical School Admission Requirements 2007-08 states that premed students must demonstrate a specific academic knowledge within the natural and physical sciences before they can achieve admission to medical school. This curriculum is 1 year of general chemistry with lab, 1 year of organic chemistry with lab, 1 year of general biology with lab, and 1 year of physics with lab. Some medical schools utilize a grade point average from these courses as well as the overall grade point average from an undergraduate degree within the selection process (Chanatry, 2006).

In addition, the knowledge from science courses is evaluated through the MCAT. Individual scores for three of the four MCAT sections range from 1 (*lowest*) to 15 (*highest*). These three sections of the MCAT are verbal reasoning, physical sciences, and biological sciences. The fourth section, the writing sample, has a score range from 1 (*low*) to 6 (*high*). Identifying an acceptable score is dependent upon which medical school a student applies. How these scores are utilized in the admissions process varies from school to school (Association of American Medical Colleges, 2003). Through coursework and testing, science is clearly visible in the medical school admissions process. Thus, potential applicants

to medical school must demonstrate abilities in these disciplines. Individuals who do not demonstrate scientific knowledge are not viable in the medical school application process.

It is clear that the disciplines of science are relevant for the application process to medical school, but statements from government officials and female physicians identify potential challenges for women within science courses. These challenges have an impact on women progressing to the point of deciding to apply to medical school. In addition to issues that focus on gender, medical schools communicate a message by requiring science courses for the application process. The message suggests a common experience between science and medical education that may be problematic for women.

First, the government of the United States has identified a problematic relationship between women and the study of science and math. Education Secretary Margaret Spelling publicly identified this issue as a national challenge and placed it on the national research agenda (Wilson, 2006). Frequently, the issue of women not pursuing the disciplines of science and math is reported in the national press. What is embedded within these disciplines that results in low female participation? It is paramount to examine the sciences, as taught within higher education, to understand why women do not enroll in these courses and majors at the same rate as men. This question becomes particularly relevant since the preparation process for medical school situates the science curriculum prominently within the application requirements.

The second reason to focus on the culture of science within the undergraduate experience resulted from accounts by 3 female physicians describing their undergraduate experiences. In describing their experiences, each of them referenced their undergraduate experiences as they told their stories of becoming physicians. In the three separate excerpts, there was one commonality: Each woman referenced the science and math curriculum. Lori Arviso Alvord received the only "D" grade in her educational experience in calculus at Dartmouth (Alvord & Van Pelt, 2000). She immediately retreated from the sciences to finish a degree in psychology. A mentor encouraged her to return to the sciences in a postbaccalaureate experience. She excelled and achieved admission to Stanford Medical School.

Another surgeon spoke affectionately about her undergraduate experience, which included dating, sororities, and the organic chemistry course that resulted in a "B" grade and "stretched" her intellectually (Cassell, 1998). Finally, Firlik (2006), a neurosurgeon, talked about her decision to pursue a premed curriculum to insure career security that anthropology with a Japanese minor did not offer. She described organic chemistry and physics as painful experiences. These women could have unanimously spoken about mentors, leadership experiences, research projects, or community service events, but they did not. They focused their comments on their lived experiences with the science curriculum, the one aspect of the premed experience that is common for everyone who declares an interest in applying to medical school.

The third reason to focus on the science curriculum was that medical schools have established a relationship between competence in the sciences and success in medical school. As referenced above, every student who pursues a medical career must take a designated science curriculum. Some students incorporate this curriculum into their major while other students select a nonscience major. My assumption, based on the required premed science curriculum that is evaluated through the MCAT and also utilized within the admissions process through grade point average calculations, is that the uniformity of this requirement across the medical school application process communicates a message. This message identifies a connection or relationship between science and the study of medicine. In addition, this message communicates to undergraduates that the tenets of the undergraduate science curriculum are relevant to the medical school experience. This message also communicates that the culture of science permeates the medical school experience. Thus, it is important to understand this culture from a historical perspective so as to understand the relationship between women and science.

Locating Androcentric and Eurocentric Roots of Science

Benjamin (1993) observed: "Science is tightly bound to the popular hallmarks of masculinity-objectivity, rationality, truth, progress, exploration, and power" (p. 8). Bleier (1984) stated: "Science is the male intellect: The active, knowing subject. Its relationship to nature—the passive object of knowledge—is

one of manipulation, control, and domination. It is the relationship of man to woman, of culture to nature" (p. 196). Metaphors for science have grown out of the male experience. For example, science wrestles secrets out of nature, science conquers the unknown, or science is like hunting because one has to be in the right place at the right time and know how to use a loaded gun on the prey (Flannery, 2001).

Science is not only androcentric but historically located within a Western, eurocentric philosophy of the modern era (Schiebinger, 1993). The focus is on identifying the one real truth within a European framework of objectivity. Harding (2006) explained:

> The knowledge systems of other cultures, it was routinely asserted, were infused with magic, superstition, religion, and other forms of irrationalism and anthromorphism, making them unreliable guides to nature's regularities and their underlying casual tendencies, and leaving the thought of those cultures firmly lodged in the premodern. Such knowledge systems did not deserve the name "sciences," and because of their cultural elements, they could not be integrated into a unified or harmonious relation with modern Western sciences. (p. 5)

Harding further explained that some non-Western practices such as acupuncture and indigenous pharmaceutical practices have gradually been accepted, but there are many methods that are not seen as credible in the framework of value-free Western science. What is missing from this brief history of science is the participation of women and people of color and the metaphors used to reference their lived experiences. A historical review of the relationship between women and science depicts a deficit model concerning gender. Schiebinger (1987, 1993), a noted scholar on the history and philosophy of women in science, stated that from

the dawn of time women have been recognized as inferior for the scientific disciplines. Hippocrates and Aristotle defined women as weak natured, which justified lower social status and objectification within the development of knowledge. Bart (2006) quoted Aristotle as saying: "The woman has a deliberate faculty but it is without authority. . . . The man is by nature superior and the female inferior; the one rules and the other is ruled" (p. x). This philosophy carried through to the 18th century.

A minute number of women and Black men were allowed admission to scientific programs within European universities in the 18th century. Anton Wilhelm Arno (a native of Ghana), Dorothea Schloezer, and Dorothea Erxleben are all examples of diverse people who participated with success in the "educational experiment" of Enlightenment in Europe. Their admission to the study of science was only allowed after verification of excellence within the hegemonic requirements of classical music, astronomy, and mathematics. However, success at a university did not grant women passage to avenues of continued scholarship and recognition within the sciences as it did some Black men. Arno was extremely visible and accomplished in public service in Europe. The real acknowledgment of competence was membership in the scientific academies. Women would have to wait for 200 years before the first woman was allowed to join the Royal Society of Sciences in 1945. Men of color found limited acceptance as early as 1786 with the membership of Jean-Baptiste Lislet-Geoffroy to the Academy of Royal Sciences in Paris (Schiebinger, 1993).

In the mid-19th century, the group known as Social Darwinist claimed that a woman was a man whose physical and mental development had concluded very early. Doctors discouraged women's intellectual growth due to concern for maternal duties. A myth emerged that a causal relationship existed between a large brain and small ovaries, which threatened the reproductive process (Schiebinger, 1987). It is interesting not toe that men of power also adopted the language and discourse of Social Darwinism as a tool to exclude women from social conversations (Bleier, 1984; Gal, 1991). The treatment of women as an inferior gender continued into the 20th century with few exceptions. Achievements by women such as Maria Winkelmann in astronomy, Emilie Du Chatelet in physics, and Madame Curie in biology were marginalized within the disciplines of science.

This abbreviated history of science demonstrates that men are publicly foregrounded, and diverse people such as women and people of color are nonexistent as creators of scientific knowledge. Historically, women have been seen as inferior in the pursuit of science. The characteristics of science parallel the socially ascribed characteristics of White men with power. These characteristics are rational in thought, authoritarian in identifying the truth, and objective in nature. Science of the 21st century has failed to relinquish this empirical identity that is counterintuitive to women. One tool for reproducing the hegemonic messages in the disciplines of science is the classroom. By narrowing the focus to the college classroom, the thread of alienation will weave a blanket for understanding disengagement with science. This disengagement results in women electing not to

pursue careers that have a science orientation such as medicine.

The Classroom of a General Biology, Chemistry, or Physics Course

All premed students experience general biology, chemistry, and physics in a university classroom. Most medical schools will not accept test credits such as Advanced Placement from high school to insure that potential applicants have this common experience (Chanatry, 2006). It is difficult to stereotype these classrooms due to the range of higher education institutions in the United States. Science classrooms within institutions that fit the Carnegie Research Extensive category are often auditoriums that hold between 200 and 500 students engaged in chemistry, biology, or physics courses. In addition to the lecture performed by a tenured faculty member or teaching assistant, students might experience a small group tutorial. A laboratory experience is offered to supplement the classroom experience, and it is often scheduled for a different time period. The opposite experience might exist at a community college. The class size is often smaller, and the faculty facilitate the class lecture and laboratory experience. However, certain characteristics are common enough to draw upon for this analysis.

First, science faculties are predominantly males teaching a discipline that is historically identified as masculine. Second, the number of students in a science classroom impacts the experience for female students. Third, the knowledge rewarded through the educational evaluation process has not been socially constructed or reconstructed but received by the empty student receptacle from the

faculty fountain of knowledge (Freire, 2004). It is important to unpack these previous statements.

In 1994, women comprised only 34% of full-time faculty in higher education (Glazer-Raymo, Townsend, & Ropers-Huilman, 2000). The National Center for Educational Statistics (2004) confirmed that the majority of science faculties in U.S. higher education is male. Based on fall 2003 data, women faculty encompass 22.9% of full-time faculty and instructional staff in 4-year institutions in the natural sciences. Women, in general, are learning science that was created by men from male faculty members. Belenky, Clinchy, Goldberger, and Tarule (1997) focused their research on how women learn. In one research study, they shared an experience of an interviewee who was in an introductory chemistry course. She indicated in her interview that she had to believe the male professor because he had a PhD. She concluded that he was telling the truth. In addition to focusing on one truth, the language and examples were gendered as previous referenced metaphors for science demonstrated (e.g., wrestles secrets out of nature).

The learning environment of a science course may present another level of discomfort for women. Many introductory science courses are presented in a lecture format in a classroom that contains between 10 and 300 students. A large student enrollment results in less opportunity for dialogue. Belenky et al. (1997) indicated that dialogue is relevant for women as they learn.

Finally, the evaluation of science knowledge is centered on examinations with short answer formats. Students are often required to memorize facts and reproduce those facts through multiple-choice questions to demonstrate proficiency. The MCAT is an excellent example and a requirement for medical school admissions. Lab reports offer a written opportunity to reflect, but the traditional report is written in the third person to discourage contamination of the knowledge or facts from personal bias. Belenky et al. (1997) criticized this objective approach to learning since it ignores who the learner is and how the learner comes to know. For example, Belenky et al. emphasized that women learn through dialogue and reflection. Thus, a lab report that incorporates not only the "facts" but also the "personal experiences" to arrive at those facts would be appropriate for women. Barbara L. Whitten (Wilson, 2006), a physics professor at Colorado College and scholar of gender issues, stated:

> There's a disjunction often between what young women expect from college and what 1st-year science courses are like at big schools: the largeness, the impersonality, the pointless difficulty, the general meanness, the sense that we don't need you. Even very talented women coming in from high school, when they hit those things, suffer a huge loss of confidence and think: This is not what I want to do. (n.p.)

Navarro and Yakushko (2005) identified factors in the higher education classroom that communicate further inequality for women. Female students are less likely to be invited to interact with faculty on an informal level such as office hours. Invitations to discuss discipline-related topics during faculty office hours would engage female students. It would also honor their ways of knowing through

dialogue and would foster an opportunity for women to incorporate examples from their lived experiences that have application to the scientific subject (Belenky et al.). These references offer examples of how science and its communication tool, the classroom, are not centered on the learning styles of women and send messages that devalue women's way of knowing.

Collins (2000) defined ethic of care as "personal expressiveness, emotions, and empathy that are central to the knowledge validation process" (p. 263). This concept recognizes the uniqueness of the individual, accepts passion within verbal expression, and encourages the development of empathy to increase understanding for all contributors. Science, as a discipline, is defined as objective, rational, and androcentric, and it does not offer this ethic of care.

Belenky et al. (1997) were critical of science and male science faculty who treat students as knowledge receivers but do not attempt to encourage students to share their knowledge as a reciprocal relationship. They advocated a midwife-teacher paradigm described as "students giving birth to their own ideas, in making their own tacit knowledge explicit and elaborating it" (Belenky et al., p. 217). Students should be encouraged to be verbally expressive, share personal experiences to develop multiple realities, and respect the knowledge shared by others. Belenky et al. viewed students, both male and female, as partners in their knowledge acquisition and capable of creating new knowledge. They discouraged the standard metaphor of filling empty vessels with knowledge.

The ability to demonstrate empathy is another issue within the field of science that can be problematic for women. Empathy can be actively practiced to communicate understanding concerning the actual study of science or a situation that impacts the ability to participate in the process of knowledge acquisition. Navarro and Yakushko (2005) shared the story of Laura, a woman who had shown academic competency within the field of science at a community college. She was mentored to pursue a career that would require more science at a larger university. Her university encounter with science was much different from the community college experience. She explained that the male faculty sent signals of doubt about her abilities, especially after she shared issues of conflict between class attendance and child care. Her need for empathy in her situation and dialogue to identify solutions was met with silence and disinterest. Laura as well as other women who have identities of student and mother need their locations of knowledge to be acknowledged by science faculty to communicate belonging within the sciences.

Women need to witness science faculty creating knowledge within the classroom. The polished lecture is sanitary and maintains the objective truth of science, and it establishes an artificial environment that frustrates a student who does not understand the concept. By the faculty member engaging in deconstructing complicated topics through dialogue that is passionate and spontaneous with students, students experience the reciprocal nature of knowledge that exists in any discipline, including science (Belenky et al., 1997).

Alvord and Van Pelt (2000), Firlik (2006), physicians in the ethnography written by Cassell (1998), and Dr. Whitten from Colorado College all identified mentors as critical in accomplishing academic goals (Wilson, 2006). Mentors are people who engage with students to offer this ethic of care. They share stories of triumph and victory and empathize over frustrating situations. One of the keys to attracting diverse students to science is diverse faculty who offer this ethic of care.

The literature on the culture of science indicates historical roots in androcentric practices. Women were not welcome into this objective world. This culture of male objectivity has permeated the study of science into the 21st century and impacts female participation in science disciplines. This culture is evident in the pedagogical methods that focus on a monologue from a faculty member rather than a dialogue among students that facilitates the struggles that are involved with the creation of knowledge.

Household Altruism

Individuals who commented on the topic of women deciding to apply to medical school mentioned the multiple roles that women acquire as their lives progress. The household identities of partner and mother were often mentioned. Identification with these roles within the female life experience is common. An economic theory on household altruism offers insight into women's household identities, and it offers a point of explanation on how women's multiple identities can be conflicted, which has impact on career decisions.

Mish (2006) defined *altruism* as "unselfish regard for or devotion to the welfare of others" (p. 37). If I apply this definition to the household, it would mean that decisions made within the household are not based on the selfishness or individual priorities but on the good of the group or members within the group.

England (1993) and other feminist economists declared that the household is not an altruistic institution. Instead, male desires prevail over female needs, including career goals.

Strober (1994) stated: "Feminist economics is a rethinking of the discipline of economics for the purpose of improving women's economic condition" (p. 144). She questioned the traditional economic theories based on scarcity, selfishness, and competition rather than on abundance, altruism, and cooperation. If future economic study considered both parts of this dichotomous relationship, the result might provide great benefit to the discipline of economics and women.

Households are a significant topic within feminist economics. The reference to households as altruistic has a long history within economics. Folbre (1993) educated the reader on the work of Robert Owen. Owen saw himself as supporting women in their right to work and to have control of their lives but separated women into a world of work and household. For Owen, the household was concerned with altruism on all levels. Folbre classified Owen's work in the 19th century as a "paternalist." He identified female oppression in the workplace but found the home to be a location of altruism. Why would a woman or child not want to do something that reinforced the familial unit? He did not question this

servitude within the home. He advocated for women to be part of the industrial workforce and held true to the notion that the household worked within the framework of altruism or selflessness for all members.

Becker (1981), a modern economist, acknowledged the household as important within economics but characterized it as altruistic in nature. He did not acknowledge that the financial decision maker of a household, usually male, would pursue his own needs over the needs of the group. England (1993) disagreed with Becker and concluded that men are generally absent of altruism when making decisions for the household. England explained her view of feminist theory to be twofold. First, women have been excluded from activities that are traditionally seen as male such as a career in medicine. Male activities receive more value within society, which are defined as power, honor, and money. Second, women's activities are devalued within society. One way to examine this phenomenon is to look at national wage-gap data. Since women are often excluded from activities that have higher value or never receive the same value as males, they are not able to achieve incomes comparable to their male counterparts, and they are often left in situations of dependency within the family. In 2004, the U.S. Census Bureau documented the female-to-male earning ratio as 76.2; in other words, a woman will earn 76% of what a man will earn in a comparable position. These data indicate that there is a difference in earning potential that has links to education and gender (Fronczek, 2005). This situation can negatively impact the bargaining power of women inside and outside the household (Silbaugh, 2005).

One of England's (1993) critiques of neoclassical economics is "altruism at home" (p. 47). Becker (1981) and others argued that the head of a household (often male) is concerned with the welfare of the entire group, not just self. England disagreed with this assumption and found acts of altruism in the household to be minimal. She cited research demonstrating that the desires of a man prevails over a woman in a household, unless the woman is employed and has a higher salary than the man. She summarized that market issues for women (employment and salary discrimination) reduce their power within the household and limit their ability to insure that the household is altruistic (England).

Silbaugh (2005) discussed equating household work with commodities to increase not only the value of women's work but their bargaining power within the household. Some economists believe that this technique would devalue the contributions of the homemaker, but Silbaugh argued that items can have a price and still be priceless. He referred to examples of life insurance and the life of a person as one example where a price is offered, and it is not expected to represent the true value of a life. Others might argue that valuing or commodifying women's work in the home leads to the exploitation of women. This line of argument finds women involved in the work of the home for many other motivations beyond money. Are women socialized to believe that the work of the home is about love and care for the family? Such socialization allows those involved in the home economy to be valueless and possibly powerless, which impacts them as other household members make decisions, including economic.

Feminist economists are concerned with the household because of the location it holds for women. In microeconomics, the household is the location where women perform as they nurture their children. Female children observe early the dynamics of the male and female role in decision making. The household provides a location for the socialization of young women to observe their mothers and grandmothers as powerless over financial decisions. The lack of altruism by fathers and the lack of bargaining power by mothers can impact these young women as decisions are made concerning food, health, and education.

Feminist economists are deconstructing the notion of familial altruism to advance the economic plight of women within the household. These economists offer another avenue to understand why women may not pursue a career as a physician. First, women are socialized to be altruistic, considering the needs of the family over their own personal goals such as a career in medicine. Second, the socialization process that produces altruistic tendencies is initiated early in the home as young women watch their mothers make choices that reflect concern for the family over self. Research indicates that male members of the family do not make altruistic choices that encompass equity for all members of the household. Thus, learned altruistic values by women can curtail their pursuit of careers that are male oriented such as a physician.

I have examined two concepts, the androcentric culture of science and household altruism, as offering insight into the low enrollment of women in medical school in certain geographic locations. A literature review on the topic of

women applying to medical school offered suggestions for future research.

Related Literature on Women Applying to Medical School

Chapter 1 addressed female applicants to medical school on national, state, and institutional levels. Data for Utah over a 5-year period indicated that women from this geographic region were less likely to apply to medical school than women from other states (Association of American Medical Colleges, 2008b). Understanding more about women in medicine in Utah provided one location to begin the literature review,

A search that encompassed women, medicine, and Utah offered some interesting insight. A chapter was written in 1992 by Denise Callister Quinn, MD, in a book on Utah medicine from 1940 to 1990. In this chapter, which is 8 pages in a book that exceeds 500 pages, Quinn shared the historical roots of women in Utah medicine or "the hen medics" (p. 541). She concluded that Brigham Young, an early leader of The Church of Jesus Christ of Latter-day Saints in Utah, was accepting of women in medicine. He identified their role as necessary to perform procedures such as childbirth since it was not proper for a male doctor to participate in this type of female routine. She also concluded that Utah was progressive on its inclusion of women in medicine until the turn of the 20th century (Quinn).

Quinn (1992) credited the reduction of women as physicians in Utah to federal laws such as the 1910 Flexner Report, which changed the educational requirements for physicians, and to a growing movement that claimed women were

not physically capable of a career in medicine. With the advent of World War I and World War II, women were encouraged to become physicians, but this quickly changed when men returned from the wars. The civil rights and feminist movements of the 1960s and 1970s saw more women in the United States seeking admission to medical school, but the 1972 freshmen class at the University of Utah School of Medicine was only 16.8% female, which was identical to the 1990 entering class (Quinn). These low numbers could be attributed to a lack of accommodating the needs of women by medical schools, the lack of female physician role models for women, or both. Quinn reported that only 10% of the physicians in Utah in 1991 were female. Her brief review of Utah medicine indicated that the lack of women involved in careers as physicians permeated the 20th-century medical history.

Other literature and research on medical school applications and admissions processes have a national focus. Turner and Griffin (1982) reported a significant increase in the number of women pursuing medical education. In a 10-year period, starting in 1970, female enrollment had increased by 17%. Johnson (1983) indicated that more women were taking the MCAT between 1970 and 1980, but there were some interesting differences between men and women and their scores.

First, women were more likely than men not to continue the application process after taking the MCAT. This finding was relevant to my study since I included questions that referenced the MCAT. Second, women scored higher than men on the reading sections of the MCAT but lower on subtests that included

science knowledge. Johnson also addressed the increased retention of women in medical school by the 1980s. He attributed the increased retention of women medical students to increased peer support and the women's movement contribution of reduced androcentric elements of medical education.

Johnson (1983) concluded that women had made tremendous progress in application, admission, and completion of medical school by the early 1980s. He and the Delphi panel, which was formed to study issues in medicine, recommended specific changes to continue this progress for women. The first recommendation encouraged women liaison officers within the medical school environment to support and mentor women students. Second, women students should be directed by female faculty to seek out leadership positions and practice in male-dominated areas of medicine such as surgery. The third recommendation was to hire and promote women within the medical school faculty. The final recommendation was to publicize the achievements of all women in medicine. By 2006, some of these recommendations had become reality. For example, an organization called the American Medical Women's Association exists at most medical schools in the United States. This organization fosters support for female faculty and students as they achieve their goals within the medical field. The Association of American Medical Colleges (2006c) also developed a program called "Women in Medicine" to assist medical schools in achieving gender equity and offering direction for women as they identify their medical career path (Association of American Medical Colleges).

Yens, Benenson, and Stimmel (1986) tested short-term recruitment visits as a strategy to increase applicants who were females, minorities, nonscience majors, or a mix of all three characteristics. They concluded that short-term recruitment did not impact applicants in these categories but was met with enthusiasm by premed advisors since it was an important source of application information. One interesting point in this study focused on the need to interact with nonscience majors early before they selected other career paths. Research comparing science with nonscience majors shows equal progress in completing medical school. Even though Yens et al. did not address this issue with respect to women, the message of success for nonscience majors could be significant in moving women to the application stage if women are more likely to have a nonscience major due to the culture of science being androcentric (Yens et al.)

A review of statements by Mary Roth Walsh in 1977 that medical schools discriminated against women, which resulted in few female doctors, was tested with the Association of American Medical Colleges data. It was concluded that direct discrimination of women by medical schools had not occurred since World War II, but there was a concern that the male-to-female applicant ratio for medical school was 2 to 1. Walsh recommended additional research into the general socialization of women that affects their career aspirations as well as cultural values that impact the continuation of premed women to the point of goal attainment as a physician (Cole, 1986).

Perna (2004) described an explanatory model for decisions to enroll in graduate school that included an examination of professional schools such as medical schools and gender. Perna was interested in understanding graduate school decisions of women since women had exceeded men nationally on bachelor's degree attainment. The prescribed model could not explain gender differences in professional school enrollment for the 1990 dataset but encouraged more research that addressed social networks and resources found at a research-extensive institution as important for female enrollment in professional schools (Perna).

Research concerning the enrollment of women in medical school is situated within a national context and is not focused on a small geographic location. A review of literature within one geographic location that currently experiences low female application statistics indicated that women were historically encouraged to practice medicine in women's health issues such as pregnancy. Thus, female physicians had a purpose. However, by the turn of the century, women were not welcome in this occupation due to national regulations. Research in the 1970s and 1980s focused on support networks in medical schools for women who had enrolled but did not address the premed experience. Later studies indicated that limited interventions on the undergraduate premed level were attempted but not found effective, even though premed advisors indicated that this intervention was critical for women and students of color. This study identified the importance of connecting with nonscience majors as a way to impact admissions of women to medical school. The literature to this point does not focus on women within

premed studies in a geographic location for understanding the process of deciding to apply to medical school.

Conclusion

Even though the research is limited on the topic of women pursuing a medical education to become a physician, it does indicate that understanding gender decisions concerning application is important due to the historically low enrollment of women in medical school, which resulted in fewer female physicians. Even though this gender disparity among applicants has changed on the national level, there are geographic areas in the United States that continue to experience low female participation. Previous research also encourages future research on this topic and suggests investigation into the impact of the science curriculum on female enrollment. Research questions concerning socialization processes within certain cultures might also impact career goals for women. A geographical region with a low female applicant pool for medical school provides a location to further understand the female experience of deciding to apply to medical school.

CHAPTER 3

DESIGN AND METHODOLOGY

Reality for a Woman Who Has Pursued Application to Medical School

A research study has many key components. One important component is the sample, which are the people who are willing to share their lived experiences. The researcher focuses on the descriptions provided through these experiences to develop findings that answer the research question.

It was critical to know that women who had pursued the premed studies experience were willing to share this information with me. In August 2006, I began to identify women from one geographic area who fit the criteria of participating in the premed studies program. I contacted them via e-mail to see if they might have an interest in participating in such a study and if they had colleagues who might have an interest. I received only positive responses from 20 women to this e-mail inquiry. In their affirmative responses, some provided the names of others who would have an interest and 1 indicated that I should send this to the medical school student listserv to insure that everyone who wanted to participate could do so. The result of this query of interest not only identified people who would participate later but I also started to receive stories of women's lives. Let me share this response from Wei, a 3rd-year medical student.

> Hi Sharon,
> It is good to hear from you. Your dissertation will make a great impact. What a much needed, yet complex topic. Just yesterday, in my church group, the leader talked about the "cult of the career" and how women "now-a-days" need to be cautious as not to lose sight of their role and sacrifice (read: sacrifice of their career) for their family.

Wei continued much further into this event. She discussed culture within a geographic area, mentors, and the anxiety of being a female physician who is alone. She believed that these issues could drive women to careers other than being a doctor. Wei, as well as other women, have experienced the premed studies journey, and they want to describe their lived experiences.

This chapter outlines the design and methodology of this study. I begin by offering my personal biography, which locates me as an active member of this qualitative study. Next, the feminist framework and the constructivist grounded theory research strategy are explained as a foundational element of the study. Together, these elements justify the development of knowledge through the lived experiences of women, which includes oppressive acts, just as the one highlighted by Wei in the vignette above. Next, the research questions are introduced to establish parameters for the study. Now that the foundational pieces are in place, methods for sample development, data collection, data analysis, and research as an instrument concept are explained. The activities that address the issue of trustworthiness and rigor are critical for the study to be identified as legitimate and the findings reliable. Marshall and Rossman (1999) indicated that this chapter addresses the "how" question of a study. I identify how I will attempt to develop a

theory that explains how women decide to apply to medical school.

Personal Biography of the Researcher: The Researcher as Instrument

How does a researcher come to select a topic, an epistemology, and a research method? Understanding the answers to these questions is part of the reflexivity process of research. Lincoln and Guba (2003) defined "reflexivity as the process of reflecting on the self as researcher, or the human as instrument" (p. 283) within the research. It is vital for qualitative researchers to know who they are in relationship to their research pursuits and where they are located within the research (Charmaz, 2006; Coffey, 1999; Delgado-Gaitan, 1993; Ellis & Bocher, 2003; Lincoln & Guba, 2003; Punch, 1994). As I declared in Chapter 1, I am locating myself within this study and use "I" when I refer to myself. This location of research in first person is consistent with a constructivist, grounded theory study that is layered with a feminist perspective.

I began writing this section with two specific questions to answer: (a) What aspect of my lived experience do I need to tell the reader that will frame my development as a qualitative researcher who is active within her research field of higher education? and (b) Why do I have this passion for this research? Three facets of my life offer an answer to these questions. These answers are my interactions with my parents, my higher education experiences, and my career within higher education. By sharing these interrelated elements of my life, I clarify who I am within this research study.

Parents

My parents played a key aspect in understanding my passion for higher education. My father finished an agricultural high school program and was a truck driver who experienced a debilitating accident when I was 12 years old. It impacted his vocation and his health. My mother was a dental receptionist who accomplished many complex tasks within her career despite a much-delayed completion of high school. My family, residing in a rural area in Vermont, would be categorized as "blue-collar," and neither my maternal or paternal family had a history of college attendance. The key focus of many familial conversations that included sister, parents, and me was attending college and the importance of education to our futures.

I reflect upon these memories with admiration and astonishment. I admire my parents for encouraging my sister and me to achieve an educational goal, a bachelor's degree. I also realize how little information our family possessed to accomplish this goal. There was not a family history of education beyond high school, only one family friend attended an agricultural college, and the high school guidance counselors were not focused on familiarizing students with options beyond high school. Being the oldest, it became my responsibility to demystify this process.

Many stories float to the foreground as I think about this experience in my life. My pursuit of a bachelor's degree exposed some familial shortcomings. By age 17, I knew our family income and became acutely aware that I could not

attend just any college or university. I needed to find monetary resources such as scholarships and state and federal financial aid to support my attendance at an institution that was affordable. Many people would rely upon their state university system to provide that opportunity. In 1978, the University of Vermont was not an option for a competent but resource-limited Vermont resident. After a great deal of comparison shopping, I declined admission to Boston University for the University of Maine at Presque Isle. My parents were supportive of my decision and relieved that I did not see our family income as a barrier to our family goal of education.

The day we drove 12 hours to the campus for orientation was extremely stressful for us. The distance to the campus, the lack of understanding about the undergraduate experience, and the requirement to participate in "parent orientation" did not lessen my parents' belief that their daughters must have college degrees. Watching my father cry upon his departure from the campus meant a great deal but not as much as his words: "You can and must get this degree."

My Higher Education Experience

Tears were common for the 1st semester. This culture was different. Students did not seem to study much, they slept during the day, and faculty were not too interested in students. I was called to this special meeting within my 1st week of attendance to be told that I was different. I was a "first-generation" college student. The speaker went on to tell us that many of us would not graduate due to the educational backgrounds of our families. It would be important to

engage ourselves in campus activities, utilize tutoring, and seek out assistance when problems arise.

This label and this meeting were very discouraging to me. Was I destined to fail despite my best effort? I proceeded on with class attendance, found a part-time job for my work-study allotment, and met other freshmen; by the 6th week, I did not feel a connection to this campus. I called my place of work and told the secretary that I could not be at work next week. She asked no questions, which made that easy. I left messages for my faculty that I would not be in class. Then I called my family and told them I was coming home to visit. I took my first airplane adventure at 18. The next week was spent on discussions of whether I would withdraw, continue, or transfer.

In the middle of this week at home, I received a telephone call from the director of Student Counseling, Dr. Carolyn Smith. My supervisor for my work-study position was Dr. Dennis Dunham, vice president of Student Affairs. He noticed that I was not in the office that week and started asking why. The secretary indicated that I had called but she was not sure why I was not working. He then called the residence halls and faculty. My roommate reported that I went home for a visit. At that point, he had the director of Student Counseling, a woman who I knew through my work-study position, call me. She indicated that she and Dr. Durham were concerned, could they help, and that it was a good idea that I took a "short break" to visit my family. On Sunday, I flew back to Presque Isle, Maine, to complete my bachelor's degree. My parents were very supportive and listened

intently as I problem solved my situation. The call from Dr. Smith did not reference my first-generation identity but was addressed to the issues of Sharon. This period was the turning point in my undergraduate education that produced a bachelor's degree and a career in higher education that is focused on people and understanding each person's unique lived experience as he or she pursues education.

My Vocation

I completed my bachelor's degree in 1982 in the midst of a severe recession. It was bittersweet to leave the campus in Presque Isle but it was time to find employment, and I had hoped that would be in Vermont. While I focused on my job search, I lived at home and worked a temporary clerical position at the Experiment in International Living. In July, the vice president I worked for at the University of Maine called with an offer of employment in the Admissions and Financial Aid Office. By August, I had moved back to Presque Isle to be a student recruiter for the institution.

As a student recruiter, I visited high schools in Maine, New Hampshire, and Vermont to promote the Presque Isle campus and provide information on admissions and financial aid. I really enjoyed this position but found I was often involved in conversations reminiscent of my personal experience. High school students wanted to go to college but did not understand the institutional options, monetary resources, or processes for financial aid. I found myself spending a great deal of time not recruiting these students to Presque Isle but advising them about

their options for higher education and financial aid. I knew that the University of Maine at Presque Isle was a good school, but it was not the best choice for everyone.

In 1983, academic advising was still assigned to faculty. My personal experience with my faculty advisor was dismal until I had enough institutional knowledge to ask another faculty member to be my advisor. In general, new freshmen do not enter the institution with this type of institutional knowledge. Thus, I found myself advising many students during their freshmen year on courses and activities. It was a great activity for me because it insured that I knew the curriculum of the campus, and it provided a continuous face from the point of recruitment through the 1st-year experience for students.

It never occurred to me that, in the future, I would locate myself as a practitioner within the field of academic advising. In 1989, I was hired as an academic advisor at Weber State University. My next higher education employment experience started in 1995 at the University of Arizona as an academic advisor for undecided students. In 1999, I moved back to Weber State University as the director of Academic Advising and First Year Programs. In this administrative position, I continued to advise and taught a section of the First Year Experience course. In 2002, I was hired as an associate dean for Undergraduate Studies. This position is responsible for the administration of central advising but does not preclude me from individual student advising contact. The experiences of my students and staff inform my administrative role as I participate in the campus

community.

