MEDICAL PROFESSIONALISM AS DEVELOPMENTAL TRANSFORMATION

by

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DEDICATION

For Christine who is the woman behind the woman and Cole who taught me what transformation really means.

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ABSTRACT

In the past decade, designing educational environments to support medical professionalism and the development of a professional identity have become prominent issues among medical educators. This dissertation argues that medical professionalism and the construction of a professional identity is a development process. In order for students to acquire this professional identity, educators must understand the tasks associated with this development, the interaction of multiple developmental domains and the role of educational learning environments in shaping the development of professionalism.

This case study describes the journey of thirty two medical students as they moved through one year of their medical education. Data for this study were collected over a one year period. Each participant engaged in two interviews that occurred over one year of his/her medical education. Collectively, the experiences documented in these interviews represent all four years of medical education.

The interviews were based on the self-authorship interview (Baxter Magolda & King, 2007). Observations and engagement with students in a variety of settings were used to refine and expand insights gained from interviews and to more fully understand participants' actions and intentions in a variety of contexts. The data from interviews and observations were analyzed using the constant comparative method (Glaser & Straus, 1967).

Three phases in the journey toward medical professionalism and the construction of a professional identity emerged from the participants' descriptions of their

experiences. During this journey, the domains of knowledge, self and others played an important role in students' development. As students moved through the phases of their journey, each of these domains underwent qualitative changes that contributed to the development of medical professionalism and the construction of a professional identity. Throughout this journey, institutional, extra-curricular and personal contexts exposed students to a variety of forces that served to propel students forward in their development.

Implications of this study suggest the investigation and documentation of the developmental nature of medical professionalism is an area worthy of continued study. In addition, a careful examination of the learning environment of the first two years is necessary in order to better support and guide students' on this educational journey.

CHAPTER ONE

INTRODUCTION: EXPLORING THE "NEW" MEDICAL PROFESSIONALISM

For centuries, physicians have held an important position in society and their professional identity has been defined and characterized by three elements: control over a body of specialized knowledge and skill, a commitment to moral and ethical standards of behavior, and a high degree of self-regulation and autonomy (Hilton & Southgate, 2007). Members of the medical profession not only possess specialized knowledge, skills and techniques, they also define the ways in which they, as a profession, apply and use such knowledge to solve problems. The moral and ethical standards of the profession emphasize a commitment to public service and dedication to placing the needs of others before the needs of self. These standards are embodied in the doctor-patient relationship and physicians' willingness to serve and care for patients rather than seeking personal gain. In return for this dedication to the principle of altruism and willingness to serve the needs of society, the profession has historically been granted a high degree of autonomy and the right to self-regulation. Physicians not only have authority to set standards of care, they make all decisions about admission to training and practice and have the exclusive right to discipline unprofessional conduct (Slotnick, 2001).

Throughout the 20th century, medical education emphasized the acquisition of the specialized knowledge and skills that set physicians apart from lay people and were central to the professional identity (American Association of Medical Colleges Group on Educational Affairs, 2000). The first two years of medical training focused almost exclusively on teaching students the scientific knowledge essential to the practice of

medicine. During this time, students studied content from disciplines related to human health and disease including embryology, histology, anatomy, physiology, pathology and pharmacology and learned the scientific principles behind health, disease and treatment. The final two years of training were devoted to teaching students the clinical skills and methods of inquiry used when caring for patients.

The beliefs, attitudes, values and behaviors that contributed to the moral and ethical standards of the profession were not an explicit focus of medical education. Instead, it was assumed that trainees possessed these qualities prior to beginning medical school and training served to refine and hone these personal characteristics through an informal, less visible and less systematic process of socialization (Becker, Geer, Hughes & Strauss, 1961). For much of the last century, medical students were an extremely homogenous group. These students were predominantly male and came from white, upper middle class families where one or more generations were doctors. As a result, many of the values and beliefs central to the profession were thought to be transmitted long before students were accepted to medical school (Merton, Reader & Kendall, 1957). Trainees were exposed to the dedication and service that characterized the profession through their interactions with family and friends and through the extra-curricular experiences required of students applying to medical school. Once in medical school, interactions with physician mentors and role models reinforced the values of the profession and the ways in which these values were enacted in the day-to-day work of doctoring. In this way, the dedication to the service of healing and the centrality of the

doctor-patient relationship were thought to be acquired, even though not explicitly addressed in the classrooms or clinics of medical schools.