Connections Among Experiences to Produce a Qualitative Researcher

My lived experiences impact how I move through life and have made me acutely aware of the importance of honoring the lived experiences of others. My experience in higher education changed my life and my family's life for the better. Due to my personal history, I am motivated to assist others in understanding the benefits of education, in defining educational goals, and in achieving these goals.

My current administrative position is one of privilege within higher education. I have access to people and mechanisms that are involved in developing academic policies that impact educational goal attainment for people. As I observe the development of policy, I have noticed that quantitative data inform discussions and outcomes. Administrators such as me or other participants in the policy process who introduce data, which were qualitative in nature, are silenced. These data, which offered depth and breadth beyond the numbers, were identified as antidotal, just words. The numbers drove the decisions on future policy and practice.

My parents would always enter my consciousness just as a colleague would discredit comments made by others or me that were derived from these lived experiences of students. My parents' most basic premise is that education will positively impact one's life. Their encouragement to be a life-long learner as well as this continued irreverence for the lived experiences by certain privileged

administrators resulted in my enrollment in a doctoral program. Through this educational experience, I have acquired skills not only to appreciate the lived experiences of others, but I also understand how to organize the lived experiences of others to impact future directions in higher education.

As I thought about data collection, the words of participants, and analysis of data, I considered the concept of symbolic interactionism. Basically, I must be aware of the meaning that women who participate in this study might place on the different words. These meanings control how my respondents might act or respond, and they have been socially constructed through interactions with other people. They are the result of participating in an interpretative process (Blumer, 1969; Charon, 2000). Symbolic interactionism will influence how respondents answer the interview protocol, so I need to understand the meaning they give to certain words and how that meaning evolved for them. One example from the semistructured interview protocol is the word *involvement*. I might ask the respondents to tell me what it means to them and to explain the process of involvement through stories.

Punch (1994) discussed how the relationship between the researcher and the participants can produce a significant contribution to women's issues due to trust and commonality. Madriz (2003) indicated that interactions such as interviews are empowering for women due to group dynamics that identify common situations within their experiences of deciding to apply to medical school. The epistemological stance as well as the research methodology and feminist

perspective allows the researcher to be a peer in creating knowledge and sharing voice with other women through future actions by the researcher such as communicating the theory. These insights by Punch and Madriz on the power of data collection assisted me in making key decisions as I developed this study. Decisions on data source, data collection, and data analysis are outlined later in this chapter.

My location as a practitioner is now richer because I can develop research studies that explain and describe the students' experiences in their words. My dual role as a researcher and a practitioner will result in journal publications and conference presentations for higher education professionals that not only inform but also encourage action to positively impact people who have educational goals. This brief biography has provided some insight into my lived experiences. I know that the quality of my life has been enhanced by education. Events and people who honored my lived experiences and ignored "the data" on first-generation college students gave me encouragement to continue to a point when I could provide the same motivation for others. Respect and understanding for the lived experiences of others were the root of my epistemological focus for this research study. In addition, my personal biography not only explains my epistemological stance but also explains how I interact with my research participants as I position myself within the study and report the findings and what these findings mean to women who are deciding to apply to medical school.

Epistemological Focus

How shall I learn more about women who arrive at the application stage for medical school? One approach would be to elicit information from the human focus of this study, women, about the unit of analysis: the experiences involved in deciding to apply to medical school (Marshall & Rossman, 1999). For this qualitative study, I gathered information from female students who made a decision about applying to medical school. This approach followed a constructivist epistemology in which the researcher and the participants constructed knowledge as a team through lived experiences. In this paradigm, knowledge was interpreted based on a relationship between the researcher and the participants through various types of transactions such as interviews. The method(s) utilized to create this knowledge included dialectic and hermeneutic (interpretive) strategies that produce a creation and cocreation of knowledge (Lincoln & Guba, 2003). Charmaz (2006) incorporated the constructivist epistemology into grounded theory methodology, which created an opportunity to layer the research study with a feminist perspective that is explored further in this chapter.

Why would I select this philosophy of knowing? The axiology of constructivism values social emancipation and encourages participants to create the activity, information, or strategies that address their needs. The ontology (knowing what is real) of this philosophy believes that knowledge is constructed based on an individual's reality. Knowledge is local, and there are multiple truths due to the multiple experiences of the participants who create this truth (Schwandt, 2003).

Thus, it was appropriate to utilize the feminist framework with the constructivist philosophy to create a model or theory that explains how women decide to apply to medical school based on their multiple experiences.

Each story was unique to the women because it was their personal stories. These stories became data that I viewed through my lens for interpretation. My goal was to analyze these unique stories to look for concepts and relationships that form a model that has a meaning for women and other people who interact with women who are considering a career as a physician. Simultaneously, I recognized that my utilization of a feminist perspective within a constructivist grounded theory study acknowledges a worldview of multiple realities deciding to apply to medical school. This theory offers guidance to women, but it also shares the complexities of particular views and actions taken by women as they experience this phenomenon, the process of deciding (Charmez, 2006).

In addition to utilizing a constructivist epistemology, I also draw upon a feminist perspective to guide the study. This perspective focuses on the identification of activities that are oppressive within the lived experience of women. This source of oppression is a location of knowledge for women. In addition to identifying oppression, this framework advocates for action that emancipates women through their own lived experience that produced knowledge and resistance (Harding, 2004, 2006; Hartsock, 1983; Marshall & Rossman, 1999; Naples, 2003). By overlaying the feminist perspective on the constructivist grounded theory, I identify situations that women found as challenging in their

lived experiences. Obstacles, barriers, and challenges impact decision making concerning goals and also impact knowledge acquisition. The feminist framework offered guidance in developing a theory that identifies current androcentric practices within the premed studies experience and promotes dialogue between the researcher and participants to create avenues of change that are empowering for women.

Methodology and Design for Constructivist Grounded Theory Research

A grounded theory methodology has a process orientation (Charmaz, 2006; Creswell, 1998; Strauss & Corbin, 1998). The researcher focuses on information shared by participants, which describes how they accomplished an action. My goal is to develop a theory that explains how women decide to apply to medical school. Ground theory methodology requires me to utilize these data as I gather them to develop hypotheses and then test these hypotheses as I interact with additional women in the sample. By utilizing constructivist grounded theory, the women and I collaborate to answer the research question without the bias of an established theory or model. For testing these hypotheses, I used a foundational element of grounded theory, which is theoretical sampling. This element required that I interview women with different demographic characteristics to test hypotheses that emerged through analysis. This process was significant for theory development since each progressive interview offered additional description and detail that enhanced the developing theoretical framework and addressed the research

questions (Creswell).

Glaser (1978), Glaser and Strauss (1967), and Strauss and Corbin (1998) contributed greatly to the development and understanding of the objectivist grounded theory methodology. As I stated earlier, I will utilize the work of Kathy Charmaz. Charmaz criticized early theorist in limiting grounded theory to a positivist or postpositivist philosophy that is objective and distances the researcher from the respondents and data in order to find a "Truth." She stated that a constructivist philosophy centered on the social construction of knowledge through dialectic methods produces rich results in the form of emergent theories grounded in data (Charmaz, 2003).

As stated in Chapter 1, I identified Charmaz's (2003) arguments concerning a constructivist paradigm in grounded theory to be relevant to the research that I conducted for this study. In review, she clearly stated that a researcher is subjective and must clarify all biases. She discouraged a researcher from bracketing herself out of the research. Understanding between the researcher and the respondents was crucial. Both parties draw upon their lived experiences for clarification, dialogue, and awareness to achieve a mutual understanding. The researcher and the participants collaborated continuously to arrive at the findings. Findings evolved through dialogue because constructivism believes in more than one truth that emerges from multiple realities. The meaning of the findings developed theories that are dynamic and accommodate new data. In conclusion, she stated that the constructivist epistemology increases the value of the grounded

theory methodology in explaining a process due to multiple experiences contributing to developing the results (Charmaz). In this study, I accomplished these aspects of constructivist grounded theory through reflecting on who I am within this study and conducting interviews that were purposeful in creating understanding between the participants and me. In addition to interviews, I invited participants to review my findings and offer further comment. These activities insured that I was working collaboratively with women as I answered the research questions.

I agree with Charmaz's points and believe my lived experience, as a woman who advises premed students, impacted how I proceeded through the research process. I was also interested in how my respondents interpreted questions and concepts and believe that I discovered many different experiences through engaging the women to communicate the meaning of their lived experience. As the interviews progressed, I increased the cocreation of knowledge by asking women to describe certain concepts or processes. This technique created shared understanding and meaning about the activities within this process. For example, as I interviewed more women I asked them to describe the ideal premed advisor, to define competition through stories in their lived experiences, and to explain techniques they engaged in to understand self. Even though each answer was unique, there were commonalities that resulted in descriptions of concepts such as connectivity and avoidance.

Women also used similar words or descriptive words, such as checklist and "Who do I think I am?" which became *in vivo codes* for theory development. Constructivism was an active element of this study and appeared in a subtle form due to confidentiality requirements. Women did not gather in a room as is a common element of constructivism, but coconstructed the findings through sharing rich data with me. I became a medium for merging these data through analysis to produce findings that women confirmed at later meetings and e-mails. The analysis procedure of grounded theory allowed me to abstract these varying experiences to a point of a substantive theory or model, but I also understood that this model might not "fit" all women since their individual experiences must be honored as unique, and there are multiple realities that lead to multiple truths.

Grounded Theory Question

The research questions had a process orientation to address how women make a decision about life issues, such as a career as a physician. The questions are as follows:

1. How do women decide to apply to medical school?
2. How does the undergraduate experience influence women's progression in deciding to apply to medical school?
3. How do personal life experience influence to women's progression in deciding to apply to medical school?

The questions focus on explaining the process of deciding to continue in professional education to achieve a career in medicine. Since attainment of medical

school admissions is a long and rigorous process, the point for beginning this study was to focus on the process of deciding to apply to medical school. Grounded theory focused on accumulating and understanding the stories of women who have negotiated this process through life events, including their higher education experiences. Based on this research strategy, the answers to the above questions are grounded in the answers of the participants. Analysis of the stories results in a rich description that explains the process of deciding based on the female experience, which initiates a theoretical framework.

I selected the constructivist grounded theory within a feminist framework to accomplish the identification of a theory or model that explains how women make decisions about one type of professional education. This choice of research strategies accomplished answering the questions by utilizing specific methods for sampling, data collection, and data analysis, which are explained in the next section.

Methods

Sampling

The issue of whom and how many participants to have in a grounded theory study is complex. Creswell (1998) indicates that this type of research study will have 20 to 30 participants. This is an interesting statement since Glaser and Strauss (1967), Strauss and Corbin (1998), and Charmaz (2006) indicate that the sample needs to be sensitive to the development of categories, concepts, and theory. Thus, the participant sample started with open sampling but developed into theoretical

sampling based on analysis and coding which lead to testing of hypotheses in selecting participants. Snowball sampling also occurred because participants were asked to recommend other women to participate in the study. The actual number of participants was the result of saturation of data within the categories and concepts that lead to a theory. The development of the theory drives the sample. Details on these sampling techniques for this study are provided below.

The first participants were selected from an open sample. After three interviews were complete, the open sampling technique was replaced by theoretical sampling to test various hypotheses that were emerging through coding (Creswell, 1998; Glaser & Strauss, 1967; Strauss & Corbin, 1998). Characteristics such as undergraduate major and type and location of undergraduate institution were considered as the women were selected for the interview. The range of characteristics among the women added definition and density to categories and relationships.

Another sampling method used to increase the number and scope of participants was snowball sampling. After I finished interviewing women, I asked if they could recommend other people to contact (Creswell, 1998). This method elicited more potential participants which was important for utilizing the constant comparative method and theoretical sampling. These snowball sampling techniques evolved into theoretical sampling as I identified the need for certain types of respondents to add definition and density to categories and concepts in building the theory.

Grounded theory utilizes a constant comparative stance to develop theory. I selected women who attended different types of higher education institutions, studied varying academic disciplines, and lived in different geographic locations. Interviews with these women allowed me to understand each individual premed experience and also look across the experiences as I pursued theory development.

A research university in the western United States was contacted for permission to advertise the study to women who were considering application to medical school or women who had applied to medical school. This university is located in a geographical location that has a dominant religion, is politically conservative, and the majority population is Caucasian. Table 4 indicates that the lived experiences of many women in this study extended beyond this geographic region. This higher education institution granted permission and advertising began in February 2007 for participants. By June 2007, 16 women had participated in the study. One participant had not applied to medical school and 15 participants had applied and were in medical school. Table 4 describes characteristics of the women while maintaining confidentiality.

All of my participants were women who have multiple roles that were honored within this study. The obligations of these women go beyond their educational environment to their homes and communities. These women offered their time, a precious resource, as they shared their lived experiences and offered feedback on the findings of this study. Thus, I offered reciprocity to my participants by offering a safe interview and focus group space and food or

Table 4

Characteristics of Women

Born in study state	Bachelor's from institution in study state	Race/ethnicity	Public/private institution of higher education	Major(s) for bachelor's degree
Yes	No	Multiethnic	Private	Art history
No	Yes	Caucasian	Public	Exercise and sports science
No	Yes	Latina	Public	Psychology
No	Yes	Caucasian	Public	Biology
Yes	No	No response	Private	Biology and Spanish
No	No	Caucasian	Private	Biology
Yes	Yes	Asian	Public	Chemistry
Yes	Yes	Caucasian	Private	Biology
Yes	Yes	Caucasian	Public	Communication
No	No	Caucasian	Public	Communication
Yes	Yes	Caucasian	Public	Biology
No	Yes	Caucasian	Private	Chemical engineering
Yes	No	Caucasian	Public	Biochemistry
No	Yes	Latina	Public	Communication
Yes	Yes	Caucasian	Private	Art and chemistry
No	No	Caucasian	Private	Economics and biology

beverages. These are small gestures of appreciation that are ethical and appropriate within this qualitative study (Marshall & Rossman, 1999).

The approval of this research project from the Institutional Review Board was obtained before any students were contacted for participation. The Institutional Review Board proposal included an informed consent statement for signature of each participant (see Appendix A).

Data Collection

Before I move directly into data collection and analysis, I want to reflect back on researcher as instrument since it is critical in these sections. I entered this process with many concerns. One significant concern was whether I should curtail my role as an advisor and administrator as I conducted this research. How would I negotiate these multiple identities as I conduct this study? Is it ethical for me to ignore the knowledge I have from my other roles if it will positively impact one of my participants? Does this type of knowledge transmission change the data and the findings? How do I deal with participants moving beyond the development of a theory to action that implements the theory? These are questions that I know I will continue to reflect upon beyond this study. I found resources to assist me with these questions.

Coffey (1999), Montero-Sieburth (1997), and Delgado-Gaitan (1993) all dealt with how the researcher interacts with participants. The piece by Delgado-Gaitan was significant in guiding me through this personal journey. She was placed in a situation where she decided to redefine herself within her research. She

clarified that the constructivist paradigm encourages the cocreation of knowledge that can be followed by empowering people to act. If I found myself in a situation where the participants were inclined to do more than create the knowledge, I assessed this development. The epistemology and framework of this research study allowed empowerment and action. I moved from a role of qualitative researcher to facilitator of change within the academic advising of undergraduate women preparing for medical school by reporting my results to advisors at other institutions. It was vital that I utilized tools like a journal to reflect upon these issues as I collected data and analyzed them. This clarification allowed me to move to the data collection within grounded theory and my choice for obtaining primary data.

Constructivist grounded theory allows a researcher to collect data in many different ways. Interviews might be open or utilize a semistructured question protocol, which can be recorded and transcribed for analysis. A researcher can capture data through observations, videos, and photos. For some questions, a review of documents provided appropriate data. Many researchers maintain field notes that explain environments, respondent comfort level, and other details or a research journal that shares ideas and thoughts of the researcher as the study proceeds, or both. Multiple data sources resulted in triangulation and allowed judgments to be made about the credibility of the data, which impacted category, concept, and theory development, and these sources built support for the trustworthiness of the study (Creswell & Miller, 2000; Strauss & Corbin, 1998).

The primary source of data for this study was semistructured interviews (Charmaz, 2006) with women. I conducted these interviews. Each participant was interviewed at a location of her choice to increase her comfort in sharing her experience with me. I built a rapport with the respondents to increase the quality of the interview data through the location of the interview, consideration of participants' needs during the interview, and some initial questions that identified me not just as a researcher but also as a person who is interested in the respondent's individual experience. I also stressed the significance of this collaboration between the participants and me in developing a theory that could be empowering for women who consider a medical career in the future. Charmaz encouraged the researcher to develop a few broad or open-ended questions that allow respondents to describe their experiences. Appendix B identifies the questions in the semistructured interview protocol. I conducted a pilot interview to test these questions for appropriateness, interview length, and quality of initial responses. I also asked the pilot respondent for feedback on the questions.

Before the interview began, I asked each woman if she would fill out an optional demographic survey that was Institutional Review Board approved for use in this study. Appendix C identifies the items on this survey. No names or identifying marks were captured to maintain confidentiality.

Each interview was recorded and then transcribed for analysis. The tapes and transcriptions were secured in a locked filing cabinet and password protected on a computer in my personal office. As soon as possible, I reviewed each

transcript to code and analyze these data, which impacted the focus of questions asked at future interviews and who became a participant in the study. The goal of data collection was to focus on theory development that would describe the process of deciding through concepts that emerged through the lived experiences of women. I had further contact with respondents via telephone, mail, or e-mail to thank them for their time, to clarify certain points, and to ask new questions as the analysis progressed.

Data Analysis

Strauss and Corbin (1998) and Charmaz (2006) structured the analysis of data through the use of open, axial, and selective coding. The coding process was significant in answering the research questions and identifying a model or theory. I developed, over time, sensitivity to data through listening to interviews, reviewing transcripts, and continuing dialogue with the participants. This sensitivity assisted in defining categories, which contributes to the development of concepts, and relationships that lead to theory development. This sensitivity resulted in trusting my analysis.

Glaser did not advise such structured data analysis as recommended by Strauss and Corbin, but he did indicate that closeness to the data allowed a researcher to trust her or his intuition on what the data meant with respect to theory development (Glaser, 1978; Glaser & Strauss, 1967). My interpretation of Charmaz's (2006) method of coding was a middle ground between the objectivist grounded theorists such as Strauss, Corbin, and Glaser. She utilized many of the

tools recommended by Strauss and Corbin as a point of entrance to making sense of the data. However, she warned that the data should drive the emerging categories, concepts, and theories and not the grounded theory coding process (Charmaz). Data sensitivity was important to me because it strengthened my analysis to arrive at a theoretical framework that explained the process of deciding to apply to medical school for women. The central point of grounded theory is that the theory emerges from these data. For this to happen, I had to have a close relationship with these data so that the theory was a product of the data (Glaser). At this point, I reviewed the structure of coding as prescribed by Strauss and Corbin since it offered direction for this initial grounded theory study.

Open coding was the entry point for me to immerse myself in these data. Open coding fosters discovery and creativity within data to look for emerging themes or categories. This coding should be continuous as each new interview, observation, or other data sources are added to my collection. Open coding consists of code notes, theoretical notes, operational notes, and rudimentary diagrams (Charmaz, 2006; Strauss & Corbin, 1998). The comments that evolve in each of these areas are referred to as "memos."

The code notes were a collection of thoughts experienced by me as I reviewed data and began the process of building theoretical sensitivity. These notes included some initial impressions or patterns that were obvious or floating among the comments shared by the respondents. The notes produced the initial ingredient within a category or the initial beginning of a concept. Theoretical notes are key to

developing concepts or a theory. These notes facilitated depth and breadth of categories and concepts by looking for properties and dimensions. A typical memo in this area might read: "What are other properties of the application process?" or "How do women at small colleges describe the science classroom?" These memos within the theoretical notes of open coding assisted in future sampling that built the substantive theory. This strategy is referred to as theoretical sampling. Theoretical notes led me to develop some operational notes. These notes offered future directions on additional questions to ask as I increased the density of the concepts, built the sample for comparisons among respondents, or suggested possible data collection opportunities such as an observation of a specific process or activity like a chemistry class. For example, I noticed that many early participants had fathers who were physicians. As the sample developed, I looked for women who had a different paternal experience. Grounded theory encourages the researcher to be flexible and utilize data in solving the theory-building puzzle (Strauss & Corbin, 1998).

Axial coding intentionally initiates the development of relationships between categories and concepts. I became more theoretically sensitive due to the fluidity between data collection and data analysis. The code, theoretical, and operational notes of open coding are more intentional in the axial coding phase. I used data to look for variation since the respondents in the sample may have changed to establish a dimensional range in the categories. The constant comparative method in grounded theory allows for axial coding to be effective in defining categories

and concepts due to the variation of participant experiences. I looked across the data of all respondents to identify pieces that added to concept and category development. I used these data to reach a "tipping point," which established a clear concept or theory.

I attempted saturation through further data collection to insure explanatory power of my theory. The memos established for all notes presented answers to the what, when, where, with whom, how, and with what consequences questions may have surfaced in the open coding stage. Code notes strengthen emerging categories and concepts. Theoretical notes attempt to summarize code note memos, suggest other potential respondents to further the theoretical sampling process, and suggest ideas for future data collection. The theoretical notes suggest how categories are emerging into concepts or what is missing in recognizing these relationships, leading to operational notes. I identified additional questions for all respondents or looked for new respondents to improve theoretical sampling (Strauss & Corbin, 1998).

It was important to think about the words of the participants as I moved through this coding process to arrive at my final concepts and their relationships that resulted in a theory. I have purposely given voice to participants and myself as I introduced each chapter through the vignettes or quotes from participants. These vignettes were one way for me to empower my participants and maintain their lived experience, as well as provide an opportunity for me to publicly reflect upon my location within the study (Jackson, 2004).

Charmaz (2006) also encourages the use of in vivo codes, which are the actual words of participants as they tell their story. These words that become in vivo codes maintain a presence for the participants throughout the analysis and give voice to the participants by allowing them to define and describe certain categories or concepts with their words. It was important that I utilize in vivo coding appropriately as I arrived at a theory or model because it maintained a constant presence or voice for the participants and their experiences.

The final coding stage is selective coding. Here the concept or theory has emerged through the inductive process. I might identify a few minor concerns that will be addressed to insure depth and complexity. Any further sampling is deliberately based on completing the concept or theory. Negative cases or disconfirming cases will be reviewed and scrutinized to affirm the emerging concepts and possible relationships that explain a process within a phenomenon. Code notes are reduced to stories that establish the relationships that have been discovered in the data. Theoretical notes are clearly validating connections within these data and identifying missing pieces that must be discovered to complete the concept or theory. These will lead to very specific operational notes that lead to completion of the study (Strauss & Corbin, 1998).

Throughout the coding process, I was diagramming my discoveries within these data. These diagrams were rudimentary in the open coding process. A few properties of some categories were identified and enhanced by other participants. In the axial phase, the diagram assumes greater life as data are sorted into

categories and possible relationships between the categories emerge. The selective coding stage resulted in a diagram that adds dimensions and properties to categories and concepts. The relationships between categories will lead to a concept or concepts that explained the process for women deciding to apply to medical school which was labeled as a theoretical framework. The diagrams assisted me in identifying breaks in the logic of the theory as it was developed (Strauss & Corbin, 1998).

The coding steps outlined in this paper do establish a structure for grounded theory data collection, analysis, and theory development. Strauss and Corbin (1998) outlined this structure to provide guidance for future researchers like me. This structure is meant as an advisory tool. Strauss and Corbin remind me and other researchers that a theory emerges when we use flexibility, spontaneity, and creativity with the grounded theory methodology. Earlier work by Glaser and Strauss (1967) situated grounded theory with far less structure and encouraged the budding theorist to trust her or his intuition (or sensitivity) as much as data when theory was developed within a study. Charmaz (2006) situates coding between the work of Strauss and Corbin and Glaser and Strauss. She offers flexibility through fewer levels of coding and encourages the researcher to immerse self into the analysis process.

I utilized computer software, such as ATLAS.ti, to manage data as I developed memos that addressed the various types of coding and future interview protocols. This software program and the interview transcripts were maintained on

a computer in my home office, which is only accessible to me. This software assisted me in maintaining organization and clarity as these data collection processes and coding progressed. It assisted me in identifying and organizing questions or concepts that the respondents should discuss, processes that I should observe, and variations in the participant sample that will allow for comparison and the development of the theoretical sample. I supplemented the computer software with a coding notebook that allowed me to write as I analyzed data. This was significant for my process of discovery. This notebook, as well as other tools and techniques, contributed to the trustworthiness of the study and is described below.

Trustworthiness of the Study

The transcripts from the interviews, field notes, researcher's reflexive journal, respondent follow-up questions and answers, documents, and observations were part of an audit trail that increased the precision, consistency, and relevance of this study. Creswell and Miller (2000) tell us that these documents create rich, thick descriptions that are critical in explaining context in qualitative research. I maintained field notes to share thoughts, ideas, and specific quotes or nuances from respondents during the interview, as well as a reflexive journal to capture my experience as researcher and participant in this study. Finally, I reviewed certain documents and observed certain activities that were suggested by the respondents, premed advisor, and medical school admissions personnel, which contributed to a richer understanding of the premed process. For example, the respondents suggested that I observe a premed application workshop to understand certain

behaviors or the premed advisor suggested that I read the admissions instructions for certain medical schools to understand the complexity of the process. These data sources were important to clarify certain parts of the application process, check researcher bias, and understand the lived experience of the respondents.

I invited the female respondents to meet with me or participate in a focus group as the final theory was emerging from the data. It was optional. Five women accepted the invitation to meet with me at a time that was convenient for each of them. At each meeting, I explained the categories, concepts, and relationships that were emerging from these data. I recorded the feedback on tape and on a feedback form. This member-checking process (Creswell & Miller, 2000) allowed me to share results of this inductive process and solicit feedback on the findings from the owners of these data. This was an act of validating the final product from these data (Charmaz, 2006; Creswell, 1998; Strauss & Corbin, 1998). The analysis and follow-up with participants produced some disconfirming cases. Each respondent was asked if aspects of her lived experience were conveyed through the findings. Since these experiences are complex and multifaceted, I understood that some respondents would not confirm every aspect of the theory. These disconfirming cases are included in Chapter 5 (Creswell). They serve the purpose of verifying the rigor of the data analysis that developed the theory and the utility of the theory in addressing this issue for women in the future.

Ethical Considerations

This research study followed the ethical codes of research established by the American Psychological Association, the Association for the Study of Higher Education, and the American Education Research Association. There were two important concepts, participant consent and participant anonymity, that were outlined as ethical standards, and they were considered in research (Marshall & Rossman, 1999).

I mentioned previously that this research study was submitted for approval from the Institutional Review Board of a university in the study state. In addition to clearly explaining this study, I provided an "Informed Consent Form" to each participant that was approved by the Institutional Review Board and is represented in Appendix A. I reviewed this form with each one, explained any questions, and secured a signature before anyone was interviewed. This is extremely important because it established that there are resources to assist any woman who may experience trauma during or after the interview. The interview questions attempted to elicit information that informed the study. These questions are referencing past experiences that could include stressful life events. It is vital that I assisted participants experiencing trauma from the interview with a list of professionals from the university community.

This study attempted anonymity to the participants through the utilization of pseudonyms, but anonymity cannot be guaranteed. These pseudonyms, assigned by me, were utilized in this dissertation, as well as journal articles and presentations

that explain the findings and the theory. Anonymity is critical for participants. These women shared stories that reflect upon various aspects of their higher education community or the larger community they resided in during the events they described to me. It is crucial that their individual lived experiences were utilized to build a substantial theory and not used to identify them as criticizing certain people, services, academic disciplines, or institutions that are hegemonic within their lived experiences. Anonymity attempts to guarantee that these women will continue to progress within their chosen career path while participating in a study that will inform other women on how to negotiate systems as they are deciding to apply to medical school.

Conclusion

As I moved forward with this constructivist grounded theory study to develop a theory of how women decide to apply to medical school, I was cognizant of the lived experience of all who were part of this study. Data that developed the theory were drawn from people who lived each day within many different discourses of the world. Context, temporal activities, and social interactions were all attributes of the lived experience that are dynamic and fluid. Participating in this study offered an avenue for empowering women who have an interest in pursuing a particular educational and career goal. It is important to take into account political considerations since many of these women are still in the process of building their professional and personal lives. It is important that all involved understand the significance and limitations of this study.

To this end, I reiterate that I was not developing a "grand theory" that explains how all women decide to apply to medical school. Rather I am describing a process through the lived experiences of 16 women. The result was a substantive theory that is explained in Chapter 5. This study began my personal journey of understanding this process for women who lived in one geographical location at the time of this study and who were pursuing a career as a physician. This study not only increased my understanding of qualitative research but also launched my research agenda. This research not only impacts the individual but also impacts higher education policy and women's issues. This constructivist grounded theory study is part of my lived experience, which initiated my understanding of research and shaped my future world as a researcher, practitioner, and policymaker. Chapter 4 describes results from analyzing these data, and Chapter 5 explains the meaning of this study for scholars, practitioners, and administrators who are interacting with women as they are deciding to apply to medical school.

CHAPTER 4

RESULTS

> Mainly it was just seeing them [physicians] and seeing their personality styles and how their lives were and just being able to relate to that and understand that. Being able to see myself in their shoes, I guess. It made it more possible. You know, like the medical establishment is so shrouded in this tradition. It's looked upon as being very hard to get into and very. Only the smartest and the brightest and best. It was actually really useful for me to see that the people, you know, the doctors that I was shadowing were just normal people. They didn't seem like complete geniuses. It kind of demystified the whole, just the whole process.

The results presented here are from semistructured interviews and are reported through the words of participants, such as Mary above, as they reflected on their experiences of deciding to apply to medical school. Even though women initially focused on a list of premed activities, further conversation included stories about interaction with people. Women described people who were infused within these prescribed premed activities as well as people who were instrumental within the process of self-discovery. Chapter 4 offers understanding of activities, people, and self-exploration within the process of deciding to apply to medical school through the words of women in this study.

The first section in Chapter 4 provides demographic information in the aggregate about women in this study. This demographic information assists the reader as each woman's experience is described in later sections of this chapter.

The second section is organized around the prescribed preparation activities for admission to medical school. Many women referred to this as the "checklist" during the interview. This section explores the experiences of participants as they enrolled in the prescribed premed courses, selected their undergraduate major, registered for the MCAT, and participated in premed extracurricular activities. The extracurricular activities included physician shadowing, research, direct patient care, and community service. The comments by Mary and other women in this study referenced many interactions with people during these prescribed premed activities as well as described each woman's own personal process of self-exploration that included support systems, role models, and mentors.

The third section focuses on the question: Who Do I Think I Am? This section describes how women learned about themselves in relationship to various roles filled by women in life generally and the physician career field specifically. The women in this study discussed their exploration of expected roles, the importance of identifying role models and mentors, and their strategies to overcome competition. All women in this study personalized the prescribed curricular and cocurricular activities on the medical school admissions checklist. This strategy of personalization was foundational for deepening their understanding of self, especially self as a physician. As a result of personalizing the prescribed medical school admissions activities, all women in this study progressed through the process of deciding to arrive at a decision concerning application to medical school.

The Participants: Demographic Information

The women in this study shared two commonalities: (a) gender and (b) a vocational interest in becoming a physician. Table 5 provides insight into the women demographically and academically without ignoring confidentiality since names have not been included. These data are race/ethnicity, birth location in western state, location of undergraduate institution in western state, type of undergraduate institution, and academic major. As Table 5 indicates, 8 of the 16 women were born in the state of this study. Ten women enrolled at a college or university in this state, and 6 received their bachelor's degrees outside this state. In addition, the type of institutions the women attended for their undergraduate degree was diverse. Seven women attended a private college or university. The academic discipline(s) they declared for their major field of study were also a mix of disciplines from the areas of science, social science, humanities, and fine arts. Three women completed two academic majors simultaneously. These demographic data offer some characteristics of the women in this study.

Although demographic data identified characteristics of the participants, the responses to interview questions provided details that added to the density of each woman and her individual process of deciding to apply to medical school. Multiple dimensions of each woman emerged through the dialogue that detailed her lived experiences. The next section focuses on the prescribed activities for admission to medical school since many women discussed how preparation activities are shared with them in a checklist form.

Table 5

Characteristics of Participants

Race/ethnicity	Born in study state	Bachelor's from institution in study state	Public/private institution of higher education	Major(s) for bachelor's degree
Multiethnic	Yes	No	Private	Art history
Caucasian	No	Yes	Public	Exercise and sports science
Latina	No	Yes	Public	Psychology
Caucasian	No	Yes	Public	Biology
No response	Yes	No	Private	Biology and Spanish
Caucasian	No	No	Private	Biology
Asian	Yes	Yes	Public	Chemistry
Caucasian	Yes	Yes	Private	Biology
Caucasian	Yes	Yes	Public	Communication
Caucasian	No	No	Public	Communication
Caucasian	Yes	Yes	Public	Biology
Caucasian	No	Yes	Private	Chemical engineering
Caucasian	Yes	No	Public	Biochemistry
Latina	No	Yes	Public	Communication
Caucasian	Yes	Yes	Private	Art and chemistry
Caucasian	No	No	Private	Economics and biology

The organization of the section is based on advising materials that are distributed to students who ask for information on medical school admissions. These advising materials focus primarily on distinct activities. One example of a brochure published by a medical school for a premed student situates the Undergraduate Major and Premedical Course Work on the first page of the brochure (University of Utah School of Medicine, 2006). The MCAT was on the third page of the brochure. Information on selection criteria, which are later in the publication, outlines extracurricular activities of community service, leadership, research, physician shadowing, and patient exposure and is expected of each applicant. A review of additional premed advising materials established a similar pattern that focused on major, MCAT, and premedical course work before the extracurricular activities (Brigham Young University Prehealth Advisement, 2008; University of Utah Preprofessional Advising Office, 2006a; Utah State University Prehealth at Biology, 2008).

Prescribed Preparation Activities: Jumping Through Hoops

"I mean, the whole process itself is so intimidating, just all the different hoops you have to jump through." Interviews with women and a review of documents written for premedical students indicate that a group of activities prepare individuals for the medical school admissions process. Students who consider a career as a physician are instructed through written materials or institutional resources to first interact with the premed advisor (Chanatry, 2006).

This section begins with women discussing the checklist as an independent entity and their interaction with the premed advisor. Then I describe how women reflect upon their experiences with each checklist activity. These activities are the undergraduate major, premed curriculum, MCAT, and the various extracurricular activities of shadowing, research, and service. As mentioned earlier, the organization of the subheadings in this section reflects written materials that students receive as they explore admission to medical school.

The Checklist

Many participants echoed Mary's statement when they discussed how the requirements for a medical school application were shared with them. Phrases such as "jumping through hoops," "checking off the box," and "have-to-do's" were phrases used to describe the process. Participants indicated that receiving this information was "overwhelming," "discouraging," and "stressful." Olene, who was born, raised, and educated in the study state, explained that the process was a list that must be accomplished to be able to apply. She said, "I just have to be able to check that box to keep going." As she moved forward in attempting to pursue the list, she realized, "Holy cow. I don't think I can do all of it at once." Olene reported being overwhelmed and discouraged at first.

Helen, who also grew up in the study state but received her bachelor's degree in the eastern United States, viewed the checklist this way:

> You go to college to learn. You don't go to fulfill just requirements. . . . I really feel like it [list] just pins people into getting crap done just so they can move on. I think you should appreciate college and

> you should learn something. You shouldn't learn it because you have to check it off.

She indicated that the checklist overshadowed learning. Wei, who grew up in the same geographic location as Olene and Helen but went to a private school on the west coast, reported, "I remember leaving that [premed] meeting and a lot of people around me were just so discouraged." Many women indicated that the application requirements were provided in a list format that was discouraging.

The participants discussed the requirements for applying to medical school in two ways: They discussed the comprehensive presentation of all requirements at one time that produced an overwhelming checklist and they discussed individual components of this checklist. These experiences are reported through focusing on the activities of undergraduate major, premed curriculum, MCAT, and extracurricular activities. This structure of checklist activities is based on written materials that premed students receive or through communication with the premed advisor (Brigham Young University Prehealth Advisement, 2008; University of Utah Preprofessional Advising Office, 2006a; Utah State University Prehealth at Biology, 2008). Before women's experiences with the premed activities are described, the interactions with the premed advisor are explained.

The Premed Advisor

The communicator of the checklist was often the academic advisor or faculty member responsible for assisting students who were preparing to apply to medical school. Many institutions of higher education employ an individual to

provide information about the medical school admissions process. The employment title is often "premed advisor" (Chanatry, 2006).

Evaluating the potential applicant. The women described the experiences with advisors based on two different orientations. Some women reported that advisors simultaneously communicated the process of preparing to apply to medical school and evaluated the women for potential success. The focus of communication was on producing the perfect applicant with the right grades and scores. Other women interacted with advisors who engaged the student in a conversation to become acquainted with the individual who was considering a career as a physician. Each of these situations are explored below.

Some women described the approach used by some advisors to be structured with an emphasis on the activities within the process. According to Mary, there appeared to be a formula that produced the perfect applicant for medical school. The prospective medical student was told to take certain science courses, declare a major, shadow a physician, participate in research and service, and have experiences with direct patient care. Two culminating activities in the process would be the standardized exam called the MCAT and the standardized medical school application process called the American Medical Colleges Application Service. These activities were foregrounded within the advising process.

Mary, an exercise science major who attended a 4-year public university, explained the approach this way:

> They [advisors] really stress like the perfect applicant. You know, they wanted you to do this, this, and this, and it didn't seem like they really stressed life experience or. Maybe if you had poor grades but you came back and retook some classes and did well. I mean it was just, it seemed like you really had to have a certain formula when you applied, to be able to get in.

Mary and other women indicated that the focus of the premed advisor was on the curriculum, grade point average, MCAT scores, and hours spent at extracurricular activities. Mary referenced it as a "formula."

Some women shared experiences that indicated evaluation by the advisor. Based on minimal information or a brief conversation with the student, the advisor evaluated the student's ability to succeed as an applicant to medical school. Jenny, who attended a public 4-year university and graduated with honors, went to an advisor as a freshman to learn more about preparing for medical school as she pursued a double major in science and fine arts. She shared the following story:

> I went my 1st semester and I was just very discouraged because they said, you know, "You want to go to medical school and you want to do this. And you have a lot of credits to take and your majors are completely divergent. . . . There's a high chance you won't finish or you'll be over max credits and how are you going to pay for it?"

Jenny reported that she was dissatisfied and never returned to this advising office. Her conclusion was that the advisor was focused on the premed process of producing an applicant and not on the individual who was interested in two diverse academic disciplines as well as medical school.

The evaluation Jenny received was based on attempting to do too much, which could impact her success. Susan reported her experience with the premed advisor was centered on grades. Susan, a chemical engineering graduate who

attended a private university with religious affiliation, reported that the premed advisor discouraged her from moving forward due to her grades. She concluded, "They only encourage the people who they think have the best chance of getting in; therefore, it makes their numbers look better."

Other women reported advising experiences that evidenced evaluation by the advisor based on nonacademic characteristics. Advisors discussed characteristics such as gender, age, and personal values as problematic.

Barbara, a biology major at a public research university in the study, was a wife and mother as a sophomore in college. Her family and other support systems were in this geographic area, and she reported her personal interest in remaining in this area as she pursued medical school. She described her experience with the premed advisor this way:

> I think that one conversation that I had with the premed advisor, when I said, "You know, here's my situation. I don't really want to leave [this location]. How reasonable is it for me to apply to one school?" They're like, "Well, that's just basically career suicide. Like people apply to 5 to 15 school. You kind of need to broaden your net. If you're serious about this, you should consider living apart from your family to pursue this." I was very disheartened by that.

Barbara indicated that the advisor evaluated her "seriousness" in pursing admissions to medical school as low based on her family values. The advisor labeled her plan as "career suicide."

Rosalyn, an older woman with three children who completed the premed curriculum as a postbachelor's student at a 4-year public university, knew her premed advisor through other groups within her geographic location. She described

her first interaction with her advisor this way:

> It was a nonverbal kind of hesitancy that maybe I would, maybe I wouldn't. I could perceive her unwillingness to put a whole bunch of effort into this person who, really it was a long shot. It was a long shot. She gave me the information. It was fine. But it wasn't, "Gosh, this is great."

Rosalyn indicated that she believed she was being evaluated by the advisor based on her age and the advisor was "unwilling to put a whole bunch of effort" into Rosalyn as a potential applicant to medical school.

As illustrated here, some women reported the messages communicated by advisors concerning preparation for the medical school application process to be discouraging and judgmental. They concluded that the advisor relied on the structured process filled with grades and scores as a "formula" to produce the "perfect applicant" rather than focusing on the woman who was deciding on applying to medical school. Other women shared interactions with advisors who were supportive and caring.

Supporting the needs of women. While some women reported unsatisfactory experiences with the premed advisor due to reliance on the structured process for evaluation, other participants expressed interactions with advisors that focused on supporting the individual as the woman attempted components of the premed application process. This type of advisor made it a point to know the individual and to be available as the individual moved through the process. Gloria, who attended a private 4-year university in the midwest, explained that there was a large premed office with a dean. She referred to her advisor as an "advocate" and

communicated, "She [the advisor] relieved some of my stress." Gloria's experience included her premed advisor interceding by calling some medical schools when Gloria was not being contacted for interviews. Gloria described the office that advised premed students as follows: "They would have tons of students. They cared about all of them. They're very nice people."

Emma, a communication major at a 4-year public university, had been tentative on her decision to apply to medical school for many years of her undergraduate experience. She did not have support from her immediate family but had married a physician who was supportive of her pursuing this career. She had completed the premed curriculum and was getting closer to the point of application. She reported this experience when she visited the premed advisor:

> She was amazing in her support. I contacted her probably right as I was starting to fill out my application. I had already done my premed requirements and I was kind of finishing my 6th year of undergrad[uate]. She was just absolutely instrumental in helping me with my application, reading over, looking for typos and things like that. But then she also hooked me up with . . . a pediatric neurologist researcher. . . . She [the advisor] was kind of instrumental in making the connections. She held writing workshops that were really good. She was a huge support.

Emma found the advisor to be a "support" and connected her to resources and activities.

Another participant, Olene, who was an academically strong biology major and involved in the biology research program at a public research university, indicated that the advisor met her personal needs and was "helpful" as a resource. She said:

> I didn't know what I was doing [when I was applying]. I was lost. They were huge, a huge resource, just in terms of getting information, to be able to talk about what I needed to do, as far as get ready or . . . anything I needed to talk about, like scores or anything. They were very helpful and I got a lot out of that resource.

Olene indicated that her advisor was there to provide support and listen to her as she participated in the medical school application process.

Gloria, Emma, and Olene identified the advisor as considering the needs of the individual. The advising was holistic in nature to encompass the end goal and the individual involved in accomplishing this goal. Women indicated that this holistic approach was positive for them by using the phrase "saved my butt" and "they cared." They referred to the advisor as "supportive" and an "advocate." In these situations, the academic advisor assumed a role of guide who is interested in each individual as the individual prepares for applying to medical school.

The women reported mixed experiences with the premed advisor. Some found the advisor to be supportive of the person, whereas others noted a reliance on activities within the premed process for evaluation of the potential applicant. Premed advisors are significant within the admissions process for medical school because they understand and communicate the prescribed requirements or the "checklist" to students to prepare for the medical school application.

Next, this chapter focuses on each activity within the checklist from the perspective of the participants. The first prescribed element established within the "checklist" is a bachelor's degree. Every applicant will have a degree, but the major field of study will vary among applicants. The next section provides depth

into the degree through the selection of a major based on responses from the participants.

The Undergraduate Major for a Bachelor's Degree

The 2007-08 Medical School Admission Requirements guide offers the following advice on the choice of major:

> Choice of Major. Medical schools recognize the importance of a strong foundation in the natural sciences—biology, chemistry, physics, and mathematics—and most schools have established minimum course requirements for admission. These courses usually represent about one-third of the credit hours needed for graduation. This approach deliberately leaves room for applicants from a broad spectrum of college majors, including those in the humanities and social sciences. No medical school requires a specific major of its applicants or matriculants. Admission committee members are aware that medical students can develop the essential skills of acquiring, synthesizing, applying and communicating information through a wide variety of academic disciplines.
>
> Nevertheless, many premedical students choose a science major. Ideally, they do so because they are fascinated by science and perceive that such a major can be the foundation for a variety of career options. Choosing science based primarily on enhancing one's chances for admission to medical school is not in a student's long-term best interest. Medical school admission committees seek students whose intellectual curiosity leads them to a variety of disciplines and whose intellectual maturity assures that their efforts are persistent and disciplined. (Chanatry, 2006, p. 11)

The 2007-08 Medical School Admission Requirements is a primary resource for individuals considering medical school, and it establishes the parameters for individuals who are preparing to apply to medical school. Since the selection of major is a popular topic with undergraduates, it is not surprising that the participants discussed major choice. The optional demographic survey (see Appendix C) collected these data. Table 5 highlights the majors of the women in

this study, which ranged from biology to communication and art history to chemical engineering.

Most women discussed the undergraduate major within their process of preparing to apply to medical school beyond meeting the requirement of an undergraduate degree. Women discussed why they selected certain majors. Some of the women, such as Barbara, selected a science major due to their early success in high school, whereas others focused on areas they had a passion for that were not in science. For this reason, Jenny and Wei selected art majors. Another topic that some women focused on was their dismay for students who identified their major as premed. Initially, it seemed as though the women disliked the ignorance or conceit of students who openly identified as premed. Further discussion revealed that the women avoided the premed designation as a strategy for success as they prepared to apply to medical school.

Selecting a major to avoid premed identity. The participants discussed their major selection based on their academic interests and passion for learning. They indicated that they did not select majors just to make them competitive for medical school. Wei reported her father saying to her, "What would you enjoy doing? What would you love doing?" She answered these questions and declared her major in art history.

Jenny was clear with all people that she was attending the university to study art and chemistry. She said:

> I really wanted a rich experience in my undergraduate education. I didn't want to do things just for a resume either. I wanted to make

> sure that I was having experiences that would really help me as a person." Jenny reported satisfaction with both majors for meeting her goal of personal development. Women reported studying majors that were interesting to them and had a meaning in their personal lives.

As reported previously, Barbara enjoyed science in high school and selected biology as her major. Many early classes were filled with premeds whom she avoided by not designating herself as premed but biology. As she progressed in her major, she explained:

> A lot of classes I took at the end of my undergraduate [experience], did not have a lot of premeds in them. I took a lot of plant biology classes and stuff, because I thought . . . "I'm never going to get the opportunity to do these kind of classes" and so I took those, and absolutely loved them.

Barbara indicated that she was studying a subject of interest that brought her enjoyment. Her declaration of biology as her major allowed her information necessary for the premed curriculum but offered her a space to avoid the premed designation.

Most women in this study indicated that the declaration of a major was a strategy to avoid the premed designation. Some women explained their dislike of peers who openly declared the premed label. They viewed these peers as unaware or arrogant. Other women talked about avoiding competition and public failure by not embracing this label during their undergraduate experience. They utilized the declared major in an academic discipline as a convenient way to avoid the premed label.

Some women pointed out that premed is not a major that a student can utilize to complete a bachelor's degree at most institutions in the United States. Lan, a chemistry major continuously throughout her undergraduate experience at a public university in the west, expressed these thoughts:

> I just felt real annoyed when people said, "Oh, I'm a premed major." I'm always thinking in my mind, "First of all, there's no such thing as a premed major. There's a premed curriculum, but you have to have a different major here." So, that just made me think, "Do you really know what you're getting yourself into?"

Lan's experience with peers who declared their major as premed was echoed by Helen, a biochemistry major at a midwestern public university. She said:

> People ask me and talk to me about getting into medical school. They'll say, "Oh, yeah. I'm getting my degree in premed." I can't help but kind of go. Not go off on them a little bit but I kind of berate them a little bit. I'm like, "You know what? That's not a degree. You need to find something you love because you may not get into medical school and you want to be happy in life at least and find something you enjoy."

Helen expressed the limits of premed and the future possibilities that academic majors offer a student.

Jenny, a double major in the fine arts and science at a western, public institution, reported annoyance when someone reported their major as premed. She indicated that her reply was, "That's not a major and you're not a doctor yet, and don't be so snotty." She indicated that someone declaring this premed location was lacking information on majors and was overly confident in his or her future occupation.

Lan, Helen, and Jenny indicated that unaware or arrogant students were openly identifying themselves as premed when asked about major selection. These participants indicated that this lacked understanding or ignorance of the premed process since a real major was needed to complete a bachelor's degree, which was a requirement for applying to medical school. Jenny believed that the premed designation established a "snotty" attitude about medical school when the person was still an undergraduate. Many participants reported that the undergraduate academic major had a function within the preparation process for medical school as well as preparation for other aspects of life beyond medical school.

The women in this study indicated that the premed label signaled ignorance of the requirements for medical school and provided a location for arrogance or elitism to thrive among students who were considering a career as a physician. The avoidance of the premed label went beyond ignorance and arrogance of peers. Some women in the study avoided the premed label and declared a major as a strategy to avoid competition and public failure.

As the study continued and women shared more of their experiences, it became clear why some women reacted strongly to the utilization of the premed designation by peers. In addition to meeting their personal needs for learning and growing, the major also served as camouflage while preparing for medical school. An academic major provided a place to avoid premed stereotypes from other members of the higher education community. Lan explained, "I didn't like to tell people that I was premed at all. . . . I'm a chemistry major." This type of

camouflage is not possible if the premed designation is publicly displayed to everyone in the community. Many participants reported using the academic major as a strategy to avoid sabotage, criticism, and public failure while making a decision on applying to medical school. Experiences described by some women offer depth and definition to this strategy.

Wei, a fine arts major at a private women's college, received some advice from a family member as she began her undergraduate experience. He told her, "Don't tell people you're premed." This piece of advice was significant to her as she told me about her experiences with faculty and students at her institution. She said:

> That was a huge thing. And I would see people saying, "Oh, I'm premed" to advisors and people. . . . And since I was an art history major, people never saw me as premed, so I kind of. I snuck under the radar. . . . I really do think professors, advisors, people see you differently, once they know you're premed. Because they see you as fake and always out to get the grade.

This family member had an established career in medicine and was very familiar with medical school admissions committees. At first, Wei questioned this piece of advice. He replied, "It'll [premed] make your life more difficult." Wei indicated that this was good advice as she moved through her undergraduate experience.

Since the interview with Wei was early in data collection, I asked other women about acknowledging their premed status. Most participants acknowledged avoiding the designation. Olene, a biology major at a public university, received the same advice from her father who was not a physician but started out as premed. Olene said:

> Actually, I wasn't [very open about being premed]. My dad actually scared me into ever saying that I was premed. He's like, "There's so many premeds. Don't say that you are unless someone actually asks if you are. . . ." So, I never actually said I was premed. . . . The only people that really knew were my like closer friends in undergrad years. But other than that, most people just knew I was biology.

Wei and Olene could identify who suggested this technique. Wei explained why she followed the advice. Other participants reacted to the question: "Did you tell people you were premed?" by acknowledging that they avoided it for various reasons. The reasons for avoiding the premed designation included the stereotype of a premed student, sabotage from other students, and avoiding public failure. Each of these situations is discussed below.

Participants reported that there was a premed stereotype that impacted interaction with faculty. As Wei indicated in the previous subsection, the focus of the stereotypical premed was on the grade. Susan indicated that some faculty at her private university viewed premed students as interested only in the grade and not learning. Mary, an exercise science major at a public university, shared this story that reinforced this stereotype:

> I really came to dislike the other premeds. I didn't call myself a premed. I didn't like to because there were so many that choose to be so competitive and would argue about points on tests and things and just really. I mean, it was probably beneficial to them and they're probably all in med school somewhere and doing great. I just. I really hated the spirit of competition and the spirit of just trying to collect points to get as good a grade as possible, . . . whether or not you really understood the material.

The situations above focus on premed students being associated with concerns about points, grades, and competition. The participants reported that this was not

their motivation for being premed. Emma summarized that this focus on grades rather than learning resulted in "teachers were notorious for being a little bit meaner to premeds." Her point in this comment was that this focus on grades and points was problematic when trying to develop a relationship with faculty as a premed student.

Wei shared an experience of waiting for a faculty member during office hours to discuss retaking a biology quiz. As a premed student left his office, she overheard the faculty member complaining about premeds to himself. As she entered his office to discuss her situation, his first question to her after hearing her situation was, "Are you premed?" She told him, "No," which was truthful since she was declared in art. In her interview, she concluded that avoidance of the premed label when in the presence of faculty was a strategic move that positively impacted her decision to apply to medical school by allowing her to build relationships with professors. Other women commented on using their major as a form of camouflage when working with faculty and other students.

Not all participants avoided telling faculty that they were premed. Jill attended a private liberal arts college and was open with her biology instructor that this was her major and that she intended to apply to medical school, which resulted in this faculty member becoming her advisor for her preparation for medical school. Gloria attended a private research university that housed a prestigious medical school, which attracted many premed students. She could not recall a time that she avoided her premed focus with a faculty member, but she did comment on

not using the designation with peers. This was another group within the higher education community that women commented on concerning the avoidance of the premed designation.

Lan continued her discussion of avoiding the premed designation by focusing on her peers. She said, "I don't want to let people know because then they might try to sabotage me." She used the word "cutthroat" as she described this competitive nature of the premed stereotype. A technique that was common was to find out how other people were doing in a class to gauge who the competition was for the top grades. Barbara described this situation: "You talk about test scores and it's like, 'oh well, I got 92% on my test.' And if you'd gotten higher, they didn't want to talk to you. So, I just didn't want to talk about my test scores." She and other participants avoided conversations with peers that revealed their vocational interests in medicine and their individual grades.

Wei, who attended a private women's college, shared a story of her organic chemistry notes disappearing before an exam, which she identified as an example of "sabotage." She said, "Someone stole my notes right before the organic chemistry exam. And so I didn't have any notes. And no one would give me their notes, let me photocopy their notes, or anything." She was amazed at the lack of support since she was in a study group and had shared her notes with other people. Gloria also reported actions such as notes being stolen. Olene described people holding back information or providing the wrong answers. Some women in this study found their peers to be competitive to the point of "sabotage." Thus, some

women avoided the premed designation to avoid sabotage by peers.

Emma was a communication major who disassociated herself from a religious group due to her interest in being a physician. Her motivation to move forward was facilitated by a male friend who was a physician and later became her spouse. She described this situation within her undergraduate experience:

> I did have a lot of premed classmates, who were men, who started teasing me and asking me, "If your husband is already a doctor, why are you doing this? Why don't you just quit now and stay home?" So, that was probably the most discouraging part.

Emma reported being discouraged when peers identified and commented on her premed status in relationship to her personal connection to a physician.

Wei's example is a direct form of "sabotage" that other participants described during the interview that happened to them or someone else. Emma experienced a situation that she indicated was discouraging as she moved forward with her preparation for medical school. Most women found that the major was a way to avoid being identified as premed, which allowed them to avoid activities by peers that would eliminate them from the applicant pool or discourage them from continuing to pursue this personal goal. The next section focuses on the applicant avoiding the premed designation to avoid public failure.

Lan is a first-generation Asian American and a first-generation college student who attended a public research university as a chemistry major. She was academically successful in high school and college. She explained:

> I would think to myself a lot, like, "What happened if I applied and didn't get in?" Or "What if things came up along the way and I didn't make it?" That would be just really detrimental to my self-

> esteem and to everything else. . . . So, I just didn't like to tell people.

Lan and other participants indicated that self-esteem and avoiding failure was one more reason to avoid the premed designation. Garciela was a psychology major at a research university and her father was a doctor. She talked about being scared of not achieving acceptance to medical school. She explained:

> I didn't start my undergraduate thinking, "I'm going to be a doctor for sure." I think I had it on the back of my mind, and I always loved it and I thought it was a great career. But I wasn't sure if I could even achieve it, or do it. I think I was scared of it.

Lan and Garciela avoided their fear of not being accepted to medical school by not telling anyone of their goal.

Rosalyn was a returning adult student to a 4-year university who had dreamed of being a physician for a very long time. She explained, "You know, I just didn't want to open myself to an area of vulnerability because I wasn't sure I could do it. I wasn't sure if I wanted to. I was very quiet about it." She told no one other than the premed advisor about this goal as she took one class within the premed curriculum each term. Rosalyn indicated that success in this one class and then many more did not alleviate her hesitancy to share her goal with friends and family. It was a gradual process.

In addition to an academic home, the major allowed these women a location to avoid the premed label and stereotype of "fake and always out to get the grade." Some women identified peers who used the label as ignorant or arrogant and expressed annoyance with their lack of awareness, especially when a major was

needed to complete a bachelor's degree to apply to medical school. The premed major also allowed the participants to "sneak under the radar" to avoid faculty who viewed premed students as focused on grades and not learning. The major was a safety zone that allowed some women to avoid competition and "sabotage" from peers. Finally, women could avoid personal failure within the premed activities if they identified as something other than premed. The participants reported that the declaration of a major for an undergraduate degree was a location to avoid the premed stereotype. It was a location that was safe as they pursued the science courses that were part of the premed requirements.

The list of requirements communicated by the premed advisor or written publications had other curricular activities besides completing a bachelor's degree. The next section discusses the undergraduate science courses that are required to apply to medical school.

Mastering Basic Science Principles

Another element of the structured process for preparing for admissions to medical school is undergraduate science courses for learning basic science principles. These science courses are part of the checklist that is communicated by the advisor to students and referenced in written resources used by premed students. Applicants must complete at a minimum 2 years of chemistry, 1 year of biology, and 1 year of physics. In addition, some schools will require a particular level of mathematics (Chanatry, 2006). The 2007-08 Medical School Admission Requirements guide explains this curricular requirement to applicants in this way:

> The study and practice of medicine are based on modern concepts in biology, chemistry, and physics, and on an appreciation of the scientific method. Hence, mastery of these basic scientific principles is expected of all entering medical students. (Chanatry, 2006, p. 11)

Based on information from the Medical School Admission Requirements and communication from premed advisors, the "mastery" of science concepts is identified as a key component for admission to medical school.

Women reported two specific situations that impacted their process of deciding to apply to medical school that referenced mastery of the basic science concepts. First, they indicated that certain people evaluated demonstrating "mastery" of science concepts through grades earned in courses. Potential applicants received this message from premed advisors and published premed materials such as the Medical School Admission Requirements guide that referenced a median science grade point average score (Chanatry, 2006). The science grade point average is based on grades in science courses. Even though women focused on learning topics in biology, chemistry, and physics for mastery of the science concepts, the messages they received focused on the importance of a grade for calculating a grade point average. Some women expressed a belief that grades became an evaluation tool for "weed outing" candidates.

Second, many women focused on the importance of interacting with faculty for learning the science concepts. Women identified strategies to increase interaction with faculty to impact learning and continue their process of deciding. The requirement of mastering basic science concepts was a challenge within the decision-making process of applying to medical school. Most women were

confronted with a system that evaluated mastery through a grade and ignored other evidence. Women defined mastery as learning concepts, which was facilitated by interaction with faculty. The next two sections explore the experiences that focused on mastering basic science principles.

Evaluating mastery and learning through grades and scores. Some participants reported that the goal of taking these courses that was communicated to them was the importance of the grade and not comprehension of the science concept. It is important not toe that this science grade point average is only one element within the medical school admissions process. Wei, the art history graduate who attended the private women's college, remembered the premed advisor saying this at the Premed Information Session: "You have to get A's to get in." Wei had just finished a general biology course with a grade of an "A-" and was very concerned since this biology course was considered to be less rigorous than chemistry and physics. She reported that the premed advisor discouraged her and others in pursuing application to medical school due to early grades in science courses.

Susan, a student at a private research university in the study state, was discouraged from applying to medical school by the premed advisor due to her early grades in beginning science courses. When she changed her major to chemical engineering from biochemistry, her grades greatly improved in courses that were more advanced than the premed science courses and included upper division courses in scientific disciplines. She reported this experience when she

requested a committee interview from the premed advisor:

> At the time, my grades were the best [they had been] but he was not encouraging to me at all. He basically told me that I should aim for lower tier medical schools and some DO [doctor of osteopathic medicine] schools. He didn't really give me very much hope at all.

Susan and Wei provided experiences that describe predicting success in medical school admissions through grades in basic science courses.

Mary finished her undergraduate degree in exercise science at a research university in the study state. She described herself this way in reference to applying to medical school: "I wasn't a top-tier applicant." When asked to explain this in more detail, she talked about scores, grades, and resources. Her impression was that medical schools were looking for certain grades and scores, and she did not find resources that expanded that frame of reference beyond scores. Her experience left her with the belief that high grades were necessary for success in the application process. Some women indicated that premed advisors used grades in science courses to evaluate mastery of science concepts and as a predictor of success in the medical school admissions process without looking more holistically at the individual.

The women in the study talked about the premed science courses from a perspective that focused on learning and knowledge rather than just grades. They commented on early success with science in high school but found the higher education environment was different based on size of classrooms and interaction with faculty. Upon arriving in higher education, some women explained that participation in science courses discouraged them as they were deciding to apply to

medical school. Many women reported that these science courses were part of a "weed-out" process within the premed preparation process. The use of grades by advisors to suggest failure in the medical school admissions process was one situation for weeding out that the women described.

This impact of grades upon advisors produced a conversation about the role of faculty who teach premed courses. Even though some women experienced situations with faculty that were discouraging, participants overall acknowledged the positive impact faculty members had within learning or "mastering" the science material. Some women reported that mastery of science concepts fostered continuation within the process of deciding to apply to medical school.

Mastering and learning science concepts through faculty interaction. Most women in the study commented on the importance of interaction with faculty members. This interaction was not focused on securing a high grade for admission to medical school. It was focused on learning the information. Some women explained faculty behaviors that were interactive with students. Garciela explained:

> You can totally see the difference between someone that is there to weed out, or at least you think you know the difference. Maybe I'm completely wrong. But there are some professors that really want you to learn, that they push you hard, because they do push you hard. But you can also tell the reason they are pushing you hard is because they want you to learn. They want you to ask questions. They were always the professor that said, "The more you ask, the more you learn, and the more I enjoy teaching these classes."

Celicia reported that some faculty facilitated learning through encouraging student inquiry.

Lan, who participated in small and large science classes at a large public university in the study state, identified characteristics of a "good professor" who facilitated learning. She took a general anatomy class, which was open to all students, and then enrolled in the more advanced anatomy due to the pedagogy of this faculty member. Lan explained:

> He's a really good professor. He cares. You know, he shows that he cares for students. He just makes science so interesting. He even said, even people who are nonscience majors, they should take anatomy, because we're all people and we all have our own bodies and muscles. . . . He gives a case scenario every single week. It would be like a person comes to the ER [emergency room] with a numb foot, . . . and other symptoms, and "Diagnose the patient." And just by using the anatomy and anything that we [were] learning in class, and biology, we have to come to some kind of conclusion. So, that was just really interesting. I was like, "Wow, I can't wait to be doing this. This is cool."

Lan explained a pedagogy that engaged students with the subject on multiple levels. This faculty member focused on the individual student using knowledge from this discipline for personal reasons that also facilitated learning. The women had very mixed experiences with science faculty in the classroom. While most faculty members were there to teach, as experienced by Graciela and Lan, women shared other experiences. Mary summed it up this way:

> The whole process is pretty impersonal. I mean there's 200 students to one professor up there. So, it was easy to feel like your questions didn't matter. You would never be able to see the professors. A lot of them just really taught. A lot of them, you could tell teaching wasn't their number one priority. Like they were researchers or something else and they just wanted to get the material out. And the tests were always [in the science classes] geared to a pretty [extreme] amount of difficulty, so the averages were quite low, so that you could really spread out the [students], separate the class. Just, in general, you get the feeling that, the professors didn't

> always really care how well they taught it to you, just that you could learn it by the time of the exam.

Mary concluded that teaching science concepts to her was not a top priority for some faculty based on their pedagogical style that was focused on quantity and not quality. Another concern was that the size of the classroom hindered women from establishing rapport with faculty. Lan provided this account:

> Every single class is such a huge lecture hall, that you don't get much one-on-one time with professors or anything, unless you go out of your way to go to office hours. . . . It just seems like you don't get the personal attention.

Lan identified a classroom as a "huge lecture hall" that not only negatively impacted attention from the faculty member in class but outside of class, too. Mary and Lan concluded that a large classroom size negatively impacts interaction with faculty and hinders learning. Because women realized the importance of faculty interaction for learning science concepts, women developed techniques that facilitated interaction with faculty.

One technique was to identify classrooms that had low student enrollment. Jenny did this through a special program at a university, and Jill did it through a smaller college environment. Jenny described the interactions between students and faculty in premed science courses in this way:

> I would say some of the other classes I had, just in the basic sciences, a lot of the teachers had problems with medical students, because they were really concerned about their grades and they'd come in and ask about the test and not so much concerned with like abstract thought or principles.

Jenny described the stereotype of the premed student who is focused on the grade and not on learning. Jenny was also eligible for courses that met the premed curriculum requirements through the Honors Program. Jenny took advantage of these courses with a maximum enrollment of 40 students to avoid the large classroom of 300 students. She explained, "Those classes really shape your thinking to be more creative, and I think more, 'I can do this.' You know? I'm in a select group of students who really want to excel. I think those classes are really positive." Jenny indicated that the smaller student enrollment in the Honors Program sections not only contributed to her knowledge but also to her self-confidence in deciding to pursue medicine. She had more interaction with a faculty member in and out of the classroom.

Some women attended smaller colleges that had classrooms with lower enrollments. These participants verified how significant the class size was to getting to know the faculty member. Jill attended a small, private liberal arts college and majored in biology. She reported that class size was around 25 students. This was an opportunity to interact with the faculty member. In her situation, this person became her premed advisor and offered her an opportunity to conduct research. She reported this experience:

> When I first started, I just took the basic biology class. I had an excellent professor who actually ended up being my advisor later on. He had a few students prior to that [who] attended medical school, so he knew the process. He knew what needed to be done. He understood the competitive nature of it. So, having him as a kind of resource was pretty invaluable. I really appreciate him.

This institution did not have a premed advising office. Jill believed that developing this relationship with this faculty member early in her undergraduate experience through this premed science course was important for her mastery of science concepts and impacted her process of deciding to apply to medical school.

In addition to participating in classrooms that had smaller enrollments, women identified other strategies for interacting with faculty members. A second technique was interacting with faculty members during office hours. These interactions produced deeper understanding of the subject. Helen, who completed a biochemistry degree from a public research university, interacted frequently with her organic chemistry faculty member. She reported:

> It was really funny because he either really liked you or he just kind of thought you were a waste of his time. I always did really well. Like, actually one of my most favorite subjects was organic chemistry. I always got along really well with him because a lot of his research was in organic chemistry. So, I always talked to him a lot about it.

These interactions allowed Helen to test her mastery of organic chemistry principles for critique by this faculty member.

The participants reported that success through learning in the science courses was significant for "mastery" of science, which also contributed to personal confidence. Mary shared, "Well, being able to survive premed classes is pretty reassuring, I think." Basic science courses were a premed checklist activity that built confidence when accomplished, but they also produced stress due to the emphasis on grades for success within the medical school admissions process rather than a focus on learning basic concepts. Most women reported that faculty were

important since they facilitated learning in and out of the classroom.

Women identified strategies to interact with faculty members who "took an interest in learning" and demonstrated "caring" about student mastery of science concepts. These strategies included identifying classrooms with lower enrollments and attending office hours. By moving the discipline of science from a large, impersonal experience in a classroom to a smaller environment, women were able to find value in this requirement through "mastering" concepts within the disciplines as they made decisions about their future career goals. Women in this study did not want to focus just on the grade or score but valued learning science concepts. Faculty were significant elements in learning science concepts for women.

The "hoops" of the premed process that have been explored to this point are the undergraduate major and the premed science courses. Women also discussed the MCAT as a hoop within the structured process.

Medical College Admissions Test

The MCAT is a requirement for applying to medical school. This is a national exam that evaluates potential performance of individuals within a medical school environment. The exam is multiple choices, includes a written essay, and is administered electronically. The exam evaluates knowledge in science and written communication skills. Applicants take it after completing the premed curriculum and before finalizing the application with the American Medical Colleges Application Service (Chanatry, 2006). Some applicants will participate in a test

preparation program as a way to increase the score on the first or future administrations of the exam. Some medical schools will establish an expiration date on test scores. This expiration date can result in the applicant having to retake the test (Chanatry).