By the mid-1980s, each of the elements that characterized physicians' professional identity was being challenged by a variety of forces. The body of specialized knowledge and skills that had been the focus of medical education began to expand rapidly (Sinclair, 1997). The emergence of new scientific disciplines and technological advances led to an exponential increase in the knowledge used in medicine. In addition, the knowledge base used by doctors began to include disciplines outside of science such as public health, sociology, law, bioethics and behavioral sciences (Thomasson, Higgs & Sugarman, 2001). As a result, there was no longer a clearly defined, stable body of knowledge that would serve physicians throughout their careers. Nor was it possible to convey all of the knowledge relevant to future practice in the first two years of medical education. As a result, it became necessary for physicians to develop the skills of life-long learners (Jotkowitz, Glick & Porath, 2004). Instead of mastering a relatively finite set of knowledge and skills, young doctors needed to graduate from medical school capable of acquiring, creating and evaluating knowledge. In addition, they had to be able to retrieve and use information effectively. They needed the ability to deal with high levels of complexity and uncertainty and make appropriate decisions with partial information in the face of unstable circumstances. Finally, with the rise of evidence based practice, physicians needed to demonstrate a commitment to developing an on-going understanding of best evidence, and how to assess and apply this evidence to measure both risk and benefit (Coulehan & Williams, 2003).

The moral and ethical standards of behavior central to medical professionalism also faced significant challenges. The altruism that is central to this professional identity and that had historically been illustrated by physicians' dedication to service and commitment to their patients was increasingly called into question. Disparities in access to and delivery of health care, the disproportionate impact of disease in minority communities and the rising cost of medical care have all contributed to a public sentiment that physicians are no longer dedicated to service and are, in fact, placing personal interest and gain above the needs of those served (Cruess, Cruess & Johnston, 1999). The changing role of doctors within the healthcare system has also challenged the values associated with physicians' professional identity. Doctors are no longer solely responsible to their patient. They are employees and competitors in a marketplace where cost containment and profit are powerful forces (Cruess & Cruess, 1997). As managers in the healthcare system, physicians have responsibilities to multiple parties. As a result, they face multiple conflicts of interest as they work to advocate and make decisions that are in the best interest of their patients while still following organizational guidelines related to provision of services, cost containment and profitability.

The moral and ethical standards that characterize medical professionalism have come under scrutiny not only because of doctors' changing role within society and the health care system but also because of physicians' interactions with individual patients. Patients are increasingly expressing dissatisfaction with the doctor-patient relationship that was once thought to be the primary illustration of physicians' values. Patients dislike the, "technical, reductionistic and invasive features (Coulehan & Williams, 2001)" of

medical care. In addition, patients feel that doctors do not communicate and lack the ability to establish productive, empathetic and therapeutic relationships. In patients' minds, a practitioner's objective knowledge and technical skills are only a part of what it means to be a doctor. Physicians must also demonstrate that they are connected, humane and emotionally available.

The final challenge to the moral and ethical standards of behavior central to the professional identity of physicians comes not from outside of the profession but from the education and training physicians must complete in order to join the profession. In response to the "new" bioethics of autonomy and informed consent, medical education in the 1970s and 1980s began, for the first time, to explicitly address moral principles such as beneficence, nonmaleficience and justice and to teach students about various ethical codes and standards (Coulehan, Williams, McCrary & Belling, 2003). In spite of the fact that these ethical issues were, for the first time, included as a part of physicians' training, educators began to notice and document a steady erosion of trainees' ethical behavior. Instead of refining existing traits and values, medical training made students more cynical and more insensitive and led to a general decline in their moral and ethical development (Hafferty & Franks, 1994). By the end of medical school, more than half of students have engaged in behavior they know to be unethical for fear of not fitting in with their team or receiving a poor evaluation. In addition, more than half of students felt "bad or guilty" about their behavior in clinical environments and believed that some of their ethical principles had been "lost" during medical school (Feudtner, Christakis & Christakis, 1994). This research clearly demonstrates that medical education does not refine moral

and ethical standards of behavior as previously assumed but actually diminishes these qualities.

The power of medical education to negatively impact moral and ethical development in spite of what is taught in classrooms has been linked to the hidden and informal curriculum (Hafferty & Franks, 1994). The hidden curriculum consists of those influences that function at the level of organizational structure and culture. These influences include characteristics of the organization such as the hierarchy among faculty members and curricular elements such as exams, textbooks, teaching methods and the academic calendar. While often seen as neutral elements, these features convey powerful messages about what is important and valued in the profession of medicine. The informal curriculum consists of highly interpersonal forms of teaching that take place in spaces and interactions outside of the curriculum. While students are taught to identify and define values associated with the profession in the classroom, they receive powerful messages about how these values are enacted in the conversations and encounters outside of the classroom. For example, students in the first two years are taught to respect a patients' wishes and privacy but in their clinical years may be asked to witness a procedure that a patient does not understand and has not consented to because it is deemed to be in the patient's best interest (Coulehan & Willilams, 2001). As a result, students learn one set of values in the classroom but tend to internalize and act on another, quite different, set.