The 16 participants discussed the MCAT at various times during the interview. Dolores, who had not applied to medical school, had not taken the exam but reflected on it. Wei, who had a family member who was a physician, was thinking about the MCAT as early at ninth grade. Mary took it as soon as she finished her premed curriculum. She explained that she used it as a gauge for moving forward in applying to medical school. Susan indicated that she had good MCAT scores both times she took the exam. She only retested because some medical schools would not accept her scores due to the test date.

The participants were asked how many times they took the MCAT exam on the optional demographic survey. The results were 1 participant did not take the exam, 8 participants took the exam once, 6 participants took the exam twice, and 1 participant took it more than twice. Two reasons that most participants cited for retaking the MCAT were a score(s) that was too low to be competitive in the admissions process or the scores had expired for the application process. Most women viewed this application requirement as discouraging and an obstacle within the process of deciding but acknowledged that it had to be accomplished for application. It was a necessity. A few women described the MCAT as just one requirement among many for admissions to medical school. Reflecting upon this

requirement reminded some women that it was a pertinent element since they are entering a profession that requires constant testing. This section discusses the significance of this exam not only as a necessity within the application process but also its role in modeling one element of the physician's career field, which is continuous testing, called "boards."

Understanding the necessity of the Medical College Admissions Test for admissions and career. Most women in the study indicated that the MCAT was a challenge that had to be addressed for application to medical school. Olene, a biology major, declared that the MCAT was an obstacle for her. She said:

> I needed a higher score in one of the areas to get into [a particular medical school]. So, I had to retake it. I was kind of discouraged with that. It was like, "Oh, crap. I don't want to take this again." That's a huge test. That was kind of discouraging. But I guess knowing that [going to medical school] that I wanted to do, I knew that was just another step I need to take to get there. . . . Like I just have to be able to check that box to keep going.

Olene indicated that she had to be able to "check that box to keep going" to accomplish her goal. She saw the MCAT as a necessity that must be accomplished for applying to medical school. Olene and other women viewed the MCAT as just one requirement of many requirements, which reduced its power to discourage them.

Helen reported that she had participated in many activities within the premed checklist that were relevant for applying to medical school during her undergraduate experience at a public research university. She reported activities such as volunteering in a clinic for 3 years, participating in research, and

completing the premed requirements through her major in biochemistry. When her senior year arrived, she needed to make a decision about her future but she only had one problem. She declared, "My only problem was with testing. I'm not a great test-taker." She realized that pursuing a career as a physician was her goal and proceeded to take the MCAT because it was necessary. Reflecting back on her scores, she concluded, "I did not get a good MCAT score. I got into medical school purely based on maybe my interview and everything else." Helen believed that the MCAT was only a requirement among many for medical school admissions. It was one numerical measurement and she was sure it did not contribute to her success in the admissions to medical school, but it was necessary to apply. She made her decision to apply to medical school before she took this exam and did not allow the scores to dissuade her from continuing the application process. Olene and Helen viewed the MCAT as one necessary requirement among many for the medical school application.

The MCAT scores are a numerical measure within the admissions process that were seen as an obstacle by many women in this study. These women did not allow one requirement to minimize all their achievements within the application process. The MCAT was one required element within an application process that had many elements. As women reflected on the MCAT, a deeper meaning emerged. The MCAT replicated a key component of their future career. As a physician, each woman would be required to participate in standardized testing for her medical specialty throughout her career. The next section elaborates on the

significance of the MCAT in reproducing the testing scenario that physicians experience in their career. The MCAT requirement encourages medical school applicants to consider this element in their career.

Participating in the MCAT and achieving certain scores were significant for the application to medical school. Some women applied the MCAT beyond admissions to enrollment in medical school and their future profession. Olene complicated the significance of the MCAT beyond the application for medical school. She said:

> I was really scared of the standardized test, because I don't feel those are my strength. In being in a career that requires you to take standardized tests, . . . was really scary for me. I mean, first of all the MCAT was really frightening and I prepared for this hard. . . . After that, all the boards and everything that comes with medicine.

Olene explained that her decision to take the MCAT was the point that she decided to pursue a career in medicine. She realized that this exam was the first in a line of many exams that physicians complete as they earn and retain their credentials. This extension of the MCAT beyond medical school application to practicing medicine demonstrates the reflective process that some women experienced as they were deciding to apply to medical school. They were considering how requirements such as the MCAT informed them about their compatibility within their future careers that required participating in standardized exams.

The MCAT was a necessity for admission to medical school that most women viewed as a barrier to pursuing application to medical school. This exam also served another purpose beyond medical school admissions for potential

applicants. Most women discovered that this exam was informing them about one element of their future career, which was continuous testing within their medical specialty field. Thus, standardized exams not only were a necessity to pursue admissions to medical school but would become one aspect of their future career.

The "checklist" or prescribed premed activities were not limited to a bachelor's degree, undergraduate science courses, and MCAT scores. The list included extracurricular experiences such as physician shadowing, patient care, service to community, and research. As women initially viewed these activities within the checklist, the activities overwhelmed them and were seen as "another hoop" for applying to medical school. Thus, these activities are included in the next section.

Extracurricular Experiences

The Medical School Admission Requirements guide indicates that academic achievements in the undergraduate major and premed curriculum are not enough to be accepted to medical school. The Medical School Admission Requirements offers the applicant to medical school this advice:

> While physicians are certainly expected to be knowledgeable and skillful, they are also expected to be altruistic and dutiful. The required knowledge and skills are developed in part through the college and medical school educational processes. Dedication to duty and altruism are nurtured through experience—with family, with friends, and with people in need. (Chanatry, 2006, p. 12)

The section above explains that experiences with physicians in health-care settings and with activities that offer service to the community develop values within the

potential applicant that focus on service to others. These extracurricular activities offer the individual greater understanding of the career while developing her or his values, interests, and abilities.

This section in the Medical School Admission Requirements concludes with a discussion on how medical schools assess these experiences within the admissions process. The guide states: "At least three criteria are used: length of time invested, depth of the experience, and lessons learned" (Chanatry, 2006, p. 13). All participants made comments and told stories about their experiences with physician shadowing, health-care settings for patient exposure, volunteer/community service, and research, as described below.

Shadowing a physician: Physicians are regular people. Physician shadowing is an opportunity for individuals considering this career to observe someone who is a practicing physician. This clinical experience can be a few hours or extend over many months. The individual might watch a few procedures or become extensively involved in the actual work of the physician. It is important that all involved are cautious to follow appropriate guidelines of care that have been established by the Health Insurance Portability and Accountability Act, also known as HIPPA. Some potential applicants to medical school will shadow more than one physician for breadth and depth into various specialty areas.

Women in this study shadowed dermatologists, emergency room physicians, pediatricians, oncologists, and family practitioners. One participant worked in cardiology rehabilitation unit before applying to medical school. One participant

talked about exposure to multiple physicians and specialties because she participated in a physician's free clinic for 3 years. Their experiences were varied and offered insight into this career and the people who were physicians.

This chapter began with a quote from Mary. She explained that the shadowing experience was important. For Mary, shadowing "demystified the whole process, the whole personality type that can survive in medicine." Mary's experience resulted in understanding that physicians were "regular people who made mistakes" and had "regular lives."

Three participants in the study, Wei, Barbara, and Graciela, had information about physicians since they each had a parent who was a doctor. Wei commented, "I just kind of felt like the hospital's kind of been my second home." She spent a great deal of time at the hospital with her father throughout her life. Barbara stated that as a child she accompanied her father in the clinic, too. She said, "I just loved going up there and watching him do little procedures and talk to the patients." Wei, Barbara, and Graciela believed that this exposure influenced their decision to consider this career. For other women, shadowing was a great way to understand more about the people underneath the white coat. As Mary indicated in her interview, women found the physicians they shadowed to be people with families, hobbies, and time for community service.

Jill was from a rural area of her state. She had considered a career in medicine, but the shadowing experience early in her undergraduate experience was significant for her progression to medical school. She stated:

> When I was at [small liberal arts college in study state], I did work part-time at a dermatologist's office. . . . That was kind of my first real experience with medicine, in the sense that I was there every day. I was seeing patients . . . . That physician that I worked for was also very encouraging. He always took the time to explain things to me. He always tried to make it interesting, make the bridge between dermatology and other aspects of medicine. So, I think seeing that for the first time, when I was still kind of early at [small liberal arts college] and in my undergraduate path, helped kind of seal the deal and I realized that, "Yes, this is what I want to do."

Jill interacted with a physician for an extended period of time. She observed how he interacted with patients and was familiar with other aspects of his life such as his family. He encouraged her to become a physician. This experience for Jill resulted in her moving forward in preparing for medical school because she saw the whole person who was a physician and he was encouraging. Not every woman had this type of experience with physician shadowing.

Dolores was participating in a program to support students of underserved populations in progressing into health-care professions. She had positive comments about the program. It assisted her in finding experiences for physician shadowing. She shared two different shadowing experiences that were with male physicians. Dolores said:

> I was set up to work with an oncologist . . . and he was great. . . . He was close and warm with his patients. And you can tell his patients really like him. But I also remember when he had left the room. . . . We'd walk into another room where he could write down his notes or his observations and only MDs [medical doctors] would be coming in and out of the room, or residents or whatever, hospital personnel. I remember . . . this woman would come in and ask him if he had eaten and tease him about how she was going to tell his wife that he wasn't eating again. You know, I remember there was also a joke about how he just doesn't see his wife or whatever, because he's so busy. I kept thinking. . . . "It's great but he's so

> good at what he does, that people love him. But people closest to him in his life, those relationships are suffering and I don't know if those are the kinds of relationships I want to have when I'm older."

Her conclusion from this experience was that the male physician had chosen his profession over other types of relationships such as family.

Dolores had a second shadowing experience in pediatrics with another male physician. She reported the experience this way:

> When I did my rotations through peds [pediatrics], it was more of the same. Maybe I guess, maybe the real factor here, I guess, that I, I really got to shadow people that loved what they do and are totally committed to their profession. But by virtue of that, other parts of their lives are not as strong as I would want those parts of my life to be.

Dolores did not observe a balance between life and career through these two shadowing experiences, a point that will be returned to later.

Shadowing also placed women in situations where physicians discussed their regret for selecting this profession. Gloria provided this example:

> Everyone's been told, "The field is terrible." "It's not worth it." "If I would have done it again, I wouldn't have." You know you get those people telling you that. . . . A lot of people are getting reduced salaries and having to pay more insurance and they're obviously unhappy. The older physicians are having to do more paperwork nowadays and they don't like it. They can't practice medicine like they used to. Whatever the reason, there's a lot of unhappiness. That can be very discouraging sometimes.

Gloria stated that it was discouraging to listen to a physician focus on activities such as higher insurance premiums and paperwork rather than people.

Graciela described a similar experience during her shadowing experience. A resident continually expressed dissatisfaction with his career choice and told her to

rethink her choice. These shadowing experiences described by Gloria and Graciela offered experiences for some women that identified dissatisfaction from practicing physicians. Even though these physicians were not positive on their career choice, it provided more information about the career field and demonstrated that physicians were "regular people" who sometimes disliked their career.

Shadowing went beyond understanding that regular people are doctors. The participants witnessed physicians making a difference in the lives of other people. Lan told the story of one physician she shadowed at a community clinic. A man who drove a taxi came in late in the day to the clinic with severe back pain. She said:

> Dr. XXXX said, "We have to get you to a hospital or you're going to die." Of course, it was almost closing time and this gentleman, he couldn't drive himself. Dr. XXXX took his keys and he told the nurse, "I will be back. Just stay here and make sure things go okay. I'll be back later." He took his keys, his own car and drove the gentleman out to St. XXXX's Hospital by himself, to get the gentleman the urgent care he needed. And when I came back 2 weeks later, Dr. XXXX had said, "That gentleman, if he had not gone to the operating room within the next several hours, he would have died." Yeah, so just like being there and seeing, "Wow! Just like one person can make such a difference in another person's life" solidifies for me, that this is what I want to do.

Lan's story explained how she witnessed a physician caring about the life of another person in a medical situation and going the extra mile to save his life.

Barbara had spent time with her father. Barbara observed:

> He's very personable with his patients and very dedicated to what he does. Then I kind of came to medical school and talked to other doctors and realized that they weren't like that. That there is a distance between them and their patients, and realized that I want to practice medicine how my dad practiced it, and that's not very

> common. He does a lot of pro bono work. And he never made very much money because, he talked about medicine was like an obligation and a gift to society and that we weren't doing it for ourselves. We're doing it for other people.

Barbara's experience with her father replicates Lan's experience with the clinic physician in observing physicians who cared about their patients. Women reported other values and behaviors they observed through their shadowing experiences.

Lan was in her senior year of her undergraduate experience and shadowed a female physician who was also a mother. She described this experience:

> Dr. XXXX, she was 5 months pregnant when I shadowed her, and she was pregnant on like, I think it was her fourth child. . . . I talked to her about it. And she was still able to take her kids to soccer practice and go to the movies with them and to be a good mom, and also be a cool mom. And the way she did it was, she worked in the ER [emergency room] and she would choose shifts that would allow her to do so. . . . That just made me feel like, "Wow, I can do this. I don't have to do pharmacy in order to be successful and to be able to help people and raise a family."

Lan felt empowered to pursue her career goal of being a physician after this experience because she realized that the physician career field did not limit women from other life roles.

Jenny, an honors student who double majored in chemistry and art, shared a similar experience:

> I shadowed a neuro-oncologist. . . . She was so amazing and she knew [things]. We were going through patient files and she knew her patients' names, even the ones that had passed on and she could tell me stories about them. So, just again, that very personal relationship with people. I was really amazed by. . . . I shadowed her pretty early on, I think my 3rd or 4th year in undergrad. . . . And so she was a big [influence]. You know she just showed me that. She was a very strong women and this is what she wanted to do and she had a family and worked.

Shadowing offered Jenny and Lan the opportunity to observe a physician who cared about her patients and participated in other roles of women.

Physician shadowing took many forms for these women. The women shadowed parents, family acquaintances, and strangers to learn more about the practice of medicine. These opportunities allowed the participants to examine this career choice beyond the patient-doctor relationship to understand that physicians were "regular people" who made mistakes and had hobbies. A few women shadowed physicians who openly complained about their career choice, which validated further that physicians were people, too. Physician shadowing was a space for observing values and behaviors that broadened the scope of a person who is a physician. The values of caring for others and raising a family were observed by women during shadowing. Another extracurricular activity that provided insight for women as decisions were being made on applying to medical school was patient exposure.

Gaining patient exposure in health-care settings: Understanding the culture. The admissions material for medical school offers this explanation of patient exposure:

> Patient exposure is defined as direct interaction with patients and hands-on involvement in the care of patients.
>
> It is important that the applicant be comfortable working with and around people who are ill. Direct patient exposure can be gained in a variety of ways. Experience can be gained through volunteering or working at hospitals, emergency rooms, homeless clinics or nursing homes. Patient contact must include patients other than family members and friends and does not include indirect patient care such as housekeeping or working at the hospital information desk. (University of Utah School of Medicine, 2006, p. 7)

This excerpt gives guidelines on experiences that offer exposure for patient care. Direct contact with patients constitutes the work of a physician. This extracurricular activity offers insight into a key component of the career.

As part of their exposure to patient care, the participants in this study gained certifications as an emergency medical technician, provided service at clinics for low-income or homeless people, and observed different health-care professionals at hospitals. These experiences had an impact on their process of deciding to apply to medical school. Two specific outcomes were achieved from patient exposure. First, most women participated in experiences that offered breadth and depth into health-care environments that went beyond exposure to patients. Women experienced the physician environment of health care that included smells, sounds, and rudimentary activities. People who range from patients to visitors and nurses to physicians inhabit this environment. This breadth and depth of the environment increased their knowledge of their future work environment. Second, women reported that they were encouraged and motivated to continue towards their goal of becoming a physician through patient exposure. Many women reported that these activities built confidence in their ability to positively impact people within a health-care setting. Exposure to patients was more than an extracurricular activity; it was motivational in deciding to apply to medical school for most women.

Lan, the chemistry major at a public research university, indicated that this experience confirmed her career choice. She said:

> It's also important to definitely encourage students to do the volunteer work in the health-care setting. Like for me, it confirmed for me whether or not I wanted to do it. And if somebody is thinking about going into the medical field, and they never really had exposure to it, how can they make an informed decision about whether or not this is the right career path for them?

Lan as well as other participants such as Helen and Jenny identified this extracurricular experience beneficial in confirming that a career as a doctor was the right choice.

During her undergraduate educational experience, Lan was involved in the hospital environment on a weekly basis. She said:

> I started volunteering not just during summers but full time. Once a week, I would go volunteer for 4 hours and I worked at the ER [emergency room]. . . . That was just so much fun. I just loved, not only the interaction with patients and checking them in and listening to them complain and stuff like that. But just like interacting with the nurses and doctors there. I just felt like I belonged.

As Lan described, these experiences gave her depth and breadth into patient care and the hospital. She was aware that patients complained and that she, as an individual, had an impact on how the patient interpreted his or her hospital experience. She told this story:

> If a patient came in and they were in a lot of pain or they were just in a bad mood and everything because they're injured or not feeling well. Just after talking to them, or taking them to their room and making sure they feel comfortable, or just smiling at them and then having them say, "Oh, you have a beautiful, radiant smile. Thanks for making my day better." Just stuff like that. It makes me feel like, "Wow, I made a difference in somebody's life and I just smiled at them. . . ." Just being at the hospital and having that exposure to patients and all that just helped a lot. It helped confirm for me that this is the right path that I've chosen.

Lan's story clearly addresses how much is learned from exposure to patients and staff within the hospital environment.

Helen discussed two different experiences that provide exposure to patient care and the hospital environment. She volunteered at an emergency room for 1 year to learn more about medicine. She was trying to answer these questions: "Do I really want to do this? Do I like this?" This is what she reported from this experience:

> Working for a year, critiquing myself working [the] nightshift. That made me realize I never wanted to be a nurse. Working mainly for cardiology. . . . The nurses, those people on the nightshift, once they found out that I wanted to go to medical school, or that I was potentially on that road, [because] I was smart. . . . They were so mean to me.

This experience gave Helen patient exposure and exposure to nurses that further clarified her goal of becoming a physician and not a nurse. Her other experience extended over a 3-year period at a free clinic that served anyone and was open in the evening when people needed health care. She said:

> So, I started working at . . . The Physicians Free Clinic, a very model clinic. A very well oiled machine. . . . I actually worked in that for 3 years. . . . I knew a lot of physicians from the community and from the hospitals, because it was a rotating system. We brought in everyone: surgeons, orthopedics, dermatologists, you name it. . . . It was a night clinic because people can't make it during the day, which is what everyone expects. That made it unique. And so we were there till 5 till whenever. So, being around a lot of those people.

Helen discussed the types of procedures she learned to do such as taking a patient's history or vital signs. She reported that this experience was important for her. She said: "So, I think that probably helped propel me because that was, I was there

until the end. Actually that was a big one." Lan and Helen approached exposure to patients and health care without a previous certification. This offered broad exposure to learn not only about patients but also the hospital culture and various professions in health care. This exposure assisted them in learning more about self. Lan and Helen enjoyed caring for others and receiving positive feedback for their actions.

Some participants received their exposure to patients and health care by gaining education on a specific occupation and then pursuing opportunities in that area. These positions included certified nursing assistant, emergency medical technician, and cardiovascular rehabilitation manager.

Victoria, who grew up and went to college outside the study state, completed a certified nursing assistant's program in high school. She then started to work in a hospital on a surgical floor using her education. She reported this:

> That really got me through hard times in school. Like when I hated organic chemistry and I hated calculus, and I didn't see why I was doing them. I could go to the hospital and spend my two shifts there on a weekend and I'd come back refreshed. And part of that was because I knew I was good at it. I knew I could spend time with my patients. I knew that I could help people. I knew I could learn medicine because I could . . . read a patient chart and know what was going on. It was easier for me, so that kept me going. And the nurses were like, "You're going to be such a great doctor. . . ." That was nice, because it was encouraging and because it was refreshing. Because I got to see the people that I wanted to work with someday.

She indicated that her exposure in a health-care setting was instrumental in moving her forward when courses were demanding and she was receiving rejection notices from medical schools. People encouraged her to continue, and she felt confident in

her ability to learn medicine despite a setback in chemistry or calculus. Victoria reported that her exposure to the people in this environment was instrumental in deciding to apply to medical school and kept her focused on her goal.

Susan, an engineer from a private research university, took an emergency medical technician course and then took the exam for certification. She joined the local university emergency response team to utilize her skills. She reported this experience:

> I was with them for 3.5 years and I started off as a terrified 19-year-old girl, who wasn't really sure which end was up. And by the end of it, I was actually the one in charge of the organization for my senior year. That was an amazing opportunity for me, just to be a leader of a group. I guess it just helped me, prepared me for medical school and the leadership aspect, and also taking care of patients and just learning how to trust myself and be confident and not so scared of everything. Because when I'm a doctor, I can't always ask the attending what to do because there's not going to be an attending, after I'm done with residency. So, I thought that was really invaluable for me.

Susan indicated that she learned about patient care and about herself as a professional in patient care. She stated that this activity built her confidence to move forward with her goal.

Not all women found patient exposure in a health-care setting advantageous to their process of deciding to apply to medical school. Gloria was an emergency medical technician and volunteered at a cancer clinic. She then pursued shadowing and patient exposure activities to confirm her direction of becoming a physician. She made this statement:

> Well, towards the end, I was doing more stuff in like a hospital setting, to try to get an idea, you know, when I was trying to get an

> idea if medicine was really what I wanted to do. I was trying really hard to figure out what it was like and all the stuff. It's really hard to figure out what medicine is really like. A lot of people will do tons of volunteer work in the hospital and talk to a bunch of doctors, but they're still not going to know fully what it's really like.

Gloria reported that her experiences did not result in a definitive answer concerning a career in medicine. The outcomes of patient exposure for Gloria differed from the experiences of Lan, Helen, and Victoria, but she did continue in her process of deciding to apply to medical school.

The women in this study shared their experiences in environments that provided them with exposure to patients. They became aware of interacting with people who were physically ill. They watched various medical personnel interact with these people. In most situations, the participants were limited in their role as they watched physicians make decisions that focused on disease and illness. Sometimes the only thing the woman could offer was to push the wheelchair to the room, a smile, and words of encouragement. In most cases, the women indicated a greater understanding of the health-care culture from these experiences. These experiences were reported as being motivational in moving some women forward toward applying to medical school. The last extracurricular area covered is volunteer and community service.

Engaging in hypothesis-based research: Valuing patient care. Participation in one or more hypothesis-based research projects was an extracurricular activity for admissions to some medical schools. The institution in which 15 participants were enrolled in at the time of this study required 32 hours of research.

Application materials for admissions to medical school define research and its importance to medical education and practice this way:

> Research is defined as involvement in a scholarly or scientific hypothesis investigation that is supervised by a professor.
>
> Research is the foundation of medical knowledge. We consider participation in research activities to be an important part of the preparation for medical school. Physicians depend on medical literature to remain current in their fields. Most physicians participate in research at some point in their careers. Research performed as part of a class is not acceptable unless the course was in independent research and the applicant completed independent, hypothesis-based research under the supervision of the professor. Research completed for a graduate thesis is acceptable. Applicants should be able to describe their project, the hypothesis investigated and their role in the conduct of the research. (University of Utah School of Medicine, 2006, p. 8)

This information outlines the parameters that participants in this study utilized as they pursued research within the context of an application requirement for medical school.

Hypothesis-based research provided an opportunity to utilize the scientific method for discovery of knowledge but lacked enough contact with people for the participants. Through research, women confirmed their passion to interact and serve people with health-care challenges. The participants identified laboratory research as an experience that motivated them to move forward in applying to medical school.

Jenny, who had pursued two research projects in oncology and physical chemistry, thought she enjoyed research due to early projects. She told a story of finding the MD/PhD options early in her undergraduate career, which seemed like a great way to enjoy both areas of interest. She explained:

> When I first became aware of the MD/PhD program here and I met with some of the researchers and some of the students. . . . I just felt like this was a group that I really connected with because they have such a love for science and also a love for people and want to mesh both of them. And I was having a really hard time with the idea of just giving up research, because I love it. I think that it makes you a better physician if you're constantly abreast of new, of what's going on in your field and with research you have to do. . . . I think just the correlation of the two makes you a better physician, too, and hopefully you're teaching students who are working in your lab. You're teaching the people who are your patients. You're interacting with people. You're also doing research and so I really like how that's all combined.

As her undergraduate experience progressed and she had more time in the lab, she told a story that explained her motivation to move forward in her decision to apply to medical school and not a joint MD/PhD program: "Just interaction with people. I realize, like spending long hours just doing research, wasn't as fulfilling for me. And then I'd see kids, and I'd be like, 'Oh, my gosh, I want to work with [people].'" Jenny embraced research initially because she thought she could combine research with being a physician, which would make her a better physician. This philosophy was mentioned earlier within a medical school publication. She learned that she valued interaction with patients, which was not available in the research environment.

Women described research experiences in physical chemistry, biophysics, and psychology labs. The bench-work experiences involved interaction with gels, tubes, and computer analyses. Barbara, the biology major, described bench work this way: "We did genetics work on plants and I would do like DNA extractions and PCR [polymerase chain reaction]. . . . You just sit there and put fluid in test

tubes and look at gels and do computer analysis." As Barbara described research, she shared one outcome of research that was repeated by other participants: "And it just became very repetitive. There's no personal interaction." Jenny, Barbara, and other participants missed interacting with people when they were involved in research.

Garciela explored research through her major of psychology. She shared this:

> I wanted to do research but I knew that that wasn't like me, I needed more of the people contact. I needed to be with people and be able to help people directly more than doing research. . . . That's when I started [to] think, "Well, maybe I can do medical school."

So, research was a catalyst for many women to realize that they valued and needed interaction with people at a greater rate than what research offered them in a lab.

Gloria, upon identifying her major in biology, moved into a research lab by her sophomore year. She reported:

> At the beginning, I thought, "Wow, research is great." I'm like, "Maybe I want to go into research medicine." You know, I was glad that I started so early because I think it takes a year or 2, at least, in research to realize if it's for you or not, at least bench-work type research. I was in it for almost 5 years. . . . That really gave me a good opportunity to realize that toward the end, I was beating my head on the desk, and, "Wait. This isn't what I want to do the rest of my life." It's just too tedious and repetitive. Too many failures. Well, medicine probably has a lot of failures, too. Just too much failure and not enough results that you can be proud of [in research].

The participants indicated that research provided perspective on their career direction. Gloria continued later by saying, "Research was an event that was very influential towards my decision because at least I was able to eliminate that as

something that I wanted to do in the future."

Research was an extracurricular activity for all women in this study due to the application requirements of some medical schools. Most women indicated that their research experiences facilitated an understanding of research as a tool that would positively impact patient care. They had a skill set to understand and apply information from research journals as appropriate to patients. Engaging in research resulted in women confirming their interest in patient care over laboratory research. Research activities left the women committed to patient care rather than bench-work exploration. The last extracurricular activity that will be covered is volunteer and community service.

Participating in community service: Career match and personal growth. A physician is a member of the larger community and encouraged to provide service in that community beyond paid employment in a health-care setting. One medical school admissions packet defines service in this way to potential applicants:

> Community/Volunteer service is defined as involvement in a service activity without constraint or guarantee of reward or compensation.
>
> The medical profession is strongly orientated to service in the community. Applicants should demonstrate a commitment to the community by involving themselves in service and volunteer activities. (University of Utah School of Medicine, 2006, p. 7)

The participants in this study identified community service as a value that they experienced throughout their lives. Each participant shared service activities that moved beyond health care.

Jenny developed an art program for homeless people that she discussed with pride during the interview. Susan went to Ghana as a member of a relief team

collecting demographic data. Gloria went to New Orleans to offer support after Hurricane Katrina. These extracurricular activities within the premed prescribed process allowed these women an opportunity to experience another aspect of their future career, which was community service and involvement. All the participants had examples of service to community that went beyond the 48 hours recommended by one medical school admissions brochures (University of Utah School of Medicine, 2006, p. 7). Women identified a match between themselves and their future profession because service was part of their lives.

The women reported accomplishing service in diverse ways to meet this admissions criterion and found it offered them personal growth. Victoria, a biology major, became a coach for Special Olympics. She reported her experience this way:

> That was really fun. Not really much connection to go into medicine although I did it because I knew I needed to learn to be a more patient person, and that did help with that. Some really amazing people. Especially like the athletes are completely genuine and they have this unbridled emotion. Whether good or bad, they're going to feel it all the way. That's admirable. They're just really fun.

Victoria identified this as an experience that offered her personal growth while assisting others.

Mary took a few years off between her undergraduate experience and applying to medical school. She was still uncertain of this career choice even though she had completed all prescribed activities on the checklist. She volunteered at a homeless teen clinic and made this comment, "I think volunteering was probably the most, the area that most helped me want to go into medicine."

Victoria and Mary identified service as an extracurricular experience that offered personal growth and development that positively impacted the process of deciding to apply to medical school.

Volunteer and community service was an extracurricular experience that was necessary for applying to some medical schools. The participants described many different service activities that were pursued to meet admissions requirements and contributed to personal growth. Women described community service as a positive "hoop" as they pursued the prescribed premed requirements.

The participants reported that the requirements for applying to medical school were presented in ways that were routine, structured, and overwhelming for potential premed applicants. The terms of "jumping through hoops," "checking off the box," and "have-to-do's," were used by the participants to describe the process. They questioned their ability to complete all the requirements at the level of competency needed for admission to medical school. After meeting with a premed advisor or reading premed literature, they engage in activities on the "checklist." They selected a major, enrolled in science courses, accomplished the MCAT, and pursued various extracurricular activities.

The next section adds depth to these journeys experienced by women who were considering a career as a physician. In the previous section, the prescribed premed requirements were foregrounded in the process of deciding to apply to medical school. Now, this chapter will foreground the woman, the individual, within the process of deciding to apply. This aspect involved relationships,

interactions, and self-reflection that added confidence and understanding for continuing this process of decision making. Women focused on answering the question, "Who do I think I am?"

"Who Do You Think I Am?"

"Who do you think you are? Who do you think you are to think you can be a doctor?" (Rosalyn, May 23, 2007, p. 4) The words spoken by Rosalyn initiate an emerging theme that was evidenced through the interviews. Interviews indicated that another element existed that informed the process of deciding to apply to medical school for women. The prescribed application activities had a focus on the requirements for a medical school application as designated by medical schools. Women identified key components of their decision-making process that were absent from conversations and materials concerning the prescribed premed application activities. As the previous section on the checklist unfolded through the experiences of women, it appeared that women learned as much about self as they did about applying to medical school. Some topics relevant to women were missing in the prescribed preparation list. These components offered information that informed women about self and encouraged a continue interaction between self and the prescribed premed activities within the process of deciding to apply to medical school. This interaction between self and the prescribed activities generated an answer to the question, "Who do I think I am?" The process of deciding to apply to medical school was not centered on the activities in the preparation process. The process of deciding to apply to medical school was an interaction between activities

and self. The catalyst for the exchange between activities and self was inputs from individuals who served as role models, mentors, and support networks.

This section suggests three factors contributing to the preparation process of deciding to apply to medical school for women. These components are women understanding women's roles, identifying mentors, and developing support systems. The section begins with women discussing their experiences in gaining information about the roles of women in society. Some women had been socialized to focus on one role, which reduced their ability to pursue other roles such as a career. In addition, women shared their personal value of pursuing a career and family.

The next component discussed in this section focuses on the value of mentors and role models. Women identified and utilized this component for visual confirmation that women can be physicians. In addition, women gained strategies and techniques to apply within their personal process for achieving success. Finally, this section will focus on support systems. Most women in this study described the significance of these systems in their process of deciding to apply to medical school. The prescribed process did not address the importance of these systems or suggest how to develop them. Women reported support systems to be an influential component in the process. The addition of these three elements provided depth on how women maintained engagement in the process of deciding and learned about self. Women were able to answer the question, "Who do I think I am?" which is critical in deciding to apply to medical school.

Roles of Women

> And all the women there [general surgeon's office], a majority of them weren't married. So, there's part of me, that there's this struggle, as I was going through college [undergraduate], just seeing at the end that, "I'm going to be alone."

This is a quote from the interview with Wei. She and many participants in the study discussed a concern they faced as a woman considering a career as a physician. Was it possible to find congruency between certain gendered roles that center on marriage, family, and children and a career as a physician? There were two distinct challenges faced by women. The first challenge was based on accounts of gender socialization that encouraged women to identify as mother and wife over other societal roles. Some groups that women affiliated with from an early age facilitated these values. The second challenge was facilitated by a personal value to have a balanced life that included children. The next two subsections provide narratives from the participants that unpack both challenges. Before proceeding with this section, it is important to point out that all women in this study, except for 2 were under 30 at the time of the interview and were between the ages of 18 and 25 as they were deciding to apply to medical school. The issue of assuming roles as mother and partner is considered at this point in life. Women in this study confirmed the relevance of this issue, especially within their process of applying to medical school.

Focusing on One Role Over Multiple Roles

A question asked of all women in the study focused on the impact various group affiliations had on their decision to apply to medical school. Some of the women belonged to a religion that encouraged women to value their roles as wife and mother from an early age. Emma was a member of this religion until she met her spouse in college who was not a member. She reported being conflicted about messages from this religion on who she should love and what she should do with her life. She decided to disassociate to allow her to make decisions that followed her personal values rather than group values. She reported that this was difficult since all other members of her family are part of this faith. She told this story about her experience:

> I never felt like the religion, in general, even encouraged getting a degree. . . . I think they gave it a little bit of mouth service, but there was no follow-through, because they just encourage you to get married so young. And then once you're married, they encourage you to have kids right away. Once you're down that path, I don't know many women that can handle school and kids, and probably work. Because when you're that young, you know, you're putting your husband through school too. So, I don't know how I ever would. I could never really figure out how I would have juggled that. Trying to live up to the expectations that people were setting for me, I just kind of assumed that I didn't want to do it. It sounded too hard. Although there are some really strong [specific religion] women that I've met in medicine, that I really respect. . . . They are few and far between. . . . Even the successful [specific religion] women who I've seen complete this journey haven't really fulfilled the traditional expectations for the female role.

Emma also explained that family members encouraged Emma to pursue physical therapy or pharmacy because it provided more flexibility for becoming a wife or mother. Emma shared this situation when she decided to apply to medical school:

> I remember calling her [mother] and telling her that I was going to apply for medical school, and the first thing out of her mouth was, "I thought you wanted to have babies?" We've since had discussions and she's since realized that she was the one who wanted me to have babies, and that I don't even know if I want kids yet. We're getting past all of that. My whole family, they were very unsupportive at first. It was frustrating.

Emma was not the only woman who found herself in this type of situation of belonging to an organization that established certain roles for women that conflicted with their career goal of being a physician. Other women, such as Wei and Susan, reported membership in groups where certain group values were forced on the individual.

Wei, a member of the same religion as Emma, told stories of Sunday school classes that praised young women who identified with wife and mother roles over career roles. One activity she described involved writing a letter to oneself concerning the future. Wei concluded that there was a right answer and it was not the one she wrote. She explained it this way:

> I remember we would write letters to ourselves when we were older, like goals and things we wanted for ourselves. And I remember writing to myself, my future self, that, "I hope you're in medical school." And then, we'd read it to everyone. And the teacher came around before we read it and she looked at mine. And she was, you know, it's not what she wanted. . . . So, then when everyone, all the other girls read, "I hope you're married. I hope you find a worthy young man. I hope you have lots of children." And, that's their hopes and their dreams for their future self, which I felt was so passive.

Wei experienced this at age 11 and referred to herself as a "weird child" based on this activity. She reported leaving this church in her early teens with her parents support due to continued activities that encouraged marriage and children over

other goals in life. Upon entering college she elected some affiliation for a spiritual purpose but reports certain aspects of this religion are still problematic for her.

Emma and Wei grew-up in the study state that has a large population who affiliate with this organization. Susan grew up in a different geographic area but is a member of this religious organization that is referenced by Emma and Wei. Her family included a working father and a stay-at-home mother. She went away to college to a private university that has a religious affiliation. She found some support from faculty as she made decisions about medical school but did not receive the same response from her family. She shared this experience:

> So, when I first told my parents that I wanted to go to medical school, I think they were a little bit surprised. They weren't sure how to take it because, you know, well, part of the thing is that being [specific religion], it's normally what happens is the father works and the mother stays at home with the kids. . . . So, for a while, I think my mom had a hard time with it, because she thought that that would conflict with raising a family and she wasn't sure how it was going to work out. So, I just kept trying to reassure her that I felt that it was the right thing for me and that I didn't know how it was all going to work out in the end, but that I wanted a family and that somehow I'd make it work.

Susan continued to prepare for applying to medical school. She was successful in her new major of chemical engineering, her emergency medical technician training, and her research.

She reported that other family members continued to question her decision. She told a story of her brother-in-law, who she respected a great deal, discouraging her career direction as she finished her undergraduate degree. She said:

> He told me that if I was a woman and I was [a member of this particular faith], medical school wasn't where I wanted to be. That

> was really hard for me. It really made me think twice about it, you know, because I respected his opinion so much. I just came back to, I knew that medical school is what was right for me. Maybe by saying that, he was saying, "Well, I would never marry a woman who is a doctor," but that didn't mean that I couldn't do it and be really happy and find a guy who would be willing to marry me, which I did.

Susan indicated that this questioning by people close to her that focused on the role of women within the family unit forced her to be firm in her commitment to her vocational choice.

Emma, Wei, and Susan reported membership in the same group that identified the primary role of women as mothers. The women reported that a career was a secondary event for this organization. Emma reported this organizational value as one of the reasons she left the group. Her disengagement from this group allowed her to gather information about the roles of women which made her feel confident in deciding to apply to medical school. Wei temporarily left the group to explore the roles that women assume in life but gradually returned as she became more confident in her decision to apply to medical school. Susan maintained her membership in the group, ignored messages that conflicted with her career goals, gathered information that addressed women's roles, and decided to apply to medical school.

Religious groups were not the only group affiliation that questioned the pursuit of career over wife and mother. Some women experienced this through their familial groups that were not tied to a religious organization. Claudia attended a private university in a different geographic location from other participants. Her

family was from a high socioeconomic status group and lived on a tropical island. Claudia had been interested in medicine her whole life. Her mother was diagnosed with cancer when Claudia was 12. This gave her a great deal of exposure to doctors. This experience was not positive for her and left her with many questions concerning this career. At the age of 15, she started her college experience at a private residential university. She shared this memory:

> Although I had been interested in medicine my whole life, I was always told, "You could never be a doctor. You're female. . . ." My mother's family is very much of the persuasion that women should only go to school to find a husband who can take care of them, and that's exactly what my mom did. She went to the States to school to get her "Mrs. Degree," and that's kind of the persuasion I was brought up in, is that you don't work as a woman and you get married and have children.

Claudia explained that it was critical for her to seek out information from other women. Her personal experience was so focused on marriage and children that she was void of information about options. Other participants in the study made children and family a foregrounded part of their decision process not due to group pressures or the values of a specific organization. It was a personal value that was challenging their career goal.

Lan, who identified as Asian from the study state with no strong religious affiliation, discussed her personal value of being a mother and having a family. These values were in her thoughts as early as high school. Her desire to have a family and be a "good" mom did not seem to have its origin in other sources other than her personal values. She said:

> "Well, if I want to have a family when I grow up and have kids and everything, how am I going to be a doctor? . . ." At one point, I briefly had considered not going to med school, because I'm thinking, "Well, maybe I could do pharmacy or something else, that will allow me to have more time and freedom and to be able to have kids and be a cool mom. Rather than like working all the time."

Lan openly discussed this challenge between her goals to be a mother and a physician. It was important to her to foreground this issue to identify opportunities to talk to women to gather information. Lan used various opportunities to discuss her interest in having a family and being a physician.

Graciela's father was a doctor who came to the United States from a Latin American country to study medicine. Her family talked openly about the lack of time he had for wife and children as he completed his education and started his practice. She shared these comments in her interview:

> I think also, always the family concept came [in]. Because me being a woman, wanting to have children and get married some day. And all of that, they [parents] always tell me, "Yeah, you're going to be able to do it but you're going to have to postpone certain things, like having children. . . ." I mean some people do it before. But probably me, I won't. So, things like that.

Graciela and Lan discussed a future family in a context of their personal goals. They indicated that this value was not being prioritized for them by any group, such as a religion. They indicated that their family was supportive of their decisions on family and career. They also felt that it was important to discuss this issue with multiple people.

Dolores talked about relationships and family as being an important value as she considered a career as a physician. She was trying to balance education with

this personal value. She grew up in the study state, was not a member of the dominant religion, attended the public research university in the study state, and identified as a Latina. She said this:

> As far as like dating goes, I've put that [on] hold throughout college and graduate school. So, I'll date occasionally but I shy away from any relationship that might get too serious because I want to finish school and once that's done, I want to put all of my energy into a relationship because I feel relationships deserve that, so I don't want to split myself like that.

This comment from Dolores would indicate that she compartmentalized education and relationships. She indicates that while she was focusing on her education, she would not participate in a relationship. She did not identify ways to accomplish both simultaneously. Her interview was absent of conversations with women on how to accomplish multiple roles. She stated in her interview that she tried to seek out women to discuss these types of issues. Her efforts were not successful. For example she shadowed two male physicians and visits to the medical school left her partnered with male medical students. Dolores completed the process of deciding by not applying to medical school.

Lan, Graciela, and Dolores reported having questions about combining a family with a career in medicine based on personal values and goals. Other women, Emma, Susan, and Wei, indicated that values concerning marriage and family were received through a religious group affiliation that encouraged motherhood and discouraged a career that might detract from being home continuously with children. Claudia received messages from her familial group that encouraged marriage and discouraged a career. These women reported engaging in

various actions to gather information about this challenge that identified a conflict between gendered roles, such as mother, and careers, such as physician. This act of gathering information and the information contributed to their persistence within the process of deciding to apply to medical school.

Even though many women were curious about combining a career and motherhood, it is important to clarify that not all women in the study had this apprehension about congruency between family life and a career as a physician. They were aware of the issue but did not personally identify with it as conflicting with their future career.

Some participants, who grew up in the same geographic area as Emma and Wei but affiliated with different religious organizations or no religious organization, did not identify the personal conflict between career and family that was outlined by Emma and Wei. Gloria grew up in the same area as Emma and Wei but attended a private university outside the Rocky Mountain area. She talked about her mother, father, and siblings being significant in her decision to apply to medical school. She never referenced a conflict between family and career. Mary echoed the words of Gloria. In her interview, she never spoke about her personal need for marriage and children even though she was married but living apart from her spouse who was in a professional school in another state. She was already experiencing women's multiple roles of spouse and medical student. Jill, who was from a rural area in this geographic region but not a member of the prevailing religion, never discussed becoming a spouse and mother as an obstacle or barrier

to applying to medical school. She attended a private liberal arts college in the study state and had a constant relationship with someone who was supportive of her career goals.

Participants in the study indicated that issues relevant to their roles as women were pertinent within the process of deciding to apply to medical school. This issue is not discussed in the prescribed preparation process even though it was a challenge for women in this study. For some women, it was significant based on pressures from groups they affiliated with as they were making this decision. For other women, the issue was relevant based on their personal values of becoming a partner and mother. As participants discussed gendered roles within the decision-making process for a career as a physician, they reflected on experiences with their own mothers.

Mothers as role models for multiple roles. Some women shared experiences that involved observing their mothers being involved in educational endeavors while maintaining a household. Their mothers were pursuing and accomplishing graduate degrees, employed, and raising a family. Some of the women were in the household to observe them.

Wei's parents were professionals in health care. Her mother was a nurse. She told this story:

> She's [mom] since gone and gotten a PhD. And this is kind of funny. What motivated me, . . . to see my mom going through her dissertation and to see how many years and how much work and how hard it is to go through all that for a PhD. Because a PhD isn't easier.

Wei concluded that her mother was continuing her education for a degree that was very rigorous. This was motivating for her as she decided to attend medical school. She observed someone engaged in being a mother, a nurse, and a student.

Gloria reported that education was very important in her family. She offered further clarification about early influences for medical school with this story about her mother:

> I'd have to say my mother was going to nursing school during my childhood. . . . I got to kind of see what that was like for her. You know, I would see her bring home her textbooks and we liked to look through them and look at all the kind of deformities and stuff, and diseases. I always thought it was kind of interesting. She would take me around to help her with her thesis work, when she was doing thesis work on Hispanic women and breast cancer in [geographic area]. Just like an educational campaign for them. You know, I always thought that was neat.

Gloria indicated that observing her mother continuing her education was influential on her progress towards medical school and Gloria did not identify a conflict between motherhood and a career as a physician.

Olene was from the dominant religious faith in the study state. Her parents divorced when she was young and Olene watched her mom maintain a household, a career, and complete a PhD in a science field. She described her relationship with her mom this way, "I would definitely say my mom was a huge influence for me. She's always encouraging me and pushing me, you know, helping me with things I can't do." Olene had watched her mom negotiate multiple roles at an early age without approval from certain groups. She reported this:

> Our first ward we lived in, my mom got a lot of crap for it [working]. It was really hard on our family. So, I kind of grew up saying, "Well, that really sucks." Like it never really discouraged me from doing anything career-wise. But it was like, "Well, that's not really fair. You know? My mom doesn't have a choice. She has to support our family." From there, from being a kid and seeing that, I was like bound and determined not to ever let it influence me at all.

Olene's interview was filled with positive comments about her mother. She described her mom's pursuit of a terminal degree this way:

> I think I was in junior high, and she went back and got her PhD more or less because . . . it was like a goal that she wanted to accomplish. She's kind of like me. She's a perfectionist and wants to do everything possible. So, she went back and did that.

Wei, Gloria, and Olene observed their mothers continuing their education and accomplishing degrees while engaged in being a mother. They all indicated that this influenced their decision on attending medical school. They saw their mothers as role models for balancing life and career.

Most women in this study were challenged by concerns over gendered roles conflicting with their vocational goal of becoming a physician. They openly shared this challenge and their actions for identifying solutions that impacted their participation in the process of deciding to apply to medical school. These experiences for understanding how to negotiate gender roles and career roles facilitated more interaction between the prescribed premed activities and "self." Women were observing and interacting with people that offered models for accomplishing these goals or presented scenarios that made some of the women question this choice at a deeper level. Some women described their own mother

being a model for negotiating the multiple roles that included motherhood and career. The next section will focus further on relationships that offered guidance and information that impacted participants as they made decisions about their future career.

Mentors and Role Models

A mentor is defined as a "trusted tutor or guide" (Mish, 2006, p. 776). For the purpose of this paper, mentors and role models are people who offer a visual image, information, and guidance on career and life issues as women participate in the process of deciding to apply to medical school. The participants discussed mentors and role models in two different ways. One group of experiences centered on a visual image of a woman accomplishing her goals that included being a physician. The second group of experiences involved interaction with women, physicians and nonphysicians, who offered guidance and information. Most of the women in the study identified a person who provided strategies on accomplishing goals that centered on various elements in career and life.

Interacting with mentors and role models for information and guidance.

Some women reported interactions with female physicians at various times in their personal lives. It established the fact that women were physicians and impacted most women in seeing self as a physician. Olene discussed her experiences with her pediatrician. As a child, Olene indicated that she had many career options in mind. She recalled her admiration for her pediatrician. She said:

> The thing I remember most is when I was in elementary school, I would go to the doctor, my pediatrician, and I absolutely loved her. She was like my hero, as far as like people that aren't in my family go. So, she was a huge influence on me wanting to do medicine. Because it's like, "Oh, I want to grow up and be just like you." Kind of ever since then I wanted to be a pediatrician, initially. That's been my goal ever since like elementary school. That's kind of what got me into it. I don't really know if there was like any experiences, other than just her interaction with me was a big deal.

Olene experienced this visual image of a woman as a physician early in her life. Since this relationship continued, she also had a mentor that provided other experiences such as physician shadowing that continued to move her forward in her process of deciding to apply to medical school.

Other participants recalled experiences that identified women as physicians being significant to their progression into this career. Victoria played softball as a teenager. She remembered watching the U.S. Olympic team in 1996 that included a surgeon. She said:

> There's a physician that was on the U.S. Olympic Softball Team in 1996. I thought she was really cool, because I was 14 then. She was cool. Like she had just accomplished so much in life. I think she's an orthopedic surgeon. Yeah. She was one of the softball players and I was playing softball then, so it was really cool. She was a good role model. She had accomplished stuff.

Victoria explained that this person who was an accomplished physician shared Victoria's interest in softball and medicine. She saw this woman as a good role model because she was a woman who had established herself as a physician and a competitive athlete. Victoria had a visual of a woman who was a physician.

Claudia shared multiple situations that discouraged her from medicine in her early life. This included her experience as a teenager with oncologists who were

treating her mother for cancer and her parent's focus on getting married rather than a degree in college. One of the groups Claudia joined in college was a rowing team. She was talented and joined the national team after college and proceeded towards Olympic competition. This experience gave her exposure to a female physician. She explained:

> I was at the Olympic Training Center, one of the physicians that was taking care of our team was from the University of Tennessee. And I'll never forget her, because she's the only woman that I saw as a physician there. She just kind of was the first physician I knew that took the time with me to explain things and was interested in me and my life, and not just like the oncologist that I'd met through my mom's cancer therapy, that were just in and out and rushed, and didn't want anything to do with me.

Claudia explained that this was significant because of lack of role models up to this point and her continued interest in becoming a physician. Claudia was impressed with the time this female physician spent with her as a patient. This was a different experience from the male physicians that she had experienced in the past who were curt and stern.

All three of these experiences described by Olene, Victoria, and Claudia identify the importance of a visual image to interact with as women consider a career as a physician. This image communicated that women become physicians. It provided these 3 women with encouragement for entering this profession because it foregrounded women as members of the profession. This is significant for women who are deciding to apply to medical school.

As women considered applying to medical school to become a physician, many questions emerged. These questions for most women focused on personal and

professional goals for their lives. Mentors and role models offered guidance and information for addressing these questions. Some women interacted with female physicians that openly discussed their path. Other women observed female physicians through the lens of a patient. Another group of women found value through interacting with women outside of medicine who had pursued a career and a family. Role models provided information on the career and on strategies for balancing multiple roles of women.

Rosalyn was a single mother with three children when she started her preparation for medical school by taking one class at a time. Her interest in medicine had emerged when her children were small. She had many life experiences to draw upon as she made this decision that would place her in medical school after her children were adults. One experience involved her child who had a brain tumor. She shared the following:

> So, the seed was planted and I had this interaction with her [daughter's] pediatric oncologist, who was truly one of the most powerful motivators and I haven't talked about her yet. She was one of the most powerful motivators for me wanting to move into medicine. But I never shared with her, that I wanted to go to medical school. . . . I just saw how she was with patients and how influential she was in my life. Part of it's her personality and she's a very spiritual person. You can imagine a pediatric oncologist who's going to have a sense of spirit. You see children die and you're in there at the moment of their death, you have to be able to have a sense of presence of something bigger. . . . She had that, and that really was so life-giving and enlivening for me. I thought, "I want to be like that. I want to be like that." That was with me through all. She cared for [my daughter] for a number of years. That seed of, "I want to be like that. I want to be a doctor." Was planted during those years, when [she] was diagnosed.

Rosalyn described a female physician that cared and had a sense of spirituality. This was an example of a physician that provided her a role model.

Graciela had a female friend who was a resident in medical school while she was an undergraduate. She explained:

> She helped me a lot with my essays and reviewing my application and everything. She was always just someone I admired of how she balanced her life and also was able to do a residency, which was crazy, and [she] seemed so happy.

The experiences described above by Rosalyn and Graciela focus on interaction with physicians as a role model or mentor for the women. It allowed women to observe women from a different lens. This lens allowed women to observe physicians who cared about patients and had multiple interests.

Lan and Jenny explained that they experienced mentoring as they shadowed female physicians. These interactions allowed them to meet women who had achieved a career as a physician. It offered an opportunity for questions that explored other aspects of being a women and being a physician. Lan shadowed an emergency room physician. This female physician was 5 months pregnant and this was her fourth child. Lan reported that she talked openly to her about how she balanced her profession and her personal life. Lan concluded that, "Wow, I can do this. I don't have to do pharmacy in order to be successful and to be able to help people and raise a family."

Jenny shared her experience with an oncologist who demonstrated commitment to patients and family that was a valuable experience for Jenny as she prepared to apply to medical school. She shared this statement, "She was a very

strong women and this is what she wanted to do and she had a family and worked." Both women were placed in shadowing situations that offered a mentor for information that assisted them in negotiating multiple roles in life.

Women identified the importance of mentors and role models in creating their vision for themselves as a physician without ignoring other personal values. Some participants identified women who were not physicians as significant to their decision to apply to medical school. Sometimes these women were in the higher education community serving as administrators and faculty members. Jenny described the director of the university Honors Program: "She was just really supportive of being a strong woman and going ahead with it [medicine]." Jenny and this woman shared the same religious faith and grew up in the same geographic area. The director of the Honors Program had accomplished a PhD and had a family while still maintaining her religious faith.

Claudia, who was in her late 20s and working full time at the cardiac rehabilitation unit, indicated that a female biology faculty took an interest in her goal of attending medical school. She shared this conversation with this faculty member:

> I remember it was really important to me that I do well in the classes and. . . . So, she kind of, even though I didn't ask her, she took a little bit of an interest in me and she said, "Hey, have you ever thought about going to medical school?" And I said, . . . "Yeah. Kind of think about this." So, she kind of said, "Well, this is what you might want to know." Or "This is a good class to take from this professor. . . ." But I loved her class. It was reputed to be a really touch class and I did really well in it, so it made me feel maybe competent enough.

Claudia viewed this acknowledgment of competence and advice by this faculty member as important in building her confidence as she progressed towards her goal of medical school. Her parents were still not supporting her efforts financially or emotionally so Claudia accepted support from other people.

Lan discussed her experience as a freshman in the ACCESS Program which was a mentoring program for women in science at the public research university she attended for her undergraduate degree. This program provided Lan with support and models of women being successful in preparing for various science careers including medical school. She said:

> Being a freshmen and getting into the ACCESS Program, . . . that was just so encouraging for me. Just to start off before freshmen year even started during the summer, and getting to know like a bunch of cool girls who are also like nerdy, but cool, but also interested in science and wanting to do a lot of things in their future. You know, going to med school or doing a PhD in physics or whatever. . . . We built such a good camaraderie during the summer, that when the school year started, . . . we all had at least one or two other ACCESS girls in the science class with us. So we'd always had a friend to sit by and to take notes with and to study with. . . . Even getting to know the ACCESS girls before me, and seeing them between classes, or getting advice from them about what classes to take, what professors to take the classes from . . . was really encouraging. Just to see that, "Oh, the ACCESS girl 3 years before me just got accepted to med[ical] school, maybe I can get accepted, too."

Lan indicated that this program that facilitated contact with successful women was motivating for her as she moved forward her decision to apply to medical school. Jenny, Claudia, and Lan reported finding a woman or group of women within their campus community that supported their personal and professional goals.

One woman did not described female mentors or role models. Dolores attended the same university as Lan, identified as Latina, and had no familial connections to medicine. When asked about groups she associated with she said, "I have a lot of girlfriends. . . . Because I love participating in the culture of being a woman, femininity, and beauty and all that stuff." Dolores continued to pursue opportunities to interact with women who had pursued a career in medicine as she progressed through the activities for application to medical school.

Since her shadowing experiences were with men, her advisor suggested a visit to the medical school to interact with female medical students. This was the experience she described:

> When we did go up to [the medical school], . . . there was never anyone [women] in any of the classes. . . . And the few that there were there, I'd always try to maneuver. Because like I said, I have a lot of female friends so I just think I obviously am more comfortable with women. But I mean, there were just a few. I wouldn't always get placed with the girls, so I couldn't really talk to them about relationships or about motherhood or anything. What do women do when they become doctors if they specialize in something like oncology? Do they have children? Do they not? Is that not even something they worry about? I don't know. I never got to ask.

Dolores reported that she was looking for women who could answer her questions and provide information from a female perspective. She concluded that female role models were significant for her as she was deciding to apply to medical school. Various experiences shared by Dolores suggest that the absence of female mentors and role models leave many questions unanswered for women as they decide to apply to medical school. Dolores did not apply.

In closing her interview, Barbara praised a new activity at her university for premed women. These were panels that focused on women preparing to apply to medical school. Panelists were female medical students and physicians who answer questions about applying to medical school and women's issues such as becoming a mother. She said, "I'm glad that they do the panels for women now, and I really wish that I'd had that." In referencing the same activity, Rosalyn made this comment:

> There are unique things to being a woman trying to do this, because I think we have multiple roles that we expect ourselves and we're expected to fulfill. And certainly if you're going to do it after having children, or while having children, there's very unique challenges and considerations that you bear, that are unique. So, I think it's really good to have a group of women who can sort of get together and discuss how they're doing, how they're doing this thing, that's quite big.

Barbara and Rosalyn indicated that women do have questions on how to negotiate a career and a family and felt that this activity offered role models and possible mentors for women who were considering a career as a physician.

Mentoring relationships with male science faculty. Women understood the positive relationship between interacting with faculty and understanding course material. One technique to accomplish more interaction was to become a teaching assistant or a research assistant. A teaching assistant offers support in facilitating a course. The assignment can range from preparing visual materials for class, offering study groups, or reviewing completed assignments, or a blend of the three. Lan pursed a teaching assistant position with the anatomy faculty and found it very beneficial. Olene, biology major from a public university in the study state,

was a teaching assistant for two science faculty. She reported: "I TA'd [teaching assistant] for them, so I got to know them better, and on a more individual level. They were mentors to me. . . . They were pretty good and influential for me wanting to keep going [towards medical school]." Lan and Olene increased their mastery of scientific concepts and identified mentors in the science faculty, which was important to their decision to pursue application to medical school.

A research assistant is involved with discovery of knowledge within the laboratory environment. Since research was part of the prescribed premed curriculum, many women had interaction with faculty through research, which resulted in collegial relationships. Susan, who did research in biophysics at a private research university, described the faculty member she did research with as a mentor and reported him as very influential in her achievement, which resulted in attending medical school. His relationship that acknowledged her academic ability did not support her vocational direction of medical school. She described a letter of recommendation that he wrote for her to attend medical school this way:

> One of the things he wrote was that he liked me so much that he wished that I would just stay and do my master's degree with him and not go to medical school. He kind of thought that I was too smart to do medical school. That I shouldn't waste my brain on patients and that I should just do research.

Someone who Susan saw as a mentor was questioning her chosen career. She reported that this faculty questioned whether medicine would use her intelligence.

Jenny experienced this same type of phenomenon with a science faculty at the research university she attended in the study state. She described faculty

interactions in this manner concerning her decision to apply to medical school after serving as a research and teaching assistant for this faculty member:

> He was very negative about me applying, said that I was deserting the lab because I had applied to medical school, and deserting the master's program, which I said at the beginning, that I wasn't sure that I wanted to finish or even do. But he was kind of pushy about starting it. Because he thought if I got into the classes and felt really strong about it, that I'd probably finish and then keep on that path.

Jenny did not change her decision about pursuing medicine even after her experience in a master's program. Jenny and Susan reported being challenged about their choice of a career in medicine over research by male faculty they viewed as mentors. They reported that research assisted them in identifying their personal interests in medicine and moved them forward in deciding on a career as a physician. Their experiences suggested that some male science faculty did not accept this career diversion from research.

Some women seemed to understand this reverse dynamic that emerged in these mentoring situations. Jenny explained it this way:

> So, I think that's hard for them and it's their passion; it's their life and I understand that. . . . They lose a lot of good researchers and good students to medicine and I think some of them are kind of bitter about that. And also about the fact that sometimes, people get into medical school and then just drop their research or whatever they're doing. It does look like they're not very invested in that, in that subject or the betterment of that field, but only want to go to medical school to make money or whatever.

Jenny was able to justify how a positive mentoring experience with a faculty would dissolve due to a lack of understanding about the medical career path that some women would select. Most women appreciated the mentoring relationships they

developed with male science faculty and viewed these relationships as motivating for progression in the decision-making process. A few women did acknowledge that some relationships did dissolve when the faculty member did not support career interests that were "deserting the research" for a career as a physician.

Mentors and role models impacted participants in this study because they established a visual image of a woman being a physician as well as exploring other roles and issues. Women who became mentors and role models for the participants offered information and strategies on achieving career and life goals. Women received information and guidance from female physicians, professional women in other career fields, and older peers. A counterexperience by one woman in this study who did not experience female mentors and role models resulted in a decision not to pursue medical school. In addition, women reported that mentoring relationships with male faculty were important but problematic when women revealed their interest in medicine rather than pure research. The last element of this personal process for deciding to apply to medical school for women involves support systems. Individuals who comprised systems provided continuous contact for women to discuss multiple issues as they progressed in the process of deciding to apply to medical school.

Support Systems

Support systems are different from mentors and role models. These are networks of people established by women in this study that offer continual contact for an indefinite period of time. Most women in this study described these systems

as safe locations to discuss various issues and topics that included the process of deciding to apply to medical school. Women in this study identified family members, partners, and friends as individuals who populated their support systems. Women reported that support systems motivated them to move forward in deciding to apply to medical school. Individuals who formed these systems for women listened to reports of poor grades in a premed course, anxiety over the cost of medical school applications and tuition, and, ultimately, the concern over rejection notices for admissions to medical school.

Olene felt her entire family (mom, step-father, and siblings) was her support system as she went through the process and provided motivation to continue even when faced with a challenge. She said: "It's frustrating applying, you know, there's so much you have to do and then you get rejections. And it's like, 'Oh, gees. I'm not good enough. . . .' So, it takes a lot of support that I definitely had enough of." Other participants besides Olene commented on the support they received from individuals and groups on numerous issues as they progressed in their decision to apply and as they experienced the admissions process for medical school.

Engaging family, partners, and friends for support. Many women identified emotional as well as physical support from their parents that started early in life. Wei shared stories of her parents referring to her as "Dr. Wei" when she was a child and supporting her exit from a religious group that discouraged her early pronouncements of becoming a physician. They assisted with the actual admissions

process for medical school so Wei could participate in a study abroad program while seeking admissions. Lan's parents encouraged any activity that increased her knowledge of medicine and listened attentively when a science teacher in high school explained the process to all of them during a teacher-parent meeting.

Victoria shared these activities as she talked about support from her family. She said:

> Like I said, I started out with this, "I want to be a doctor" when I was a little, teeny kid. My family was just great. I mean, I have a friend that's in medical school, . . . and her parents were just clueless when she applied to school. They didn't help her. They didn't ask her about it. Nothing. . . . My family hasn't been like that at all. So when I was a kid, I think second or third grade, my mom realized I was reading at sixth-grade level, so she did an IQ test and I got into the gifted and talented [program]. . . . When I was a kid, she would take me to the library once a week. . . . He [dad] always made sure that if there was something I needed, I had it. If there's something that was important for school, I had it. I mean, I had that kind of support.

Victoria offered a description of support that included trips to the library, educational testing, or specific supplies.

Gloria was more succinct in describing her parents as supporters but not the decision makers. She said, "It was always me making the decisions. My parents were always there to support me and they were there to give me advice if I asked for it." Parental support was identified by the participants as significant for moving forward to achieve their goal of attending medical school. Women reported that parents provided resources but did not make decisions.

In a previous section, the women discussed the importance of mothers as a role model and mentor for combining career, education, and motherhood. Some

participants talked about the support that came specifically from their fathers. Gloria, who attended a private university in the midwest, continued her comments on parental support. She said:

> My dad would always give me little recommendations, "You should go talk to your advisor.''You should do this, sign up for this class." I guess in a way, it was my parents who were the biggest influence [continuing toward goal of medical school], mostly my dad.

Gloria referred to her father as influential in her decision to apply to medical school. Other women made similar comments.

Graciela reported her father as being very influential on her goal of attending medical school. She said:

> I would say, my father, just for being, who he is and doing what he does. That was an influence for me. And soon as I started thinking about medical school, he was always, "Oh, that's great" and always pushed me to it, but also warned me and told me all the sacrifices that I had to make and how hard it is, because he went through it.

Other women shared Garciela comments. Wei and Barbara discussed the support they received from their fathers who were also physicians. Wei's father offered advice and support on topics from major selection to marriage.

Wei reported previously that the premed advisor at her college was focused on process of producing medical school applicants and not on people who were considering this as a goal. Wei reported that after a few discouraging interactions with the premed advisor that focused on a grade of an "A-" in a biology course, as well as her major choice, she relied on her father to fill this premed advisor role. She reported this as a successful strategy for her since he knew her as more than someone preparing to apply to medical school. This family member knew her

struggles with sports, religion, and relationships as well as her passion for a career in medicine.

Some women reported that even though their fathers were not physicians, they also offered support. Lan described her father utilizing his position as support staff at a hospital to increase his knowledge and her exposure to the medical environment. He would take her to potlucks and in eighth grade helped her get involved with a hospital volunteer program. He found resources that they reviewed together. She described this experience:

> Then my dad would tell me about medical missions that the doctors would go on. Some surgeons that he knew, they had gone to Vietnam with "Operation Smile" and they did surgeries with cleft pallets and whatnot. He showed me a documentary of that. . . . I remember watching it and I started crying too. I thought, "Wow, I wonder if I would be able to reach out and touch people in the future, too."

Lan indicated that her father supported her and her interest in a career as a physician by identifying resources and sharing these resources with her.

These 4 women concluded that their fathers were supportive of their daughters as they were deciding to apply to medical school. These men provided words of encouragement and advice on how to progress in the process of deciding and identified resources for gaining information.

Women talked about support networks as significant for motivating them in moving forward to achieve their goal of applying to medical school. Previously, Olene referenced the rejections that could be experienced in the application process and how important her mother was to her continued momentum despite the

rejection letters. Her mother served as support in overcoming rejection within the medical school admissions process. Relationships that offered a location for listening to challenges and offered support and guidance became important as women progressed through this journey of preparation for applying to medical school. Besides concern over grades, MCAT scores, and becoming a well-rounded applicant, women experienced other barriers and obstacles that challenged their ability to continue with the process of deciding to apply to medical school.

Wei, who struggled with the idea of being single forever if she became a physician, discussed a few relationships with men that were counterproductive to her goal of applying to medical school. She shared this story of a relationship she was in during her undergraduate experience. She said:

> This bad relationship, I talked to you about from my high school boyfriend. The night before the huge general chemistry exam, . . . he informed me he was going to commit suicide. . . . And I remember staying up all night with him and now, when I'm older and wiser, I would have seen past that. But at the time, I don't know. I let it get to me. I remember going to that test and with a few Red Bulls, . . . and my heart was pounding. . . . Actually, after the test, I didn't even remember a single question that was on the test. . . . It was kind of an obstacle, but I let it get to me. . . . I guess it could be seen as competition because he was competing [with] what [I] wanted my life direction to [be]. And he felt if he sabotaged that [medical school admissions], that it would more likely go towards what he wanted it to be [marriage to him].

Wei indicated that she communicated this situation and many others to her parents. She felt that they always offered answers and support that addressed the immediate issue and kept her moving forward with her decision to pursue a career in medicine. She shared this conclusion:

> I'd go to my parents and be, "Oh, you know," with all my angst and questions, because these people [boyfriend, faculty, etc.] always introduce questions and my parents always had the answer. . . . And I can't take credit for being a strong women, because I'm not. I'm still very much working on my identity and all that, but, . . I go to my parents and I'm like "It can't be done." And then they just come back to me and say, "No, it can be done because of this, this, and this."

Wei indicated that she communicated a great deal with her parents and found their support important for overcoming obstacles for preparing to apply to medical school. Wei's experience illustrated how support systems provide strength to address situations that are not productive in reaching goals.

Helen reported experiencing a relationship that was supportive but transitioned to an unsupportive stance as she moved closer to her decision to apply to medical school. Helen indicated that initially this was a relationship that was mutually supportive of each other's goals but became a barrier as time progressed. Helen shared this experience:

> There was a roommate that I had, who was a friend. I actually helped her become a him, because . . . I usually try and support people in whatever they want to do, as long as it's something that's not bad. . . . I put a lot of time into this friend because [he] was brilliant, so smart. [He] wanted to become an engineer. And actually when I met [him], he worked in a factory in Ohio. And so I helped [him] sell his vehicle. [He] lived with me. I did everything I could to emotionally support this person and monetarily, [too]. You know, [he] helped me along the way as well and supported me to a degree. In the end, like [he] was just very angry that I was leaving for medical school. And so, by this time, and also he, by this time, was on testosterone shots, so was very aggressive and kind of mean. So, I remember when I took the MCAT . . . [and] he picked a fight with me the night before the MCAT. That didn't make things very good. And in the end, [he] was not supportive of me going to medical school because he just didn't want me to leave.