Challenges to the first two elements of medical professionalism, the specialized body of knowledge and the moral and ethical standards associated with the practice of

medicine, have led to questions about the self-regulations and autonomy that constitute the third element of the professional identity. As the body of knowledge related to medical practice has increased, so has the availability and access to this information. While the discrepancy in knowledge between patients and physicians still exists, levels of patient education about their own health and treatment options have generally increased (Cruess & Cruess, 1997). At the same time, patients' desire to play an active role and be treated as a partner in the healthcare process has also increased. Physicians' professional identity, which was historically based on their exclusive control of knowledge and their patients' unquestioning trust, must now account for patients who share some knowledge and expect a higher level of participation in decisions about their care.

Additional threats to the autonomy and self-regulation that have characterized the profession have come from within the healthcare system and the profession itself. Within medicine, an increasing level of skill and knowledge by other healthcare professionals and increasing requirements to function not as the sole provider of care but as a member of an interdisciplinary team has changed the nature of physicians' autonomy and self-regulation (Jotkowitz, Glick & Porath, 2004). Doctors can no longer make decisions in isolation but must now work and communicate with other professionals including other physicians, nurse practitioners, and physical and occupational therapists that possess some of the same knowledge but apply this knowledge in different ways in order to address patients' needs.

In addition to the changing nature of the healthcare team, increased diversity among physicians and increased specialization within medicine has led to the rise of sub-

organizations within the larger professional body (Wynia, Latham & Kao, 1999). As the number of women and underrepresented minorities being accepted to and completing medical school has increased, these groups have attempted to give voice to and serve the needs of diverse patient populations. In addition, specialist organizations now work to define training and practice standards for their members. As a result, medical knowledge and expertise is increasingly fragmented and smaller organizations now speak for and regulate their members rather than having the medical profession speak as a unified whole. There is no longer a single professional voice and doctors must negotiate their role as both "advocates," "specialists," and "physicians" as they seek to secure the trust of patients and the public.

As the changing nature of medical professionalism and the growing challenges to the professional identity became more and more evident, physicians and medical educators began to acknowledge that it was no longer appropriate to teach and evaluate only the knowledge and skills associated with being a doctor and assume that trainees would complete their training having acquired the values, attitudes and behaviors central to the professional role. By 1990, medical schools and graduate medical training programs had begun to recognize that medical professionalism needed to be defined and included as an essential element at all levels of medical education and training (Inui, 2003). In 1998, the president of the Association of American Medical Colleges (AAMC) urged all medical schools to renew their focus on teaching and cultivating the core values of the medical profession that make doctoring an honored and honorable profession (Inui, 2003) Following this call, the Medical School Objective Project was established to foster

a consensus on the definition, inclusion and assessment of professionalism across the continuum of medical education. At the same time, the American College of Physicians-American Society of Internal Medicine, began working to develop a charter on medical professionalism in order to ensure that curricula and learning climate of medical education at all levels supported the teaching of skills, attitudes and behaviors associated with medical professionalism.

In response to these calls, a body of literature devoted to identifying and defining "medical professionalism" emerged. By 2000, the core elements of medical professionalism had been clearly described by multiple authors with a high degree of agreement and congruence (Coles, 1998; Makoul, Curry & Novack, 1998; Epstein, 1999; Swick, 2000; Wear & Castellani, 2000). While traditional definitions of medical professionalism emphasized the discrete elements of knowledge, behaviors and autonomy that constituted professional identity, modern definitions focus on professionalism as an on-going, self-reflective process that involves habits of thinking, acting and feeling (Wear & Castellani, 2000). This process focuses on development in three domains that are viewed as critical to medical professionalism and the resulting professional identity. These domains are: knowledge and skills, altruism and duty. In some ways, these domains are similar to the elements that have historically characterized physicians' professional identity. They have however, expanded and evolved to account for the changing needs and circumstances of the medical profession. Rather than addressing discrete facts or skills that must be mastered or codifying ethical and moral behaviors,

these domains focus on broad competencies that must be achieved and enacted in pursuit of medical professionalism and the associated professional identity.