Helen reported that she was surprised in the change of this relationship and reported it as a potential barrier due to the results of her MCAT exam. She credits herself as being able to maintain her focus on preparing for medical school that went beyond MCAT scores that were negatively impacted by actions within this relationship. Her familial and professional support systems she had established with faculty and the Honors Program advisor assisted her in being successful in medical school admissions despite this situation that negated one member of her support system.

Wei and Helen shared situations that could have stopped each woman's progress towards deciding to apply to medical school. Other participants experienced situations that challenged their career goal. Susan's brother-in-law told her she should be a nurse rather than a physician if she wanted to find a spouse and have a family. Jenny reported being challenged by some males about her commitment to her religion due to her goal of becoming a physician. The participants reported that their support networks assisted them in finding strength that allowed them to continue in the process of deciding to apply to medical school.

Some women had extended their family beyond parents to include partners. They described relationships with partners and spouses that provided a foundation for support in addition to the immediate family or when parents were not filling this role. Rosalyn provided one example of supportive partners.

Rosalyn had decided not to share her goal with her parents for many years. Before any parental support came her way, she reported confiding in a male friend that was identified in a partner role at the time of the interview. She said:

> I mentioned it [going to medical school] to him. He actually is a physician. . . . I said, "I really want to go to medical school." He said, "Go to medical school. There's no reason why you can't." He was an amazing cheerleader all the way through. . . . I was taking physics and I called one day, because I couldn't figure out the computer program that was required to complete the homework, and I was beside myself, in tears. I was saying, "I can't do this." And he just sort of walked me through it. He said, "Yes, you can. I remember feeling like this. Everyone feels like this. It's just a little hump you're going to get over. You're going to be fine." That happened many times. But he has really been a cheerleader for me.

Rosalyn was not alone in finding support from partners. Other women in the study identified people other than parents as influential in their progress towards medical school.

Claudia reported her parents were opposed to her decision to pursue medical school from her undergraduate college experience all the way to the point of being accepted to medical school. Her support and encouragement came from her friend that she married after the interview for this study. She stated, "XXXX, we've been together for 7 years. . . he was incredibly encouraging and saying, 'I support you.' That helped too, a little bit financially. He gave me a bike so I could commute and things like that." Claudia reported her family as wealthy, but she received no financial support for any of her educational experiences. She indicated that she paid for her education and found other people to support her career goals.

Emma was working at the hospital pharmacy to pay her undergraduate tuition. This is when she met her future partner who was a physician. She quit the pharmacy and they continued to date. She reported listening to his stories about his career. She reported this conversation with him:

> "I think I want to apply to medical school." It was really great. He's so supportive. He said, "Okay, are you sure?" I said, "Yes, I'm sure." He said, "Well, then let's get you signed up for some premed courses. . . ." And so he got online and even though I was really nervous and was kind of, "I don't know if I want to do this yet. I'm just kind of flushing this out." He's like, "No, no. Let's sign you up for physics." So, I dropped some of my journalism courses and I signed up for physics, and it turned out to be really easy for me. I started to get a little bit more excited about it and I stared volunteering at the American Cancer Society. . . . So, it took me 6 years and then I applied to med school and got in the first time. I honestly do not think that I would have had the faith in myself to do this if it hadn't have been for my husband, for this particular person. . . . Just for any husband, but just this amazing person that chose not to only support me, but kind of gave me a helping hand.

Emma was convinced that the support of her future partner was instrumental in her decision to apply to medical school. Emma, Claudia, and Rosalyn reported relationships with individuals outside of their extended family that offered support for their decision to apply to medical school. Some women extended their support systems beyond parents, siblings, and partners to peers and colleagues. Women found this cadre of support system members especially significant when negotiating competition within the premed culture.

Competition existed within the premed culture, and support systems provided a tool for avoiding this element of the premed experience. Olene was a biology major and actually had friends who were premed. She shared this experience:

> I mean people would voluntarily hold back information because they didn't want to help someone, so that they would give themselves an advantage. . . . It makes me feel bad. . . . We're competing against each other to get in, because, you know, some of us are going to get rejected. . . . It was very competitive.

Olene witnessed this competitive strategy by her peers. She reported actively seeking out people to collaborate with in reaching the goal of medical school. This support network was inclusive of many students she associated with during her undergraduate experience. She indicated:

> I think the people I surrounded myself with were very helpful, and we kind of created our own little unit of people to work with and get through stuff with. . . . It was more or less, "Let's help each other," because that's the only way we can all get through it.

Olene used the support system to negotiate competition. Other participants who decided to apply to medical school and were successful in reaching medical school shared Olene's strategy.

Dolores reported organizing a group of students in biology she knew through her participation in a scholarship program and a 1st-year seminar program. This collaborative strategy was similar to the one described by Olene. She described the group this way:

> And so I remember there was a group of like seven girls, and we would sit together. Like we'd have each other's backs. . . . Some of them just came from cultures where that [competition] was not tolerated. I think there were three American Indians in that group, and there's no way they were going to do that. But I also think we came from, like, similar backgrounds. . . . When you come from where we come from, people are already competing against each other. . . . That we realize that if we don't help each other out, we're doomed. In that sense, we never. I mean, we would share our grades willingly with each other because sharing grades in that group meant we need to help so and so with this concept more.

Dolores reported utilizing strategies of collaboration through support systems that included members that "did not tolerate competition" and pursued the goal of applying to medical school as a group.

Lan expressed the same technique by collaborating with the women who were in the ACCESS Program. Mary described her association with a group of premed students that formed a club for community service. She reported:

> It was something that really helped me in the application process because everyone in the group was superwilling to share ideas and opportunities. . . . I mean everyone was pretty willing to work together to do different volunteer things. It was a nice, easy way to be surrounded by people who are all applying, who were willing to help each other out.

Olene, Dolores, Lan, and Mary were from the same geographic area and attended the same public research university. They identified membership in a group of people who accepted collaboration over competition for preparation for applying to medical school. They focused on "helping" and "sharing" as everyone achieved their goal. This was another way to use support systems for addressing an immediate obstacle such as negotiating competition.

Sometimes the obstacle was not external competition by a lack of self-confidence. Support systems could be objective groups who evaluated a woman's success in medicine based on her performance in other activities. An experience shared by Claudia illustrates this role of support systems:

> And [I] found out fairly quickly that although I had good experience in how to do cardiac rehab[ilitation] wellness, I had no idea what my patients' other kind of pathophysiological issues had to do with [it]. I had a woman with Parkinson's, a woman with polymyositis, of course, many heart attacks and strokes and issues. I just had a really

> difficult time understanding how to integrate kind of all of this. It was really my patients' encouragement and recommendations, because I got to be such close friends. "You should go to medical school." I thought, "No, I could never make it through medical school." So, it was really their encouragement that allowed me to go back to school and [take] my prereqs [prerequisites] and decide to go to medical school.

Claudia's comment indicated that exposure to patients and the health-care environment was encouraging for her and this became part of her support system. She said, "They were really the people that helped me become more outgoing, helped me to realize that I had something to offer." Claudia stated that this support system of patients who became "such close friends" were significant in her process of deciding to apply to medical school.

Most women in this study reported that developing support systems was important for addressing many issues that surfaced during the process of deciding to apply to medical school. Women reported the dominant memberships in support systems were family members, partners, and trusted colleagues. Support systems went beyond information and strategies for negotiating career and family roles as a woman. The issues that support systems dealt with went from failed relationships to course selection to medical school rejection letters. Support systems provided a location to negotiate competition through collaboration. Women identified this as a key element in their process of deciding to apply to medical school that was not communicated to them in the prescriptive preparation process.

This section has introduced three elements of the process of deciding to apply to medical school that were identified by women in this study. All three

elements were not communicated to the women when they asked for information on preparation for medical school. These elements became clear to women as they progressed through the process of deciding to apply. These elements are women understanding women's roles, identifying mentors, and developing support systems. Most women indicated that dialogues about the roles of women are important within career decision making. Either through group affiliation or personal values, women are looking for clarification on how to negotiate their roles in life. This discuss of women's roles lead to a discussion on the significance of female role models and mentors.

This personal interaction provides information on career and life choices to avoid limitations in either for women. In addition, role models provide a visual that women are involved in certain career fields. Finally, this section introduced the concept of support systems. Support systems provided support for a broader range of issues including negotiating competition. The prescribed process did not address the importance of these three elements or suggest how to develop them. Women reported these elements to be powerful components of the process of deciding to apply to medical school. They provided information that focused on women as primarily and application to medical school as secondary. Women were able to answer the question, "Who do I think I am?" which included their decision on applying to medical school.

Deciding to Apply to Medical School

Women did not report that physician shadowing, service, science courses, or research confirmed their commitment to a career as a physician. For many the comprehensive list of prescribed application activities was overwhelming. Women did report that experiences, which occurred while accomplishing the components of the structured process, gave them information about self which resulted in attempting another activity. They also reported that this continuous movement was the result of identifying issues and challenges that were relevant to them as women and gathering information through exchanges with role models and support networks. During the interviews, some participants shared their moment of affirmation while others described a combination of activities that resulted in a gradual arrival at the decision to apply to medical school. Regardless of the moment of decision, many experiences and people had been part of the process.

Jill saw this point of commitment after her physician shadowing experience that offered exposure to patient care and her first real experience with medicine. She described it this way: "So, I think seeing that for the first time, when I was still kind of early at [private liberal arts college] and in my undergraduate path, helped kind of seal the deal and I realized that, 'Yes, this is what I want to do.'" She indicated that she enjoyed going to the office and seeing patients. Susan reported that her emergency medical technician certification and experience were a critical point that she knew she was going to apply to medical school. She had an opportunity to care for people in a medical environment and enjoyed it. She also

had spent extensive time in a research lab but did not find it fulfilling. She concluded that "medicine would be the best way of utilizing as many of my talents as possible."

Jenny was drawn to science, research, and service. She majored in chemistry, participated in two research labs, and was a service scholar. Her experience with service and research steered her in the direction of practicing medicine. She shared this experience that facilitated her commitment:

> They opened a Service House on campus, and so I lived in that house and I had the opportunity to meet a boy from Sudan, and he's very interested in human rights and in the law aspect of what's happening in Sudan. He's trying to recruit people who will go over there and work in Sudan and help to build infrastructure. He's like, "You know, you have an ability with medicine. I really hope that you can help me someday." So, that was also something later on that I was like, "I should really work with people" instead of just research, because I had that option.

Jenny indicated that she was drawn to medicine because it allowed her to use her intellectual abilities to help people directly, which was not possible in research. Victoria reported that she knew in third grade that she wanted to be a physician. Her experience in a research lab confirmed that an MD was the route for her. She explained:

> I did research to see if maybe it's what my career was going to be. I hated it. I hated it because there weren't people involved. . . . I wasn't helping anybody immediately. . . . I'm a more instant gratification person than that. "I need to give you the pain medicine and you tell me that you feel better and I feel good about myself." So, that encouraged me to apply to med school.

Jenny and Victoria used the research component as the litmus test for a career as a physician.

Rosalyn and Claudia were older applicants than other women in this study. Both indicated that success in the premed curriculum was key to their continued progress and commitment to applying to medical school. Both reported partners and female science faculty offering support and guidance, which impacted their confidence for committing to this profession.

Some participants indicated full commitment at the point that they submitted an application to medical school. Gloria reported the following as she talked about the application process, "It's like you've got to really want to be doing it to do it [apply to medical school]. Yeah. Once I'd made that choice, it was like I knew. I said I was going for it." Gloria had participated in all aspects of the structured process during her undergraduate experience. She did not apply during her undergraduate experience but took 1 year off to participate in research and take a few more science courses. This extra time and participation in premed activities resulted in her decision to apply.

Other participants reported commitment to a career as a physician due to something that occurred in their life. Olene identified arriving at this decision when she was in high school. She shared this experience:

> I already knew that I wanted to do medicine. But my grandma, which was like my second mother. I mean, she's always been really important to me. She had got diagnosed with Alzheimer's when I was in high school. That was just devastating to me. I couldn't handle it. So, my family, we actually moved in with her, to take care of her, because she couldn't live by herself anymore. Just like the care we gave her and that it provided for her and the experiences I went through with her, in terms of just living with her or going to the doctor with her, or anything like that. It made me realize that that is what I want to do, kind of a thing. It's like, "Wow, this is

> it." It was an eye-opener to what I already knew I wanted to do but it was like, "Oh, yeah. I really do know that that's what I want to do." It pushed me like to, I guess, come to firm realization that I really did want to do medicine. . . . It made me happy.

Olene consideration of a career as a physician was confirmed through caring for her grandmother. Emma reported, "I quit the church and that allowed me to consider med school." Emma reported that her religion was not encouraging of this choice. This disassociation from the church offered her more options in many aspects of her life, which included career and spouse. These personal experiences were key to "sealing the deal" for Olene and Emma. Both reported that they never changed their minds even when components of the structured process might produce a challenging situation.

One woman made the decision not to continue with preparation for applying to medical school. This was Dolores. She participated in the prescribed process to prepare herself to be an applicant. Along the way, she made a decision that took her in another direction. When she replied to a question about the premed advisor, she shared many elements of the process for her. She explained:

> I never went back. They weren't that nice to being with. Like it just felt like business. No, I feel bad, because I feel like I'm slamming them. In reality, I guess I am. Because I really didn't feel like they cared, like it mattered. This is such an intimate decision for me. Right? I mean, if I'm going back every day to my home and thinking of medical school when I see my mother, to have someone treat me casually as they're mapping out my future and telling me, "You're taking all these incredibly difficult courses in one semester" as if it's nothing, that's a problem. But also there weren't that many women in my science courses. When did you find support? Who did you talk to about the concerns you were dealing with, in terms of that decision? . . . I turned to Dr. XXXX [1st-year seminar instructor] and she is not an MD. . . . You know, we would have

> these conversations and she'd say, "Look, we can talk about these things. But Dolores, I'm not a doctor."

Dolores indicated that she did not find the support that she needed as she was making this personal decision. She found women important to her decision-making process but did not find them in her science classrooms or in her shadowing experiences. She reported the women that she turned to for answers did not feel competent to answer some of her questions because they were not MDs

When Dolores was asked if there was anything else that she would add to this interview to describe her premed journey, she said the following:

> It's still a sensitive decision. When I made the decision not to apply to medical school, . . . I was sitting in XXX's office. . . . So, the moment of truth came and I remember I had such a hard time telling her because it seemed so definitive to me. Like I was admitting to everybody else in the world, "I don't belong there [medical school]." So, I remember when I told her, "I'm not applying to med school," I paused half-expecting the world to sort of stop for a moment, because it was such a big decision. Nothing happened. I was so angry, because it's like, "Doesn't the world recognize how important this was for me, and that I'm not doing it?"

Dolores indicated that her decision not to proceed to medical school was difficult for her and she expected concern and dismay from individuals within her support network. When this reaction did not appear, she was frustrated and reported this was still a difficult subject for her to discuss. Dolores reported continuing her education with a graduate degree.

Conclusion

The rich description of the process of deciding to apply to medical school that was provided by women established interaction between two foci. Women

were presented with activities to accomplish that focused on the application process. Women proceeded forward with these activities but included self, the individual, within the focus. This was a powerful strategy that had an impact on progress to the point of decision. As women reflected on the prescriptive process, they identified techniques that would personalize the process of deciding to apply to medical school. They identified information on negotiating gendered roles and career, identified mentors and role models, and developed support systems. Chapter 5 will explore how women authorized self to move forward with the process of deciding to apply to medical school. Through interaction between self and the activities within the prescribed premed process, women were empowered to accomplish the process of deciding to apply to medical school. In addition to explaining this process, Chapter 5 will address implications for policy, practice, and future research.

CHAPTER 5

FINDINGS, DISCUSSION, AND IMPLICATIONS

The Interaction Between the Prescribed Process and Self

The end of spring semester was less than 3 weeks away. Helen was coming to talk to me about her progress towards medical school and the women's premed association. I had not seen her since February so I was eager for this meeting. She had become the chair of the women's premed association in October and was very close to beginning her application to medical school by enrolling in the American Medical Colleges Application System.

Helen arrived and I asked her how everything was going this semester. She started to talk about a 5000-level biology course when her lips started to quiver and her eyes filled with tears. She confided in me that she was thinking about other careers besides becoming a physician since she was not doing well in a biology course and her boyfriend had ended their relationship because she had no time for him. She reported that it was just too hard, and she could not complete all the requirements with grades of "A," and she cried some more.

Once the tears receded, we were able to talk about her semester, her goals, and her concerns about medical school. The semester was filled with courses, a research project that resulted in a presentation at an academic conference,

participating in a service project with homeless mothers and children, participating in preparation for the MCAT, and being chair of the premed women's association. In her view, every activity was successful except for the 5000-level biology course. She reported that a conversation with the teaching assistant resulted in being told to drop the course because she was failing. She did not accept this evaluation and had scheduled a meeting with the faculty of record for further input. I told her that this was an excellent strategy and that I wanted to have a report from her after the meeting. We talked about her grades and applying to medical school. Even though all her grades were not "A's," she still had acceptable grades for medical school.

We talked about the research project and her presentation. She asked me to come to her presentation. Her parents would be there. I checked my calendar to find that I was free and promised to be part of the audience. We also talked about the boyfriend. She realized that this time commitment based on her career goal was just beginning. Someone who did not understand that now would not be able to deal with a partner who was in medical school. She knew deep down that this break-up was inevitable, but it was difficult to comprehend what this really meant for her long-time goals of family. Luckily, she had her parents for support.

Finally, we talked about her leadership of the premed women's group. She continued a conversation that we had in October when she assumed the chairwomen position. The previous chair had focused on structure, offered many activities, and expected everyone to be engaged to accomplish group success. Helen felt the previous leader, Mary, had steered the organization towards a

culture of competition rather than collaboration. Her focus was to recapture an environment of support and to discourage competition among the members. She reduced the number of activities, focused discussions around ideas for service and leadership, and reemphasized earlier activities that focused on mentoring and guidance such as the medical school women's panel. There had been one major occurrence in December that had negatively impacted many women.

In December, the previous chair of the organization decided not to apply to medical school. She applied to physician's assistants programs for admission. Some members of this undergraduate women's group were devastated because someone they saw as a strong leader and a mentor decided not to continue towards medical school. Helen said to me, "If Mary can't do it, I can't do it either." The repositioning of this mentor into a different career field left many women confused and reconsidering their own options. Helen and I agreed to have a meeting with members after spring semester finished to discuss this issue of refocusing career goals, reflecting on self as one completes the premed activities, and other issues concerning deciding. Helen smiled at me, indicated that she needed to leave for a class and would call me after her discussion with her biology professor.

I saw her 1 week later at the research project presentation and met her parents. She had decided to finish the biology class because she was learning a great deal regardless of the "C" grade she would probably earn. Her presentation was impressive for an undergraduate and her research faculty mentor praised her precision and curious spirit after she answered questions from the audience. I gave

her a big hug, told her how proud I was of her, and was part of the family photo experience. As I left, she reminded me of the premed women's panel next week. I assured her that the activity was on my calendar, and I was looking forward to it. I walked back to my office reflecting not only on Helen but on all of the other women who had shared their experience of deciding to apply to medical school with me.

The above vignette illustrates elements of the findings from this study, which explored how women decide to apply to medical school. Chapter 1 focused on data from the Association of American Medical Colleges concerning applicants to medical school. These data established that the number of female applicants had not increased in 10 years even though the percentages of women applicants increased due to a steady decrease in male applicants. Thus, it was important to understand the process of deciding to apply to medical school for women to maintain the female applicant numbers and identify strategies to increase these numbers, especially in locations where women's participation was far less than the national average.

Chapter 2 was a literature review on the history of science, household altruism, and previous research on women pursuing medical education. Harding (2004, 2006), Schiebinger (1987, 1993), Bleier (1984), and others explained that the history of science identifies a culture that is androcentric. Belenky et al. (1997) established that historical values have impacted current pedagogical methods in science, which are counter to the ways women learn. England (1993), Strober

(1994), and Folbre (1993) stated that the economic concept of household altruism limits freedom of choice for women, including career choice. Previous research by Johnson, Turner and Griffin, Walsh, and others focused on women and medical education but not the journey to medical school.

The literature review established a foundation that oppression exists for women, which has an impact on educational and career goals. Despite obstacles and barriers, women have been able to negotiate hegemonic environments. Women have engaged in techniques that authorize self to make decisions and accomplish goals. This persistence is evidenced in Chapter 2 through examples of women who continued to participate in the disciplines of science and the increase of women participating in medical education in the 1970s.

Upon identifying the problem and establishing a foundation of literature in Chapters 1 and 2, Chapter 3 described the research strategy that would be employed to answer the question, "how do women decide to apply to medical school?" A constructivist grounded theory methodology layered with a feminist perspective offered a framework for interviewing 16 women to understand their lived experiences of applying to medical school.

Chapter 4 presented the analysis of data. Women reported two distinct processes within their experience of deciding to apply to medical school. The first experience was a prescribed process that prepared an individual for applying to medical school. The women referred to it as a "checklist," "boxes," and "jumping through hoops" which resulted in the women being overwhelmed and discouraged.

This experience highlighted evaluative measures such as grades, scores, and cumulative hours of service, shadowing, and patient care, which placed the focus on the application.

The second experience described by women in Chapter 4 focused on the individual identifying who she was as a person, and this experience is referred to as "the self" from this point forward. The question Who Do I Think I Am? was answered not only through activities in the prescribed application activities but through developing support networks, finding mentors and role models, and dialoguing with women about women's roles. Women reoriented the prescribed process that focused on objective measures to be subjective. Women were focusing on gaining an understanding of self, women's roles, and the physician career field through application activities as well as interactions with people.

In this chapter, I explore the meaning of this study through layering the lived experiences of the women with ideas and concepts presented in the literature review. The result of reflecting on previous literature and the lived experiences of women is the development of a theoretical framework that explains the process used by women who are deciding to apply to medical school. The model that emerged is based on interaction between individual or self and the activities in the prescribed process.

The framework of this theory emerged through weaving the analysis of these data with concepts presented in the literature review. Intertwining these data with concepts within the literature review, as well as the feminist perspective

within the methodology, resulted in the development of a theoretical framework. I also expand on this framework through a discussion of four findings. The first finding explained the importance of connectivity to others for women. By connecting or forming relationships with others, women were able to gain definition of self from others as well as develop their own definition of self that included caring for self and others.

The second finding focused on the practice of evaluating women through objective means such as grades and scores without acknowledging activities that are subjective. Objective evaluation ignored extracurricular activities that offered women understanding of self as well as their future career. The third and fourth findings established that women do encounter obstacles and barriers but identified strategies that authorized them to continue in the process of deciding. This finding acknowledges the persistence demonstrated by these women as they focused on making decisions about their future. The theoretical framework and the findings are discussed in this chapter.

In conclusion, the findings of this study have implications on practice, policy, and future research that are grounded in these data and described later in this chapter. First, practitioners should develop activities that connect women to women, encourage women to interact with faculty and academic advisors, and redirect the focus to extracurricular activities. Second, this study offers information for policies that address listing premed as major, increasing mentoring programs for women, and reorienting the grading policy within science. Third, the

methodological framework utilized in this study could be replicated to understand the experience of other underserved populations in medicine, to explore women's experiences throughout the United States as they prepare for medical education, or to explore women's experiences in other career fields dominated by men. After explaining the theory, I present a discussion that centers on four key findings that nuance the framework. I concluded with implications for practice, policy, and future research.

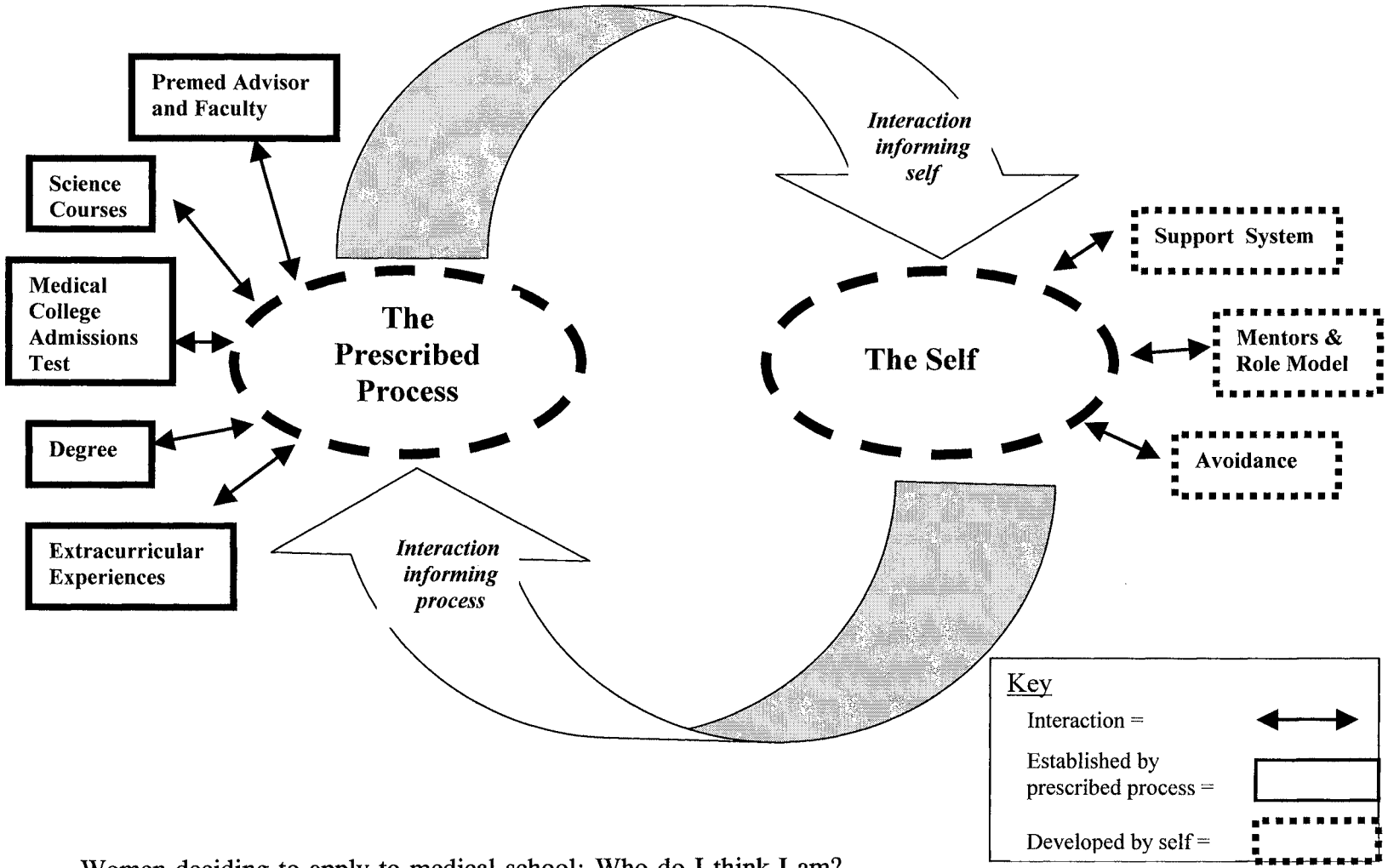
Theoretical Framework for Women Deciding to Apply to Medical School: Who Do I Think I Am?

The women in this study shared their lived experiences in deciding to apply to medical school, which framed a theory that describes the breadth and depth of the female experience. This theory informs future female applicants and people who interact with and guide them through the process of deciding that incorporates and focuses on women involved in the process. The purpose of this study is to describe the experience of women, without reference to men since men have historically dominated the physician career field.

The framework that emerged involves interaction between two significant elements. These elements are the self and the "prescribed premed process." Women did not ignore the prescribed process but engaged in activities within the process. The result of this engagement was the self gaining knowledge through interaction with activities within the prescribed process as well as gaining knowledge through reflecting on these activities with people who served as

mentors, role models, and support systems. As a woman understood more about self, she engaged in additional premed prescribed activities that added more depth and breadth to her understanding of who she was as a woman. This interaction between self and the prescribed process was continuous and iterative. The Figure illustrates the theory.

I describe each element and then I explain how each interacts to inform the other. An explanation of the framework begins with the prescribed premed process that included activities and people. Activities included science courses, the MCAT, an undergraduate degree, and extracurricular activities. People that were part of this process were the premed advisor and faculty. These activities and people are identified in a solid box because they are established by other entities such as the Medical Schools Admission Requirements Guide (Chanatry, 2006) as part of the process to prepare for admissions to medical school. The woman interacts with them as is indicated by the two-way arrow. The Figure represents the prescribed process as an oval with broken lines. The broken lines of the oval identify that the prescribed process is informed through interaction between the woman and the premed activities. The Figure also uses a two-way arrow to communicate interaction between the activities and the prescribed process. For example, most women selected majors for undergraduate degrees that were interesting to them and not for admission to medical school. The result is that women have the potential to interact with major selection if they choose to engage this activity. Unfortunately, many premed students allow the major to be dictated to them through medical



Women deciding to apply to medical school: Who do I think I am?

school admissions statistics.

The other component within the prescribed process, the extracurricular activities of shadowing, patient care, community service, and research require women to interact with each activity by identifying people and experiences that not only engage the women in these activities but offer women opportunities to understand more about self through relationships with others. Extracurricular activities inform not only the prescribed preparation process for medical school but also inform the self. One example of an activity informing the prescribed process as well as the women or self was participation in research.

Many of the women in this study such as Jenny, Gloria, and Helen shared their experiences with research since it assisted them in identifying their value of caring for others. At first, each woman thought of pursuing a career as a researcher but learned through these experiences that they disliked the repetition of research and the lack of people contact. This example illustrates the interaction that occurs between the woman and activity, which informs the prescribed process as well as informing the woman about the self as she is involved in the process of deciding to apply to medical school.

These activities that informed the prescribed process as well as the self also involved interaction with people. Jenny, Susan, and Wei found their assigned advisors more interested in the prescribed activities and objective evaluation measures than the woman who was considering a career as a physician. Jenny responded to an advisor's discouraging comments by identifying herself as her own

premed advisor and sharing her goals with her art advisor who was supportive with ideas for accomplishing all her goals including application to medical school. Susan had a friend who facilitated an introduction to a faculty member who provided premed advising for Susan. Thus, Susan returned to the premed advisor only for mandatory clerical needs and did not share her personal experience unless necessary. Wei identified a surrogate advisor within her family. Jenny, Susan, and Wei challenged the obstacle presented by the advisor who was only focused on process to identify surrogate advisors. They drew on their support systems to identify an advisor who was not only knowledgeable about the process but also cared for the woman. This example illustrates the continuous motion that occurred within this framework and transitions this discussion to the right side of the Figure.

The right side of the Figure focuses on the self and various elements that inform self within the process of deciding. An oval shape that has broken lines represents the self. The broken lines around self indicate that information is flowing into and out of self within the process. Next to the self oval are boxes filled with categories that represent the concept of authorizing self to continue. These categories are support systems, mentors and role models, and avoidance. Boxes with broken lines enclose all of these categories. A two-way arrow connects each box to self. Women develop these mechanisms captured within these boxes as they are involved in the process of deciding. This side of the Figure represents interaction flowing in both directions to inform self. The self is informed by the prescribed process, as well as by support systems and mentors. The self then

returns to the activities of the prescribed process to engage another activity for learning and decision making. The Figure provides a visual representation for the reader.

The final element of the theory is the constant interaction that occurs between self and the prescribed process. A wide arrow moving from the self to the prescribed process communicates interaction and a flow of information between both elements. Another wide arrow moves from the prescribed process to the self to communicate a continuous flow of interaction and information. The Figure illustrates this final element within the theory.

The theoretical framework presented here for women deciding to apply to medical school utilized the double interact concept within organizational theory. This concept involves an act, interact, and double interact (Weick, 2001). The act is a statement or activity in an organizational setting that receives an interaction or response from another entity. This interaction receives a double interaction that is a response to the interaction. The double interaction illustrates action and facilitates change within an organization to produce a dynamic environment that creates new opportunities for the organization and people within the organization (Weick).

By utilizing the double interact within the framework outlined in the Figure, women emerge as proactive in the deciding process. Basically women not only communicate their intention of pursuing a career as a physician despite responses from other individuals who cast doubt on this career goal, but they also participate in an action that reinforces their intentions. An example of the double interact

concept is offered by Emma. Emma demonstrated this strategy as she responded to the teachings of a religious organization. Emma announced her interest in becoming a physician as the act. The interact from her religious organization was the organization stating that this was not compatible with her role as a mother and wife. After a considerable period of time, Emma responded with a double interact that announced her disengagement with this religious organization to pursue her career goal of becoming a physician. Emma not only found self but also gave voice to self through this strategy. The utilization of voice offers women a way to act upon their intentions to achieve their goals (Belenky et al., 1997; Gilligan, 1993).

Another example of the double interact as a strategy for authorizing self to continue in the process involved interactions with an academic advisor. Susan reported that the premed advisor at her undergraduate institution discouraged her from moving forward due to her grades. She concluded that the advisor only supported students with high grades and scores to guarantee a high percentage of acceptances to medical school. Susan engaged a faculty member as her advisor after this experience. The act was to tell the advisor that she was considering medical school. The interact was for the advisor to question this choice based on an objective measurement such as grades. The double interact was Susan identifying a new advisor and continuing to pursue this career goal. Susan was defining herself in action as well as voice to give herself agency in deciding to apply to medical school. The double interact was a powerful concept for women as they actively decided on their career goals. The double interact applied within this

theoretical framework establishes a model for addressing an obstacle or barrier through an active process for the women, authorizes women voice to define self rather than allowing others to define them, and reinforces their goals to self as well as others.

Experiences described by women illustrate the framework in action. Lan and Graciela declared their intention to become a physician but had an internal conflict. The conflict between motherhood and the physician career field was internal to these women and not suggested by someone else as stated by other women in the study. Graciela discussed her interest in a family but was not sure how to accomplish this as a physician. She relied upon her support network to encourage her to move forward when she questioned this compatibility. Her parents, who were part of her support network, acknowledged that she might have to delay becoming a mother, but it was possible to be a mother and a physician. Lan complicates this situation further, which demonstrates the feedback loops within this theory.

Lan talked openly about her concerns that she could not be a "cool mom" and a physician. Her interest in a family as well as a career produced an internal struggle that resulted in Lan considering other careers like pharmacy. Lan found a role model through physician shadowing that empowered her to continue in the process of deciding to apply to medical school. This female physician had children and shared her model for balancing family and career. Lan's experience evidenced another component of the theory of deciding to apply to medical school. This

theory is dynamic with a constant flow in many directions. When Lan was confronted with this obstacle caused by self that she could not immediately resolve, she focused on another extracurricular activity. In this case, the activity was physician shadowing. Once accomplished she not only learned more about self, women's roles, and the physician career field, but also Lan augmented her strategies for authorizing self to continue in the process of deciding by increasing her role models. Lan's experience concerning the conflict between motherhood and becoming a physician demonstrates the continuous interaction between the self, and the activities in the prescribed process. Relationships with people who started as part of the prescribed process migrated to the category of mentors and role models.

The Figure illustrates the theoretical framework for the process of women deciding to apply to medical school. The model is dynamic and suggests that interaction between the prescribed process and the self is necessary for the process of deciding to apply to medical school to be accomplished by a woman. The framework developed for deciding to apply to medical school introduces four findings for discussion. This discussion centers on various aspects of the model. First, the model suggests that women seek connectivity to others as they pursue the decision-making process. Second, objective evaluation by others simplified a process that was more complex and focused on the women. Third, women encountered obstacles and challenges as they pursued the process of deciding to apply to medical school. The fourth point of discussion addresses how women persisted despite these challenges to make decisions for themselves about their

futures. All of these points are addressed in the following discussion section.

Discussion

The theoretical framework explaining how women decide to apply to medical school was developed based on the analysis of these data while reflecting on and extracting meaning from the feminist perspective imbedded within the methodology, the literature review, and my lived experience. These processes of discovery and understanding lead to a theoretical framework and four findings that nuance the meaning of this study. These findings focus on the importance of connectivity for women, criticize external objective evaluation within this complex process of deciding, and identify obstacles and barriers women encountered during the process, as well as strategies women developed to authorize self to continue in the process of deciding. Next, each of these findings is discussed in detail.

Connectivity to Other People Contributed to the Process of Deciding

I define connectivity as interaction with people to promote care (Gilligan, 1993). Gilligan identified connectivity as a key element of female development. She argued that women organize their location in the world through "a web of relationships" whereas men focus their actions from a "hierarchy of power" (Daloz, 1999; Gilligan). This web orientation results in developing and participating in relationships that promote care and meeting the needs of all participants, including self.

The concept of connectivity was a key component to the process of deciding for women. All women focused on relationships with family, friends, partners, faculty, advisors, physicians, peers, and patients as important within their process of deciding to apply. These relationships offered advice, provided support, and contributed to an understanding of self. Lan's peers in the ACCESS Program for women suggested courses and faculty for success in her science courses. Olene's mother listened with empathy as Olene cried over her MCAT scores, but she encouraged Olene to take the exam again since it was just one challenge within a long list of accomplishments for this future medical student. Wei's father told her to major in a subject that she had a passion for and enjoyed rather than selecting a major just for admission to medical school. All of these examples evidence how women used connectivity to remain active in the process of deciding.

Connectivity has another level of complexity for women that was apparent in this study. As women move through stages of development, such as moving from adolescence to early adulthood, relationships begin to define the woman. The relationship might suggest that the woman would be a good physician but also suggest that the woman would be a good partner, mother, or pharmacist. Sometimes there was a conflict created between the woman's view of self and the view expressed from various relationships.

Gilligan (1993) explained that women are often confronted with conflict in defining the self. A woman could continue to let relationships define her because it would be "selfish" not to comply with this input, or she could begin to negotiate

how she views herself in contrast to her other connections. As female development continues into adulthood, the woman initiates an awareness of self and personal responsibility for the identity of self. She is learning to participate in relationships that allow her to care for others by respecting their input as well as caring for self by respecting personal decisions. Women begin to take responsibility for various roles and identities that they select (Gilligan). This point of defining self can contribute to continuing in the process of deciding to apply to medical school or introduce a level of complexity that women find difficult to negotiate when considering how to meet the needs of others when these needs deviate from the course a woman has selected for herself. One other element of this decision process is the role of organizational membership within relationships between individuals. This organizational element is covered later in this chapter.

In this study, women described relationships that contributed to development of self and evidenced both situations described above. Wei's father took her to the hospital; her parents referred to her as "Dr. Wei" as a child, and they participated in numerous conversations about advisors, faculty, and male relationships as she matured from a child through adolescence into young adulthood. As long as Wei defined herself as a physician, they supported this identity. Jill, Mary, and Victoria had similar experiences with their relationships.

Other women described relationships that defined them in ways that did not include becoming a physician. These relationships introduced conflict between the identity of physician, partner, and mother. These women were confronted with

accusations of selfishness and forced to take responsibility for who they were regardless of the consequences. Emma's experience offered one description of this complexity of connectivity within the process of deciding. Her intentions to become a physician were met with disapproval by her family due to their religious affiliation. This group affiliation defined Emma as a wife and mother who would work only to support the education of her husband and the needs of her family. It was selfish of her to pursue a career as a physician, which would compete with the care that her familial group would expect.

Emma discontinued her pursuit of medical school for multiple years but continued pursuing her education and entered a relationship with someone outside her religion. This new relationship reengaged her in defining herself as a physician and understanding that it is not selfish to pursue this career. Eventually, she renounces her affiliation with her church and declares her intent to apply to medical school. Connectivity and relationships with certain groups and people were complex for Emma. These groups defined Emma in a way that was counter to Emma's vision of self. As she reached adulthood, she developed new relationships, which resulted in Emma taking responsibility for self and defining herself as an applicant for medical school.

Susan, who was a member of the same religious organization as Emma, experienced a similar quandary concerning definition of self that was counter to the definition conveyed by her family. Susan never swayed in her vocational interest despite the negative feedback she received from her parents and brother-in-law.

Members of this familial group questioned her ability to be a physician, a spouse, and a mother. Susan communicated clearly to her family, especially her mother, that she was not sure how these multiple identities would evolve for her, but she knew that she defined herself as a woman who would become a physician. She wanted to care for people through the physician career field and did not see this as jeopardizing other roles. She engaged them in supporting her definition of self that did not eliminate the other identities her family established for her.

Connectivity explains the responses of participants regarding interactions with academic advisors. These women were looking for relationships that cared about them becoming a physician. Written resources, such as the Medical School Admission Requirements guide, indicated that academic advisors would guide students towards medical school admissions and directed students to connect to an academic advisor (Chanatry, 2006).

Academic advising is a service offered to students who are participating in higher education to offer guidance in reaching personal, academic, and career goals. A general definition of this service is as follows:

> Academic advising is a developmental process which assists students in the clarification of their life/career goals and in the development of educational plans for the realization of these goals. It is a decision-making process by which students realize their maximum educational potential through communication and information exchanges with an advisor; it is ongoing, multifaceted, and the responsibility of both students and advisor. The advisor serves as a facilitator of communication, a coordinator of learning experiences through course and career planning and academic progress review, and an agent of referral to other campus agencies as necessary. (Crockett, 1987, p. 3)

By definition, advisors are expected to be knowledgeable about information that impacts academic and career goals for students, and advisors practice helpfulness towards students through active listening and communication that signifies interest and concern for individual needs (Gordon, Habley, & Associates, 2000). By definition and practice, the academic advisor should be a source for connectivity for women as they are involved in the decision-making process.

As women described their interactions with an academic advisor, it became clear that some women developed a professional relationship that produced connectivity to advisors within this process of deciding to apply to medical school. Gloria, Emma, and Olene reported satisfaction with their advisor because the advisor was focused on the individual and not on scores and grades within the prescribed preparation process. The advisor asked each woman about her extracurricular experiences and encouraged her to reflect on personal growth and development from all prescribed premed activities. The advisor connected with the woman.

Gloria offered an example of connectivity in advising. When Gloria was at the point of applying to medical school but did not receive any interviews, she contacted her advisor for assistance. The advisor used her relationships with staff at some medical college admissions offices to negotiate on behalf of Gloria, which resulted in a few interviews and letters of admission. The advisor's relationship to Gloria went beyond scores to be able to advocate for a woman who had volunteered for Katrina Recovery Efforts, finished emergency medical technician

training, and identified her research experience as critical to understand her need to care for people. These experiences described by some women demonstrated how connectivity to someone who is part of the prescribed process resulted in women continuing to progress towards a decision on becoming a physician. Unfortunately, other women did not find connectivity with academic advisors due to the advisor not having a holistic focus on the individual. This aspect of advising is explored in the next point of this discussion section.

Connectivity, as described by the women in this study, seemed to focus on relationships with other people. These relationships were between the women and family members, faculty, advisors, student peers, professional colleagues, etc. Some of the relationships originated from organizational memberships, such as Lan discussing her relationships that were the result of her membership in the ACCESS Program for women. Sometimes these relationships were influenced by the formal or informal values of an organization. This issue of values stemming from an organizational culture complicates connectivity based on how people internalize the values of organizations they affiliate with in their community.

In this study, the geographical site selection had a predominant religious organization and political party affiliation with the majority of the population being Caucasian. Some of the women belonged to the predominant religion and discussed relationships that were influenced by the values of this group. Emma and her family were members and she reported that her goal of becoming a physician was discouraged by this religion. She resigned her membership to move forward with

her goal. She did not find relationships for her support system through this group affiliation.

Jenny also was a member of this same religion. She reported that some aspects of this organization might see her role in society as something other than a physician, but she had identified women within the organization to dialogue with on this issue. Through dialogue, mentoring, spiritual readings, and critical thinking, she could negotiate her membership in this religion and her career goal of becoming a physician.

Group and organizations offer a key element for connectivity. Women meet people for forming relationships. It is important to recognize that these organizations include a culture with values that can impact the relationship. As the importance of connectivity is explained to women, it is vital to explain the importance of understanding the self to preclude organizational cultures from dominating individual academic and career goals. Through support systems, mentoring, and role models, women learn how to negotiate organizations to maintain their personal values and interests. Locations and spaces for women to discuss with other women challenges to their personal goals are pivotal for women to establish and accomplish their goals.

Gilligan's early research included engagement with women who became physicians. The following quote from Gilligan could have been the result of interacting with women in this study. Concerning one interview she wrote, "Joining the image of her mother with that of herself, she sees herself as a

maternal physician, as preparing, . . . to become a scientist who takes care of the world." (Gilligan, 1993, p. 55). The stories shared by women in this study evidence their decision to become a physician due to connections and relationships that center on caring for others. The decision to apply to medical school was an activity that indicated not only understanding for self but caring for self by pursuing a career that had meaning for these women.

Connectivity was apparent in these data. Relationships were the medium for developing connectivity that focused on caring for others as well as self. Connectivity introduced support for some women to move forward in the process of deciding whereas other women were confronted with conflict from these relationships. Thus, relationships as a form of connectivity to achieve personal goals varied in the outcome. Some relationships were supportive as the women moved forward in the process of deciding while other relationships introduced conflict. From these data, conflict introduced through connectivity resulted in women taking responsibility for self and moving forward in the process of deciding. One form of conflict that emerged in relationships with advisors and faculty was evaluating the potential of a woman to become a physician based on objective measures. This issue is the second point of the discussion.

Objective Evaluation of Premed Students Oversimplifies Complexity of Deciding

A connection has been established between the disciplines of science and the study of medicine. This connection is evidenced in many ways. First, the Medical

School Admission Requirements guide states that "the study and practice of medicine are based on modern concepts in biology, chemistry, and physics, and on an appreciation of the scientific method" (Chanatry, 2006, p. 11). Second, premed students must complete a specific group of science courses for admissions. Third, students are instructed to become involved in hypothesis-based research, which is common for physical and applied sciences. Finally, the MCAT is primarily based on knowledge from science disciplines (Chanatry). This connection has resulted in certain attributes of science being used by key premed resources for evaluating students. First, I draw upon the literature review to describe the history of science, which is counter to learning styles used by women. Then I demonstrate how this is used by premed resources, such as advisors and faculty, for evaluation of premed students.

Research by Bleier, Harding, and Schiebinger explained that historically the disciplines of science were objective and hegemonic and focused on the one "truth" rather than multiple truths. The culture established in science had historically excluded women to produce a situation in the 21st century where women choose academic disciplines besides science (Bleier, 1984; Harding, 2004, 2006; Schiebinger, 1987, 1993). Women who select to study the sciences through a course or major experience a discipline that does not embrace learning from a female perspective. Belenky et al. (1997) explained that women learn through dialogue and reflection, which is counter to the classroom lecture format and exams that focus on one right answer through a multiple choice evaluation tool.

The result of the multiple-choice exams is that there is an objective score that measures learning for each student. This objective orientation has been extended into various elements of the premed process. It focuses on grades, scores, and accumulated hours to determine who should consider a career in medicine while ignoring the motivations and values of the individual. In this study, some women discussed that this objective evaluation was prevalent when they interacted with academic advisors and faculty.

Many women, such as Susan and Wei, were evaluated by a premed advisor on their potential for admissions to medical school by grades and scores that originated on the checklist. Susan explained that her advisor discouraged her because her grades were too low for success in applying to medical school. Wei reported that she and other students were discouraged after interaction with the advisor at a group advising session since she focused on objective evaluation measures, such as grades, rather than the individual. Women did not connect to these advisors and looked for other people to fill this role. These women were looking for advisors who would support the individual and knew the woman beyond her grades in science courses.

The proximity of medical education to science has resulted in key resources within the premed preparation process adopting certain aspects of science as they interact with students. The primary element adopted by premed advisors is the objective nature of science as a tool to evaluate students who are considering a career in medicine. Some women in this study identified this objective stance by

the advisor, which resulted in making a decision for the women. The career goal of becoming a doctor was viewed as a binary that could be quickly evaluated by the advisor or faculty member. As described in literature and the experiences of women in this study, the preparation process begins with enrollment in the premed science courses rather than the extracurricular activities. By enrolling women in courses that result in grades, this objective evaluation occurs. The identification of a future physician is far more complex than grades and scores, and the development of a women goes beyond this simplistic evaluation system.

Two specific points from the previous research are drawn upon to discourage further utilization of this objective measure when interacting with women who are considering a career as a physician. First, Harding (2004, 2006), Schiebinger (1987, 1993), and Bleier (1984) establish the historical roots of science as hegemonic and based on objective truth and one reality. Historically women have been viewed by the science community, which was male, as having limited intellectual capacities and excluded from the study of science. In addition, Belenky et al. established that women learn differently from men. Learning involves reflection and dialogue to present multiple realities. Thus, women are not intellectually deficient; they approach the acquisition of knowledge differently from men.

Therefore, judging a woman's potential for a career as a physician through an objective evaluation method used in an academic discipline that has historically devalued women's ways of knowing discourages inclusion of women in the career

field. Women learn about academic subjects, and self, through interaction and dialogue. Women should not deal in a binary of becoming or not becoming a physician because of a grade in one or two courses. The process of deciding is much more complex. Even though some elements of the prescribed premed process do have objective measures such as scores and grades, other elements offer insight into self and contribute to growth and development of self. This complexity must be recognized, accepted, and introduced as interactions occur among women, advisors, and faculty. Advisors and faculty must recognize and communicate to women that women complete the process of deciding when they are holistic in their approach to deciding that is reflexive on the self as well as all the activities of the prescribed process.

In addition to encouraging interactions among students, faculty, and advisors that address the complexity of deciding to apply to medical school, this section has suggested that women confronted obstacles and barriers during their journey to medical school. The next point within this discussion addresses challenges that women confronted in the deciding process.

Women Encountered Obstacles and Barriers During the Process

Women in this study identified numerous obstacles and barriers that hindered their progress towards deciding to apply to medical school that included being evaluated on appropriateness for the career based on grades and scores. Women reported that these obstacles were discouraging. They described comments

made by peers in classrooms about women in medical school. Faculty members questioned their intelligence if they selected medicine over research in an academic discipline. Family members offered suggestions that limited career choices due to gendered roles. Women experienced these situations and others as they pursued curricular and extracurricular activities that were part of the prescribed process. Three categories emerged under the concept of encountering obstacles and barriers. These three categories were prescribed preparation checklist, the premed stereotype, and compatibility between motherhood and career. Each of these is described below for clarity.

Chapter 4 made reference to the prescribed preparation checklist. Mary made the comment that "the whole process itself is so intimidating" as she talked about the long list of prescribed activities that were presented to her and other women in the study. Women found this checklist to be a long list of activities that centered on appropriate grades, scores, and accumulated hours. It was oppressive due to numerous activities that needed to be accomplished to apply to medical school that were presented at one time to the potential applicant, and the focus was on becoming the applicant that would be admitted based on quantitative measures. This checklist lacked reflection on self to consider whether this was an appropriate career for the individual. It was objective in nature and did not address the process of how women gain knowledge or understanding of self.

Aspects of the literature review offer understanding on why this potential tool did not work for women. First, it focused on objective measures such as

grades, scores, and hours, which are characteristics of the disciplines of science. It suggested that this was the formula for becoming a physician. It neglected appreciation of how women gain knowledge and understanding. Belenky et al. (1997) are clear that women utilize interaction and reflection to learn about self as well as the world around them. Gilligan's (1993) research also identifies the importance of women developing connectivity and relationships as they make decisions. Both Gilligan and Belenky et al. identify the importance of voice through dialogue and interaction to give women agency to make decisions such as applying to medical school. Thus, women need more than enrollment in a course with a grade to evaluate their learning and understanding. They need the involvement offered in the extracurricular activities, dialogues with faculty, and the opportunity to discuss their experiences with other women such as advisors, faculty, and family members.

Women in this study empowered themselves to move forward despite the checklist by refocusing the activities to learn about self, women's roles, and the physician career field. This strategic move was the result of engaging a strategy for empowerment that is described in a later section. Another category within encountering obstacles and barriers was the premed stereotype.

Most women in this study discussed the stereotype that had been attributed to premed students. This stereotype resulted in experiences of oppression. Women concluded that peers who used this label were arrogant or ignorant. Arrogance was attributed to someone who assumed they would be accepted to medical school and

ignorance was attributed to the individual who did not understand the stereotype associated with the premed label. Wei, Susan, Mary, and Emma explained the premed stereotype through their experiences. The stereotype centered on a student who was competitive, focused on grades and scores rather than learning, and participated in activities that would sabotage other premed students for personal achievement.

The history of science offers some insight into the development of this stereotype. First, science has historically taken an objective stance with one truth. This stance has resulted in evaluation of knowledge in science being objective. Since the study of medicine has been connected to the study of science, objectivity has been used to evaluate students as appropriate for applying to medical school. Thus, students have observed this pattern of "culling" the premed candidates through objective grades in science courses. Therefore, students have identified certain behaviors that increase their grade, such as sabotaging other students or pleading for additional points from faculty members, regardless of learning the material or reflecting on what this means within their life. The student has been conditioned through the prescribed premed process to be more concerned with the grade in evaluating success for medical school. This behavior resulted in the student ignoring not only knowledge of concepts but also disregarding how the learning experience had impacted the self within the context of becoming a physician.

Most women concluded that association with the premed label would invoke the stereotype. This stereotype had negative implications in the classroom and among faculty and peers. The stereotype of the premed student that so many people used for a frame of reference made it an obstacle for learning within the process of deciding to apply to medical school. The premed label could have been a location for collaboration and assistance in reaching a career goal. Instead it was a site that women avoided based on fear of being ostracized for their potential career selection and being labeled as insincere about learning. The last major category within encountering obstacles and barriers involved gendered roles within the home and world of work.

Some women in this study were confronted with a conflict between women's traditional roles within the home and potential career goals. Confrontations about gendered roles involved family members, male colleagues, faculty, organizations, and the woman. In addition to situations described by Susan, Emma, Wei, Lan, and Graciela that offer an understanding of this conflict, Chapter 4 also described Claudia being constantly confronted by her parents, Jenny being challenged by men she attempted to date, and Dolores having an internal struggle about balancing these roles. Rosalyn described the conflict this way, "There are unique things to being a woman trying to do this [physician career], because I think we have multiple roles that we expect ourselves and we're expected to fulfill."

Most women in the study described conversations and experiences that presented motherhood and the physician career field as a binary. Women could pick one or the other but not both. This line of reasoning goes back to the objectivity of science and one truth (Bleier, 1984; Harding, 2004, 2006; Schiebinger, 1987, 1993). Opponents of women assuming multiple roles argued that women could assume one role but could not assume multiple roles to produce the "cool" mother and a competent physician. The issue of compatibility between motherhood and the physician career field was an obstacle that emphasized the importance of the women learning to define self rather than allowing others to define her. Gilligan (1993) discussed women assuming roles that communicate an ethic of care. She argued that women who had the opportunity to develop, connect, and reflect could intellectually and physically expand the ethic of care into multiple roles such as mother, partner, and physician.

As women discussed conversations about their roles in the household as well as their career goals, it became evident that not all women experienced households that were altruistic. *Household altruism* is an economic term that suggests that economic decisions made within a household will focus on the group and not privilege one or more members of the group over the entire group (Becker, 1981). Feminist economists argue that males are privileged within a household and female needs, such as academic and career goals, are ignored or suppressed to accommodate male members of the group (England, 1993; Folbre, 1993; Strober, 1994). Some women in this study, such as Susan and Claudia, described

households that were focused on the care of men and children despite the interests and abilities of the women. If these households had been altruistic from an economic perspective, women would have been encouraged to have careers that were rewarding and often more economically lucrative than the privileged male members. Regardless of economic factors such as income, the altruistic household does seem to be debatable within this study. The role of women within the household became an obstacle for some women.

Three categories were presented by most women in the study as defining the concept of encountering obstacles and barriers that impacted the process of deciding to apply to medical school. These three categories were prescribed preparation checklist, the premed stereotype, and compatibility between motherhood and career. These situations occurred at various times throughout the process of deciding. Women described strategies that they employed to counter these challenges to deciding. These strategic moves allowed the women to continue the process of deciding as they learned more about self. The next finding explores strategies engaged by women to authorize self to continue the process of deciding.

Women Identified Strategies for Authorizing Self to Continue in the Process

Women engaged in deciding to apply to medical school despite being challenged by obstacles such as the checklist, the premed stereotype, and potential conflict between roles assumed by women. Harding, Hartsock, Naples, and Marshall and Rossman established that women learn and persist through challenges

to actualize their person goals. Most women engaged strategies that authorized the individual to continue in the process of deciding despite the obstacle. These strategies included avoiding the premed label and participating in connectivity through support systems, mentors, and role models that gave them voice. Women discussed these strategies as critical mechanisms throughout the process of deciding. Some techniques, such as connectivity through a support network, existed for some women since birth. Other techniques emerged as they identified this career goal and progressed through the process of deciding. In addition, the process of deciding was iterative because women continued to undertake activities for learning which intensified these emancipatory strategies.

The first category that is described within strategies for empowerment is avoiding the premed label. Most women indicated that they could circumvent competition from peers and loathing from faculty if they avoided the label. Wei's support network had suggested this strategy before she went to college. She engaged it when she met with a faculty member by referring to herself as a fine arts major rather than premed. Most women learned this strategy as they initiated interaction with peers and faculty. A technique to avoid the premed label was to embrace the declared major. Thus, women were truthful about their academic goal and progressed in accomplishing their career goal without public comment.

In addition, the avoidance of the premed label allowed women to experience failure privately. Lan and Graciela stated this reason for using this technique for empowerment. Most of the women in this study reported avoiding the premed label

allowed them to be empowered when they experienced oppression that was based on the premed stereotype. Some women identified this strategy through the process of deciding while others received coaching on invoking this strategy through another empowerment strategy: the support network.

Before I discuss the support network, it is important to reflect upon this strategy of avoidance. The women reported it as a strategic move that allowed them the opportunity to continue in their process of deciding. Even though it did filter out negative comments, it also limited women's voice and potential information or knowledge that would be beneficial to their decision. First, by dialoguing with individuals who had certain negative opinions about the field of medicine, women in medicine, or undergraduate premed students, the woman could have had an opportunity to use her voice not only to impact the opinions of others but also to influence her own decision. Voice is an action for progression and power for women (Belenky et al., 1997; Gilligan, 1993). Second, the woman was assuming that the experience of others would be her experience as she interacted with this reported antipremed person. She might have found an ally that valued her interest in learning the subject for her future goal. The individual might have added information to her process of deciding. Avoidance is a complicated strategy that should not be ignored since it emerged from these data as a technique for deciding, but also it must be balanced against the women hiding her identity, her voice, and potential knowledge.

The second category that women identified focused on the importance of connectivity through support networks, mentors, and role models. Gilligan (1993) states that women utilize relationships and connections as a tool to care for self and others. Connectivity is an element within female development that encourages the individual to identify her depth and breadth. As women gain this nuanced understanding of self in adulthood, they are capable of authorizing self to pursue multiple identities such as physician, mother, partner, etc. They indicated that it was a crucial component within the deciding process that was absent from discussions with advisors and the activities on the checklist. Most women entered their process of deciding to apply to medical school with relationships that offered connectivity. The number and type of relationships grew and were enhanced as women progressed in age as well as experiences. Each category of connectivity is explored in relationship to offering a source of empowerment for women.

Support networks were individuals that offered a safe location to talk about issues, obstacles, challenges, and successes that women experienced. The network offered continual contact to discuss any subject for an indefinite period of time. Members of a support network included immediate family, partners, friends, peers, professionals in higher education, and faculty. Belenky et al. (1997) discuss the importance of dialogue for women as they learn. Voice though dialogue with members of support networks extends into agency for action. Victoria described the support she received from her family as early as third grade and Lan described all the health-care activities that her father connected her to as motivation to pursue

this career field. Rosalyn and Claudia shared examples of support from partners that included help on a physics project and moral support. Lan and Mary discussed the support they received from peers in special organizations. The support network was a strategy for empowerment that intensified with time to meet the needs of women. Another category that empowered women to overcome oppression was identifying mentors and role models.

A mentor offers wisdom through personal experience. The mentor engages in a dialogue with a mentee that articulates direction from experience. Questions and comments are exchanged to offer direction, focus, and encouragement (Daloz, 1999). In Chapter 2, stories from practicing physicians, as well as previous research on women who were successful in medical school, indicated that mentoring was important for increasing the number of female physicians. This mentor relationship offered future physicians guidance on negotiating medical school and residency. It was noted that female physicians provided a visual that women do succeed in this career field.

Most women in this study identified other women as mentors for information and guidance on career and life issues. Mentors and role models provided a visual of women performing multiple roles. These roles were situated within family, career, and educational organizations. The visual representation verified that women are capable of performing multiple roles. Women did not stop with visuals. They also identified physicians and other professional women to interact with to understand how to combine family and career. Lan and Jenny

shadowed female physicians who offered guidance on caring for patients, caring for family, and caring for self. Through the lived experiences of mentors and role models, women were able to learn techniques for pursuing the multiple roles they valued in their personal lives. Women could define self in many ways beyond definitions recommended by relationships with others. This information was powerful for conquering obstacles and allowed the process of deciding to continue. Rosalyn said it best when she said, "I saw other women, maybe not necessarily pursuing medicine, but pursuing their dream, . . . and thought, 'She can do that. Well, so can I.'" Rosalyn's words illuminate how a role model offers a path for achieving dreams and motivation despite barriers.

Women were confronted with challenges to their career goal of becoming a physician. Women developed strategies that authorized them to continue in the process of deciding to apply to medical school. Women avoided certain labels such as premed and facilitated connectivity to people for support systems and mentors. The challenges that confronted women forced them to define self not by roles and identities issued by others but by defining self despite concerns or protests from people within their relationships. These women overcame challenges by authorizing themselves to continue in the process of deciding to apply to medical school.

The framework and points of discussion address the many facets of being a woman as well as the elements of the prescribed process of applying to medical school. First, this study agrees with the work of Gilligan (1993) in identifying that women need to be involved in relationships that offer connection and caring for

self. This connectivity has an impact on deciding to apply to medical school. Second, an objective evaluation method for identifying potential medical school applicants oversimplifies actual medical school application practices and ignores the complexity of individuals, including women, involved in this career selection process. Harding (2004, 2006), Schiebinger (1987, 1993), and Bleier (1984) argue that science is tied to androcentric values and practices that disregard women. Thus, the simplistic evaluation process not only avoids complexity but also ignores how women come to know (Belenky et al., 1997). A holistic process of decision making that encompasses subjective experiences with objective measures must be utilized as women decide to apply to medical school.

Third, women encountered obstacles and barriers that are rooted in the history of science and verify the lack of household altruism in reference to women's career goals (England, 1993). These challenges forced women to reflect upon self and future goals. Fourth, women identified strategies that authorized them to define self as a potential applicant for medical school. These strategies gave women voice and agency to create their identities. From these results and findings, a theory appears to explain how women decide to apply to medical school.

The framework and discussion presented above have implications on practice, policy, and future research within the education community. The next section addresses these implications organized by area. My focus in conducting this research activity is to authorize women to make a specific career choice for self

through a theoretical model. The implications draw from this research to inform practice, policy, and future research that will benefit women and their allies.

Implications of Study

My roles as academic advisor and administrator of academic programs influenced my research agenda and my choice to develop this specific study. As a young career professional, I had watched many women declare their intent of becoming a physician, pursue activities that informed them about self and the career field, and make purposeful decisions on whether to apply. I also noticed that some women changed their educational and career goals, but I was not sure how this change occurred for some of these women. As I progressed in my career, I reviewed national and regional data that indicated that few women in some geographical areas were applying to medical school, and nationally the number of female applicants to medical school had stagnated in the last 10 years.

I drew upon my emerging identity as a researcher and future scholar to understand these national data within the lived experience of women. I was curious to understand more about the process of deciding to apply to medical school from the informed perspective of women who had been through the process. Thus, this study was conceived and conducted with the forethought that these data drawn from women would have implications for the future. These data that emerged from interviews informed the previously described theoretical model and discussion section, as well as guiding the development of the implications for practice, policy, and future research.

Implications for Practice

In this section, I begin the discussion of implications with the area of practice since this is how I started my journey in higher education. I interacted with students as an advisor to assist them in achieving their personal and professional goals. The findings from this study suggest three specific recommendations for future practice. First, faculty and professionals in higher education who interact with women on academic and career goals should reorient the dialogue to make the person the primary focus. Focusing the conversation on the requirements for applying to medical school avoids the process of exploring these educational and career goals for women. Second, academic advising as a profession must avoid the role of gatekeeper. Advising professionals need to develop skill sets that inform them about the needs of diverse student populations and create resources that are engaging for women. Third, higher education professionals must be aware of programs that connect women to women and facilitate these connections for students as they identify interests and potential goals. Women in this study indicated that programs with an orientation on the female experience promoted growth, development, and goal attainment. Next, I elaborate on each recommendation for practice.

These data drawn from the lived experience of women illustrated a key finding from this research. All women in this study were focused on understanding self as they progressed in the process of deciding to apply to medical school. The process of deciding evolved around the values and interests of women coinciding

with a career as a physician. Women were reflexive for understanding self as a woman and a physician. They were looking for information that offered models and techniques for multiple roles that included family and a career. Based on this finding, it becomes important for faculty and student service professionals in higher education to foreground the individual in conversations and on informational documents.

Rather than focusing conversation and documents on specific grades, scores, and accumulated hours, I suggest reorganizing the interaction to include discussions on learning about self, women's roles, and the career field, as well as discussing objective measures. For example, a biology instructor could follow the technique shared through Lan's experience. The faculty member asked students to apply a concept to self and the real world, possibly as a physician. Applying and internalizing a concept allowed women the ability to learn rather than focusing on memorizing information to produce a grade. Lan reported continued contact with this faculty member that resulted in other educational experiences. The reorientation towards the individual involved in the process of deciding, increases meaningful interactions for women. This offers an opportunity for women to increase their support networks and their information bank, which have a positive impact on their decision-making process. Academic advisors are a critical piece for focusing on the individual rather than the process.

Academic advisors are provided on many college campuses to assist students with application to medical school. Women in this study had mixed

experiences. Some women encountered a "gatekeeper" orientation that focused only on achieving certain grades, scores, and accumulating minimal hours in extracurricular experiences. Women reported that they opted to advise themselves, or they identified surrogate advisors. Experiences described by other women had a different focus. In Chapter 4, Gloria made the following comment about her advising experience, "they [advisors] would have tons of students. They cared about all of them. They're very nice people." Gloria and other women in the study identified advisors who communicated care through their actions. Gloria described this "care" as focusing on the needs of the woman who was considering an application to medical school. Gloria made the advisor part of her support network and engaged her when she was confronted with challenges within the application process. Gloria reported that she did not view her advisor as a "gatekeeper" and she viewed this relationship as a significant element in her process of deciding. Other women made similar comments concerning their advising.

Two specific recommendations for reducing the "gatekeeper" role focus on professional development for advisors and creation of resources that focus on the needs of students. First, academic advisors must be required to learn more about all student populations. Professional development activities such as readings, public lectures, reflective writing, and dialogue result in advisors understanding and acknowledging the needs of all students rather than focusing on the majority. In the geographic location of this study, male applicants are the majority for medical school. Advisors are familiar with this population. Conversely, women are a

minority at the point of application to medical school. Based on this study, advisors who develop a greater understanding of women's issues within the context of education and career attainment would increase their tools for advising women who are interested in becoming a physician. This understanding of student populations would drive the second recommendation concerning resources.

As evidenced by premed materials (Brigham Young University Prehealth Advisement, 2008; University of Utah Preprofessional Advising Office, 2006a; Utah State University Prehealth at Biology, 2008) and references to the Medical Schools Admission Requirements guide (Chanatry, 2006), the focus within conversations on applying to medical school is oriented towards the medical school application items and not the person in the process. Academic advisors are positioned to redirect interactions to focus on the student as well as application activities. Advisors should ask students questions that identify the values, interests, and abilities of the student. These student-focused conversations establish a relationship that will inform the advisor about the needs of the student who is considering a career in medicine.

Advisors can also develop written resources that embed understanding of self within activities that students will accomplish as they progress towards a decision on applying to medical school. Rather than focusing on curricular activities such as the science curriculum first, advisors could encourage students to start with an extracurricular activity such as physician shadowing or direct patient care. These later activities provide relevant information concerning the physician

career. When students are asked to reflect upon these extracurricular experiences within their personal values and beliefs, an advisor has orchestrated a focus on learning about self within the process of deciding to apply to medical school. Academic advising programs that communicate a student-friendly orientation and also address the needs of the individual will be viewed by the woman as an ally. The last recommendation for practice is to focus on connecting women to women.

Most women in the study commented on the significance of connections to other women. Jenny shadowed a female physician that provided information on physician values and the multiple roles in the life of a woman. Lan was a member of the ACCESS Program that encouraged women to pursue science and offered a safe space to learn science that was collaborative. Rosalyn referenced the organization of participant panels that shared the experience of women in medical school with undergraduate women who were considering this career. She said, "I think it's really good to have a group of women who can sort of get together and discuss how they're doing, how they're doing this thing, that's quite big. You know, what's successful and what's not."

One conclusion from these experiences is that the organization of formal and informal activities for women not only increases understanding of paths for achieving admissions to medical school but also impacts retention in medical school and the physician career field due to proven tools and techniques shared by other women. Rosalyn and other women discussed that a decision to apply to medical school encompassed more than a career as a physician. It had implications on

negotiating other roles women assume in life such as mother, partner, and community member. A concrete illustration provided by other women empowered women in this study to consider a career as a physician. Existing activities that offer formal and informal networking need to be clearly communicated to women. This communication must include more than a date and location. Women must understand the power of models within their own decision-making process.

I have presented three recommendations that have implications for practice. First, practitioners and faculty need to focus on the woman who is present within the process of deciding, as well as the quantitative activities that produce the perfect applicant. Women are approaching the process from a stance of learning about self, women's roles, and the physician career. Higher educational professionals have an opportunity to contribute to learning on a microlevel. Second, academic advisors must pursue professional development activities that educate them about all student populations. This educational development will increase their effectiveness not only with women but with all students who are considering a career in medicine. In addition, advisors should develop resources that incorporate learning about self (the individual) within activities that prepare a woman for a career in medicine. These recommendations are based on data from the lived experiences of women who actively engaged in the process of deciding to apply to medical school. These same lived experiences informed the implications for policy that are addressed in the next section.

Implications for Policy

My professional journey transitioned from being a practitioner to an administrator, which increased my participation in policy issues. Thus, I move next to implications for policy within higher education. I have three recommendations for policy that are informed by these data in this study. First, higher education needs to address the use of the premed label. If it is not a major, why do some students use it in this fashion? Second, the act of mentoring women and facilitating organizations that engage women must to be acknowledged through policy and resources on college campuses. Faculty and staff who are involved in mentoring projects should be rewarded through release time, professional development funding, and written acknowledgments for promotion and tenure files. Finally, women discussed the grading policy of science disciplines as creating a culture of objectivity and competition. The message was that there was a right answer and a specific limit to the number of students who could earn an "A" grade in a course. The outcome was that students focused on the grade rather than learning the subject and avoided collaborative learning to further their individual goals. All three recommendations have implications for policy in higher education. Each of these recommendations is elaborated on for the reader.

Some admissions applications identify undergraduate majors. This list often includes the term *premed* as a major selection (University of Utah Office of Admissions, 2006). Often, the institution does not offer premed as a major that will allow a student to complete a bachelor's degree, which is a requirement for

admission to medical school. Some students do not realize that they must select another discipline or subject to complete a degree. Thus, they do not explore a major early, which results in requiring more time to complete a degree once the major subject is selected by the student. Unfortunately, this designation within a list of majors presents a false reality that results in students using this label at various points in their undergraduate career to indicate certain intentions, which are appropriate for a career goal, but not accurate for an academic goal.

Most women in the study identified this label as problematic beyond the issue of time to accomplish an undergraduate degree. They referenced this label as having a negative stereotype for faculty, and it invoked competition among student peers. Women selectively avoided the label to evade prejudice, competition, and public failure.

The first policy recommendation I propose is to revisit the label premed to understand its utilization on college campuses at this time. It is critical to approach this review from a campuswide perspective to evaluate the value of this term in 21st-century higher education. The result of this evaluation could include elimination of the designation on all or some institutional documents, refocusing premed into a broader preprofessional category that is clearly about professional school education, or retaining the current stance of limitless utilization. This campus exchange on how to identify premed students if this term is eliminated from a list of majors would result in producing alternatives. For example, students who are participating in Honors Programs or service-learning programs are

identifiable through the use of administrative software programs that differentiate major from other activities that are recorded on a transcript or are pertinent to a career goal. Technology could offer students an avenue to identify multiple interests beyond the major and communicate these interests to faculty and staff. Then faculty and staff could interact with students to achieve these multiple academic and career goals.

Beyond the technical aspects of how to handle the premed term, a campuswide conversation on this term would covertly infuse understanding of the women's experience within deciding to apply to medical school and overtly address the stereotype imposed by labels that students assume or are placed upon them from the institution. Informed by data from this study, a purposeful policy on the use of the term premed has implications for women's participation in a medical career. I previously addressed the practice of mentoring women, which also has implications for women considering an application to medical school. Mentoring also has policy implications.

Institutions that offer informal and formal activities for mentoring women must develop policies that acknowledge this contribution. Formal mentoring programs require resources that include time. This is time that could be used for activities that are currently valued in higher education. For example, female faculty who mentor other women could also use this time for research, which will have greater impact on individual promotion and tenure. In addition, women who accept a role as a leader of an organization that offers networking and mentoring for

women seldom see release time or increased compensation for the activity. This critical role is added to their current activities without considering the holistic impact on the woman and society. In both situations, the message that is sent to women is that their time in mentoring other women is not valued based on the policies that organize the hierarchy of value within institutions of higher education.

Institutional leaders must address policies that devalue activities that women participate in to positively impact other women. Based on data from this study, a critical activity for women's progress in male-dominated career fields is mentoring. This leads to a final policy recommendation concerning a curricular activity pursued by students considering an application to medical school. All students complete premed coursework that is focused on science. Women reported that grading policies encouraged competition over collaborative learning. The next section addresses policy implications to refocus the nature of premed science coursework.

Even though all women accomplished the premed science curriculum, they described an environment that was competitive based on the grading policy. Some women described classrooms that had two hundred or more students. Grading was done on a curve which produced a certain number of A's, B's, C's, D's, and E's. A common belief was that everyone was everyone else's competition, especially if an advisor or medical school admission literature discussed minimum grades for admission. Women described acts of sabotage that focused on stealing notes, dispensing incorrect information, and limited access to study groups. This

competitive environment was stressful and did not contribute to learning the subject.

Women joined informal and formal groups to lessen the stress of competition and achieve goals collaboratively. Some women, such as Dolores, purposely avoided discussing grades with peers even though the information within the context of a collaborative learning group could facilitate reviews of key concepts that would increase understanding for all members of the group. Some women openly expressed their concern that the environment in a science classroom might be replicating the medical school classroom. They reported that continuing in competitive educational environments was a complex issue as women processed their decision on applying to medical school.

Disciplines within the area of science have focused on objective truth and ignored a subjective reality that accepts multiple truths. Thus, a grading system that organizes grades through limiting the number of students who receive a certain grade regardless of how much they have learned continues this focus on an objective standard rather than embracing a grading system that rewards all students based on their actually learning. A policy recommendation is to encourage the disciplines in science to review grading practices to understand the environmental impact of grading on competition and learning.

The science classroom is the initial introduction experienced by students who are considering careers in health care, engineering, and science. The policies presented to students in these classrooms through practices such as grading impact

their performance in the classroom, impact their interaction with colleagues, and contribute to decisions on their future educational and career goals. Policy review and change will not only impact women who are considering application to medical school but also other students who have cultural orientations that are collaborative. Reconsidering how knowledge is shared and learning is evaluated in science should include discussions on learning styles of multiple populations who are pursuing higher education.

This study has established three recommendations that have implications for policy in higher education. First, a review of the premed label needs to occur to decide if there are techniques for documenting this label that are relevant in higher education today and are advantageous for students to achieve their academic and career goals. Second, current policies that impact promotion, tenure, and resource allocation need to review the value of mentoring women as these women are pursuing their educational and career goals. Finally, the women in this study suggest that grading policies utilized in science disciplines establish competitive environments that discourage collaborative learning in pursuit of achieving a suitable grade for admission to professional graduate programs. These policies need to be reviewed and discussions started that address the issue of accommodating a diverse population of learners who embrace collaboration within their educational process and their future career goals. Implications for practice and policy have established avenues for change within higher education. This study also offers directions for future research that extends the findings beyond this

geographic area and extends the methodology to other underserved populations in medicine and other nontraditional careers for women.

Implications for Future Research

This study engaged me in a new role that reorients my actions in the roles of practitioner and administrator. Through this study, I am initiating my role as an educational researcher. This study offers direction and insight into the process of deciding to engage in educational experiences that contribute to the attainment of certain career goals for women. I have three recommendations for future research. First, the rich description offered from this study could contribute to a questionnaire that examined this theory in a broader context and offered generalization across a much broader population. Second, this study focused on women in one geographical area. This study could be reproduced in other geographical areas and focused on women or other populations who are underrepresented in the physician career field. Third, this study focused on the physician career field. It offers a location for future research to understand the process of deciding used by women who are employed in other careers that are traditionally male such as engineering and science. Each of these recommendations is explained for deeper understanding.

This study interviewed women in one geographic area in the United States. Based on data from Association of American Medical Colleges, this geographic location produced fewer women applying to medical school, which might have impacted sample size. Women currently living in this area were eager to describe

their experiences in deciding to apply to medical school, which resulted in a substantive theory that informs policy and practice. This study could be reproduced in other geographic areas to increase the rich description and utilize the constant comparative method of grounded theory. A broader perspective would enhance the current theory. In addition to continuing this line of inquiry on a qualitative level, a quantitative method could be introduced that is informed by the qualitative findings. A questionnaire that utilizes these data for item development and incorporates an inclusive demographic component would increase understanding of the process of deciding to apply to medical school that is generalizable across many diverse populations. It would provide additional information to inform practice and policy and suggest directions for future research. This establishes a mixed method line of inquiry that focuses on women.

When this study was initiated in 2004, it was not possible on a national or institutional level to access demographic information on race and ethnicity by an individual researcher. On the national level, I was told that these data had been misrepresented by certain organizations. On a national and local level, officials questioned the accuracy of demographic data. Demographic data are self-reported by applicants. It was believed that some applicants would not report certain pieces of information to avoid institutional racism and discrimination. Since 2003, the Association of American Medical Colleges has started to release demographic information that reports racial and ethnic affiliations. These reports suggest that certain populations are not applying to medical school. This study could be

replicated for a deeper understanding of models and theories that can inform practice and policy that promote opportunities for underserved populations in medicine. Finally, this study offers a model for researching the experiences of women in other nontraditional careers.

One value of this study is the vivid detail provided by women on their experiences within the process of deciding to apply to medical school. This study focused on capturing the lived experience to inform future practice, policy, and research. It identified oppressive acts that were overcome through strategies that empowered women to progress in their understanding of self within the physician career field. The study focused on the female experience and eliminated the male experience as a frame of reference. It is not generalizable to all women who are pursuing a career as a physician but informs future research that could lead to generalizability. This study offers a qualitative model of inquiry for other nontraditional female careers such as engineering and university science faculty. It could contribute to a deeper understanding of the female experience in these occupations. This study offers implications for future research on women and methods for studying the process of deciding to apply to medical school for other populations, and it suggests a research method that is transferable to other careers not traditionally filled by women.

As I think about my multiple roles in higher education as practitioner, administrator, and researcher with respect to this study, I am consumed with these implications that emerge from these data that would impact women who are

considering a career as a physician. There are implications for practice that engage faculty, academic advisors, and student affairs professionals to center their practice on the student who wants to go to medical school and communicate the importance of networking with other women for achieving life and career goals.

Policy recommendations challenge traditional practices on how to label students as premed, the evaluation practices in science, and valuing activities that offer women mentors and role models. These policies should be reviewed to accommodate learning and goal attainment in the 21st-century higher education community. Finally, I focus on future research that could replicate the methodology to understand how other populations could be better served as they decide on applying to medical school. Additional research on the women deciding to apply to medical school could extend this study to other geographic areas in the United States to increase the power of the theory and model, as well as develop a questionnaire that tests the theory across a large female population. The findings of this study contribute to practice, policy, and future research, as well as my future participation in higher education as an advisor, advising administrator, and educational researcher.

Conclusion

This study contributes a theory that explains how women progress through the process of deciding to apply to medical school. This theory involves an iterative process based on interaction between the prescribed preparation process and the self. The theory advances four points for discussion. First, connectivity to

other people is part of the process of deciding for women. Second, objective evaluation processes ignore the complexity of deciding for women. Objective evaluation methods must be merged with discussion of subjective experiences to develop processes that are holistic. The third and fourth points emerge from concepts within feminist literature. Women encountered obstacles and barriers within the prescribed process that hindered decision making. Despite these challenges, women identified strategies that authorized them to continue their process of deciding on their future career.

The development of this theoretical framework has implications for future practice, policy, and research that coincide with my roles in higher education. Thus, I will encourage fellow practitioners to understand and focus on each woman as an individual, which will impact her freedom of choice. I will endorse networking activities for women that not only impact students but also address institutional change by challenging the current policy structure that does not communicate the same value for mentoring students as it does for research and publications. In addition to challenging this policy, other institutional policies that label students as premed and establish objective-grading structures should be reviewed for impact on students' goal attainment in higher education. Finally, this study has implications for future research on women's issues, career choices in medicine for other underserved populations, and development of research tools, such as a questionnaire, that add breadth to the depth of this study and theory on women deciding to apply to medical school.

APPENDIX A

CAMPUS CONSENT FORM

Consent Document

Background

You are being invited to participate in a study that will focus on understanding the experiences of women who have been premed studies students for the purpose of applying to medical school. This study is being conducted because women are very important within the medical school applicant pool. My name is Sharon Aiken-Wisniewski and I am the person who is conducting this study. I am a graduate student who has selected this topic for my dissertation. In addition, I am an Associate Dean for Undergraduate Studies. An agency that I supervise is the Office of Pre-Professional Advising that includes premedical advising. Please take time to read the following information carefully and ask questions if there is anything about the study or me that is unclear or if you would like additional information before deciding whether or not to voluntarily participate in this research study.

Study Procedures

This study will involve individual interviews between you and me, which will take 90 minutes to complete. Before the interview begins, you will be asked to complete an optional demographic survey. The optional demographic survey will gather information on race/ethnicity, marital status, state of residence, undergraduate institution of attendance, age, dependent children, MCAT scores, premed studies course completion, and number of applications submitted to medical schools. Only group-level characteristics will be reported from this survey to retain individual confidentiality.

It will be *optional* for you to provide contact information to me. If you choose to do this, your name, address, telephone number, and/or e-mail address will be collected on a notecard and stored separately from data and an optional demographic sheet. This will allow me to invite you to an optional session (focus group or individual appointment) discussed below to review and comment on my analysis of these data.

The interviews will take place in a location of comfort for you and that we agree to before the interview begins. This location could be on campus in a private room in the Student Services Building or Olpin Union or off-campus at a room in a public library. The interview format contains open-ended questions that focus on your life experiences as you participated in the process of preparing and applying to medical school. You will be asked to reflect upon people, organizations, and activities that impacted your decisions on this subject. Each interview will be recorded and transcribed to create a data pool for analysis.

Once analysis is complete, you will be invited to participate in a focus group or another individual appointment with me to review the results from my analysis of data. This interaction is *optional*, it will take 90 minutes if you choose to participate, and you will have the choice of discussing the results individually or in a group.

Risks

The risks of this study are minimal. You may feel upset thinking about or talking about personal information related to your experiences as you pursued the process of applying to medical school. These risks are similar to those you experience when discussing personal information with others. If you feel upset from this experience, you can tell me, and I will tell you about resources available to help.

Although unanticipated, there may be additional risks not known at this time. Should you become uncomfortable with your participation in this study, you may withdraw at any time.

Benefits

There are no direct benefits for taking part in this study. However, I hope the information gathered from participants in this study may help to develop a deeper understanding of the process of applying to medical school for women. I also hope that you will enjoy the opportunity to reflect back on your experiences with someone who is sincerely interested in your story. Further, I anticipate using the data from this study to make suggestions for practitioners and policymakers who are working with women who are interested in applying to medical school.

Alternative Procedures

You do not have to take part in this study. If you elect to participate in this study, you retain the right to withdraw at any time.

Confidentiality

All information will be kept confidential by me as the principal investigator of this study. Your name and any other identifying information will be removed from the transcripts, and you will be encouraged to select an alias or pseudonym for the study. If you provided your contact information, it will not be stored with

transcripts or optional demographic data forms. It will be stored in a separate file that is separate from these other study materials. Data and records will be stored in a locked filing cabinet or on a password-protected computer located in my home office. Only my dissertation advisor, Andrea Rorrer, and I will have access to this information.

However, if you disclose actual or suspected abuse, neglect, or exploitation of a child, or disabled or elderly adult, I must and will report this to Child Protective Services (CPS), Adult Protective Services (APS), or nearest law enforcement agency.

Person to Contact

If you have questions, complaints, or concerns about this study, you can contact me, Sharon Aiken-Wisniewski, at (801)771-0929 and/or my dissertation advisor and faculty sponsor, Andrea Rorrer, at (801)581-3383. You can leave a message at either number 24 hours a day.

If you feel you have been harmed as a result of participation, please call Andrea Rorrer at (801)581-3383. You can leave a message at this number 24 hours a day.

Institutional Review Board

Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints, or concerns that you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801)581-3655 or by e-mail at irb@hsc.utah.edu

Voluntary Participation

It is up to you to decide whether or not to take part in this study. If you decide to take part, you will be asked to sign a consent form. You are still free to withdraw at any time. This will not affect your relationship with me.

Costs and Compensation to Participants

There are no costs and/or compensation for this study.

Consent

By signing this consent form, I confirm I have read and understand the information presented in it. I have had the opportunity to ask questions. I understand my participation is voluntary, and I am free to withdraw at any time without giving a reason and without cost. I understand that I will be given a signed copy of this consent form. I voluntarily agree to take part in this study.

_____

Printed Name of Participant

_____ _____

Signature of Participant Date

_____

Printed Name of Researcher or Staff

_____ _____

Signature of Researcher or Staff Date

APPENDIX B

SEMISTRUCTURED INTERVIEW QUESTIONS

Semistructured Interview Protocol
(November 27, 2006)
Women Applying to Medical School

Interview Questions

1. Tell me about yourself—a few things that you are proud of in your life.

2. How did your early life experiences influence your decisions concerning medical school? (Probe: elementary and secondary school experiences, a health situation you experienced early in life, other careers, etc.)

3. Who has been most influential as you continued toward your goal of applying to medical school? Why were they influential?

4. What events, circumstances, and/or situations have been most influential as you continued toward your goal of applying to medical school? Why?

5. Tell me about the groups (social, religious, familial, etc.) that you identify with in your personal life experience. How did these groups shape your thinking about a career in medicine?

6. How did your undergraduate college experience influence your decision concerning whether to apply to medical school or not? (Probe: courses you enjoyed and disliked, various activities, significant people such as faculty and advisors, etc.)

7. How were you motivated to move forward with your decision to apply to medical school? (Probe: people or relationships, events, etc.)

8. How were you discouraged from moving forward with your decision to apply to medical school? (Probe: people or relationships, events, etc.)

9. What were the obstacles/barriers for you as you were pursuing application to medical school?

10. What types of competition have you experienced in your pursuit of medical school? (Probe: definition of competition)

11. (If appropriate) How did you select the medical schools you were applying to and the one you decided to enroll in for your actual experience? What factored into this decision?

12. Is there anything else you would like to tell me about your premed studies journey?

13. Do you have suggestions for other women who might want to participate in this study?

APPENDIX C

OPTIONAL DEMOGRAPHIC SURVEY

Women Applying to Medical School
(November 27, 2006)
Demographic Survey

This demographic survey will take only a few minutes to complete, and it is an *optional* part of this study. Your participation in this study is confidential, and these demographic data will only be reported in groups to maintain your confidentiality. You may choose to respond to all, some, or none of these questions.

If you have questions regarding your rights as a research participant, or problems arise that you do not feel you can discuss with the investigator, please contact the Institutional Review Board Office at (801)581-3655.

1. Did you complete your undergraduate degree in Utah?
   _____ Yes
   _____ No
   a. If you answered "no," which institution did you complete your undergraduate degree at?

      _____

      _____

2. Did you complete the premed studies curriculum as part of your undergraduate degree?
   _____ Yes
   _____ No
   If you answered "no" to item 2, did you complete your premed studies curriculum as a postbaccalaureate student in a Utah institution of higher education?
   _____ Yes
   _____ No

3. What was your undergraduate major?

   _____

4. What was your state of residence when you applied to medical school?

   _____

   How long have you been a resident of that state? (circle one)
   a. 0 to 5 years
   b. 6 to 10 years
   c. 11 to 15 years
   d. 16 years or more

5. What is your current age? (circle one)
   a. 20 to 25 years old
   b. 26 to 30 years old
   c. 31 to 35 years old
   d. 36 to 40 years old
   e. 41 years or older

6. What was your age at the time applied to medical school? (circle one)
   a. 20 to 25 years old
   b. 26 to 30 years old
   c. 31 to 35 years old
   d. 36 to 40 years old
   e. 41 years or older

7. What is your current marital/partner status?

   _____

8. What ethnicity do you primarily identify with? (circle one)
   a. African American or Black
   b. Asian American
   c. Caucasian/White
   d. Hispanic
   e. Latina or Latino
   f. Multiethnic
   g. Native American
   h. Pacific Islander or Native Hawaiian
   i. Other

9. Do you have dependent children?
   _____ Yes
   _____ No
   How many?

   _____

10. How many medical schools did you apply to?

    _____

    Which ones?

    _____

    _____

    _____

    _____

11. How many times did you take the MCAT?
    a. Did not take exam
    b. One time
    c. Two times
    d. More than two times

12. If you did not apply to medical school, which courses had you taken in the premed studies curriculum? (circle all that you attempted)
    General Chemistry, 1st semester
    General Chemistry, 2nd semester
    Organic Chemistry, 1st semester
    Organic Chemistry, 2nd semester
    General Biology
    Another Biology course
    Introduction to Physics, 1st semester
    Introduction to Physics, 2nd semester
    Calculus I

REFERENCES

Alvord, L. A., & Van Pelt, E. C. (2000). *The scalpel and the silver bear: The first Navajo woman surgeon combines Western medicine and traditional healing.* New York: Bantam Books.

Association of American Medical Colleges. (2003). *MCAT student manual.* Retrieved October 7, 2006, from http://www.aamc.org/students/mcat/studentmanual/start.htm

Association of American Medical Colleges. (2006a). *FACTS—applicants, matriculants and graduates.* Retrieved March 15, 2006, from http://www.aamc.org/data/facts/2005/2005summary.htm

Association of American Medical Colleges. (2006b). *FACTS—applicants, matriculants and graduates.* Retrieved March 15, 2006, from http://www.aamc.org/data/facts/2005/2005school.htm

Association of American Medical Colleges. (2006c). *Women in medicine (WIM).* Retrieved October 7, 2006, from http://www.aamc.org/members/wim/start.htm

Association of American Medical Colleges. (2008a). *FACTS—applicants, matriculants and graduates.* Retrieved February 5, 2008, from http://www.aamc.org/data/facts/2007/2007summary2.htm

Association of American Medical Colleges. (2008b). *Women applicants to U.S. medical schools by state of legal residence.* Retrieved February 12, 2008, courtesy of AAMC Data Warehouse: Applicant Matriculant File as of September 25, 2007.

Bart, J. (2006). *Feminist theories of knowledge: The good, the bad, and the ugly.* Retrieved May 17, 2006, from http://www.dean.sbc.edu/bart.html

Becker, G. (1981). Altruism in the family and selfishness in the marketplace. *Economica, 48*(189), 1-15.

Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1997). *Women's ways of knowing: The development of self, voice, and mind* (10th anniv. ed.). New York: Basic Books.

Benjamin, M. (1993). A question of identity. In M. Benjamin (Ed.), *A question of identity: Women, science and literature* (pp. 1-21). New Brunswick, NJ: Rutgers University Press.

Bleier, R. (1984). *Science and gender: A critique of biology and its theories on women.* Oxford, United Kingdom: Pergamon Press.

Blumer, H. (1969). *Symbolic interactionism.* Englewood Cliffs, NJ: Prentice Hall.

Brigham Young University Prehealth Advisement. (2008). *Counseling and career center/prehealth advisement.* Retrieved March 4, 2008, from http://ccc .byu.edu/healthpro/preMedicalInformation.php

Cassell, J. (1998). *The women in the surgeon's body.* Cambridge, MA: Harvard University Press.

Chanatry, J. A. (2006). *2007-2008 Medical School Admission Requirements (MSAR).* Washington, DC: Association of American Medical Colleges Publication Department.

Charmaz, K. (2003). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of qualitative inquiry* (pp. 249-291). Thousands Oaks, CA: Sage Publications.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis.* Thousands Oaks, CA: Sage Publications.

Charon, J. M. (2000). *Symbolic interactionism: An introduction, an interpretation, an integration* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Coffey, A. (1999). *The ethnographic self: Fieldwork and the representation of identity.* Thousand Oaks, CA: Sage Publications.

Cole, S. (1986). Sex discrimination and admission to medical school, 1929-1984. *The American Journal of Sociology, 92*(3), 549-567.

Collins, P. H. (2000). *Black feminist thought: Knowledge, consciousness, and the politics of empowerment* (2nd ed.). New York: Routledge.

Creswell, J. W. (1998). *Qualitative inquiry and research designs: Choosing among five traditions.* Thousands Oaks, CA: Sage Publications.

Creswell, J. W., & Miller, D. (2000). Determining validity in qualitative inquiry. *Theory Into Practice, 39*(3), 124-130.

Crockett, D. S. (1987). *Advising skills, techniques, and resources: A compilation of materials related to the organization and delivery of advising services.* Iowa City, IA: ACT Corporation.

Daloz, L. A. (1999). *Mentor: Guiding the journey of adult learners.* San Francisco: Jossey-Bass Publishers.

Delgado-Gaitan, C. (1993). Researching change and changing the researcher. *Harvard Educational Review, 63*(4), 389-410.

Ellis, C., & Bocher, A. P. (2003). Autoethnography, personal narrative, and reflexivity: Researcher as subject. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative data* (pp. 199-258). Thousands Oaks, CA: Sage Publications.

England, P. (1993). The separate self: Androcentric bias in neoclassical assumptions. In M. A. Ferber & J. A. Nelson (Eds.), *Beyond economic man: Feminist theory and economics* (pp. 37-53). Chicago: The University of Chicago Press.

Firlik, K. (2006). *Another day in the frontal lobe: A brain surgeon exposes life on the inside.* New York: Random House.

Flannery, M. C. (2001). Quilting: A feminist metaphor for scientific inquiry. *Qualitative Inquiry, 7*(5), 628-645.

Folbre, N. (1993). Socialism, feminist, and scientific. In M. A. Ferber & J. A. Nelson (Eds.), *Beyond economic man: Feminist theory and economics* (pp. 94-110). Chicago: The University of Chicago Press.

Freire, P. (2004). *Pedagogy of the oppressed* (30th anniv. ed.). New York: Continuum International Press.

Fronczek, P. (2005). *Income, earnings, and poverty from the 2004 American Community Survey.* Washington, DC: U.S. Department of Commerce/U.S. Census Bureau.

Gal, S. (1991). Between speech and silence: The problematics of research on language and gender. In M. di Leonardo (Ed.), *Gender at the crossroads of knowledge: Feminist anthropology in the postmodern era* (pp. 175-203). Berkeley, CA: University of California Press.

Gilligan, C. (1993). *In a different voice.* Cambridge, MA: Harvard Press.

Glaser, B. G. (1978). *Theoretical sensitivity.* Mill Valley, CA: Sociology Press.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* New York: Aldine De Gruyter.

Glazer-Raymo, J., Townsend, B., & Ropers-Huilman, B. (2000). *Women in higher education: A feminist perspective.* Boston: Pearson Custom Publishing.

Gordon, V. N., Habley, W. R., & Associates (2000). *Academic advising: A comprehensive handbook.* San Francisco: Jossey-Bass Publishers.

Gose, B. (1998). The feminization of veterinary medicine. *The Chronicle of Higher Education, 44*(33), 55-56.

Harding, S. (2004). Introduction: Standpoint theory as a site of political, philosophic, and scientific debate. In S. Harding (Ed.), *The feminist standpoint theory reader* (pp. 1-13). New York: Routledge.

Harding, S. (2006). *Science and social inequality: Feminist and postcolonial issues.* Urbana, IL: University of Illinois Press.

Hartsock, N. C. M. (1983). The feminist standpoint: Developing the ground for a specifically feminist historical materialism. In S. Harding & M. B. Hintikka (Eds.), *Discovering reality* (pp. 283-310). The Netherlands: D. Reidel Publishing Company.

Jackson, A. Y. (2004). Performativity identified. *Qualitative Inquiry, 10*(5), 673-690.

Johnson, D. G. (1983). *Physicians in the making: Personal, academic, and socioeconomic characteristics of medical students from 1950 to 2000.* San Francisco: Jossey-Bass Publishers.

Lincoln, Y., & Guba, E. (2003). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The landscape of qualitative research* (pp. 253-291). Thousands Oaks, CA: Sage Publications.

Madriz, E. (2003). Focus groups in feminist research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative materials* (pp. 363-388). Thousands Oaks, CA: Sage Publications.

Marshall, C., & Rossman, G. (1999). *Designing qualitative research.* Thousand Oaks, CA: Sage Publications.

Mish, F. C. (2006). *Merriam-Webster's collegiate dictionary* (11th ed.). Springfield, MA: Merriam-Webster, Incorporated.

Montero-Sieburth, M. (1997). The weaving of personal origins and research: "Reencuentro y reflexion en la investigacion." In A. Neumann & P. Peterson (Eds.), *Learning from our lives: Women, research, and autobiography in education* (pp. 124-149). New York: Teachers College Press.

Naples, N. A. (2003). *Feminism and method: Ethnography, discourse analysis, and activist research.* New York: Routledge.

National Center for Educational Statistics. (2004). *Table 170. Total fall enrollment in degree-granting institutions, by attendance status, sex of student, and control of institution: Selected years, 1947 to 2004.* Washington, DC: U.S. Department of Education. Retrieved August 24, 2006, from http://nces.ed .gov/programs/digest/d05/tables/dt05_170.asp

Navarro, R. L., & Yakushko, O. (2005). Attending to the career-development deeds of diverse undergraduate students. In P. A. Gore, Jr. (Ed.), *Facilitating the career development of students in transition* (Monograph No. 43, pp. 103-122). Columbia, SC: University of South Carolina, National Resource Center for The First-Year Experience and Students in Transition.

Olesen, V. L. (2003). Feminisms and qualitative research at and into the millennium. In N. K. Denzin & Y. S. Lincoln (Eds.), *The landscape of qualitative research* (pp. 332-397). Thousands Oaks, CA: Sage Publications.

Perna, L. W. (2004). Understanding the decision to enroll in graduate school: Sex and racial/ethnic group differences. *The Journal of Higher Education, 75*(5), 487-527.

Punch, M. (1994). Politics and ethics in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 83-97). Thousands Oaks, CA: Sage Publications.

Quinn, D. C. (1992). Utah's women physicians coming of age. In H. P. Plenk & T. McMurrin (Eds.), *Medicine in the beehive state, 1940-1990* (pp. 537-544). Salt Lake City, UT: University of Utah Press.

Schein, E. (1992). *Organizational culture and leadership* (2nd ed.). San Francisco: Jossey-Bass Publishers.

Schiebinger, L. (1987). History and philosophy. In S. Harding & J. F. O'Barr (Eds.), *Sex and scientific inquiry* (pp. 7-34). Chicago: The University of Chicago Press.

Schiebinger, L. (1993). *Nature's body.* Boston: Beacon Press.

Schwandt, T. (2003). Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In N. K. Denzin & Y. S. Lincoln (Eds.), *The landscape of qualitative research* (pp. 292-331). Thousands Oaks, CA: Sage Publications.

Silbaugh, K. B. (2005). Commodification and women's household labor. In M. A. Fineman & T. Dougherty (Eds.), *Feminism confronts homo economicus* (pp. 338-372). Ithaca, NY: Cornell University Press.

Strauss, A. L., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks: Sage Publications.

Strober, M. H. (1994). Can feminist thought improve economics: Rethinking economics through a feminist lens. *American Economic Review, 84*(2), 143-147.

Turner, K. S., & Griffin, T. (1982). Distribution of women in U.S. medical schools, 1970-71 and 1980-81. *Journal of Medical Education, 57*(8), 651-652.

University of Utah Office of Admissions. (2006). *University of Utah application for admission for all undergraduate applicants.* [Document includes list of majors.] Salt Lake City, UT: Office of Admissions.

University of Utah Preprofessional Advising Office. (2006a). *Information for students interested in medical school.* Retrieved June 3, 2006, from http://www.sa.utah.edu/advise/pre_med_info.pdf

University of Utah Preprofessional Advising Office. (2006b). *Women applying to medical school* [Document written for April 13, 2005, Premed Advisory Committee meeting]. Salt Lake City, UT: Author.

University of Utah Preprofessional Advising Office. (2008). *Applicants to medical school over a 6-year period sorted by gender.* [Document written for February 5, 2008, report to Associate Dean.] Salt Lake City, UT: Author.

University of Utah School of Medicine. (2006). *Admissions.* [Document given to potential applicants.] Salt Lake City, UT: Office of Admissions, School of Medicine.

Utah State University Prehealth at Biology. (2008). *Starting off right.* Retrieved March 4, 2008, from http://www.biology.usu.edu/undergrad/prehealth/startingright.htm

Weick, K. E. (1996). *Sensemaking in organizations.* Newbury Park, CA: Sage Publications.

Wilson, R. (2006). A hothouse for female scientists. *The Chronicle of Higher Education.* Retrieved May 3, 2006, from http://chronicle.com/weekly/v52/i35/35a01201.htm

Wolfe, M. G. (2006). *Year-by year chronology of the secretarial profession.* Retrieved October 7, 2006, from http://www.crazycolour.com/os/secretary_01.shtml

Yens, D. P., Benenson, T. F., & Stimmel, B. (1986). Recruitment of underrepresented student groups: A controlled study. *The Journal of Higher Education, 57*(1), 44-57.