The domain of knowledge and skills still places central emphasis on the specialized body of information and expertise that physicians must possess and use in their professional practice. In addition to addressing the question of "What do I know?" this domain places the question of, "How do I know?" at the center of medical professionalism (Swick, 2000). Medical students must learn facts and develop clinical skills but they must also learn to apply this information effectively and appropriately when making clinical decisions about patients' health. They must develop and use an internally defined system for making decisions about best practices and competing evidence. In addition to acquiring the explicitly defined rules and objectively verifiable data that can be easily transmitted in lectures and clinics, students must develop an understanding of the role of tacit knowledge in the practice of medicine (Epstein, 1999). They must become aware of how experience informs their work and contributes to clinical decision making. They must be able to apply this unspoken knowledge in a thoughtful, critical and contextualized manner. As they work with both explicit and tacit knowledge, physicians must also be able to manage situations that are characterized by high levels of uncertainty and ambiguity (Swick, 2000). They must be able to exercise independent judgment in spite of complex and dynamic circumstances where some information may be incomplete or missing. In addition to applying and using a variety of different kinds of knowledge, physicians must be able to create and evaluate knowledge. This allows them not only to advance their profession and contribute to the community

but is essential if they are to stay abreast of the rapidly changing knowledge base in their field. By focusing on how knowledge is created, applied and evaluated in addition to acquisition of specific facts, this domain shifts the emphasis of medical professionalism from simply mastering content to developing the skills necessary to independently apply knowledge in an infinite number of circumstances and critically evaluate the resulting outcomes.

Altruism, the second domain that comprises current definitions of medical professionalism, still emphasizes the centrality of the moral and ethical behaviors to which physicians must adhere. Devotion to service and the doctor-patient relationship are still key but this domain also addresses the question of how doctors build relationships with others (Markakis, Beckman, Suchman & Frankel, 2000). In order to serve others and place the needs of the patient before their own needs, physicians must achieve an awareness of self and a deeper understanding of how they interact with others. This includes an intercultural awareness that allows them to identify non-biological determinants of poor health such as access to care and socioeconomic status and to act on these issues both with individual patients and in the community (Hilton & Southgate, 2007). Doctors must develop communication skills that go beyond the ability to take a complete patient history. They must be able to communicate in a way that supports relationships including identifying ways in which patients' experiences are different from their own. This allows physicians to better understand and interpret patient behavior. They must have the skills to deal astutely with language. This includes the ability to attend to patients' narratives and be open to the insights they provide (Charon, 2001).

Instead of approaching patients in a detached and purely objective manner, physicians must become aware of their own emotions and biases and use this awareness to help them identify potential conflicts and build trusting and lasting relationships with patients and families (American Board of Internal Medicine, 2002).

Duty, the third and final domain of medical professionalism, addresses the need for physicians to exercise accountability for themselves and their colleagues. This domain does not focus simply on setting and enforcing standards of practice but instead considers questions of "Who am I as a professional?" and "Who do I want to be?" In addressing these questions, this domain emphasizes the need for critical reflection on self, peers and profession. Physicians must possess the skills of independent, life-longer learners. This includes the ability to recognize and address limitations in knowledge and to evaluate levels of anxiety and uncertainty and consider their impact on thought and action (Epstein, 1999). Physicians must demonstrate a willingness to identify errors, their causes and develop plans for improvement. Medical professionals do not only direct this reflection inward but also use the same process to engage in meaningful evaluation and critique of peers. In addition to looking at individuals within the profession, physicians must have an understanding of themselves as a part of larger system. They must consider how that system contributes to their construction of knowledge and how it obscures or limits such construction.

In addition to clearly defining the domains of medical professionalism and identifying key elements within these domains, there is widespread agreement in this body of literature that medical professionalism is not simply a series of traits or behaviors

but an acquired state of being that involves emotional, moral and cognitive development over a prolonged period of time (Hilton & Slotnick, 2005). Throughout their training, medical students gradually develop the skills and abilities associated with professionalism. In order for students to gain these skills and assume the professional identity, different aspects of professionalism must be explicitly and appropriately taught at different points in the medical education continuum (Hilton & Southgate, 2007).

Agreement on what constitutes medical professionalism and the importance of explicit instruction related to the development of professionalism has led to increased and changing opportunities in medical education (Whitcomb, 2002). In the past 12 years, most medical schools in the United States have engaged in formal efforts to emphasize the importance of medical professionalism and the development of a professional identity. These efforts have included changes to the institutional environment, revision of medical school admissions processes, curricular reforms and increased emphasis on extra-curricular opportunities (Inui, 2003).

Acknowledging that the environment in which students learn plays an important role in the development of medical professionalism, schools have worked to address institutional factors that have hindered students' development. Institutions have attempted to address the gap between the widely recognized and publicly professed elements of professionalism and the hidden and informal curricula that send powerful messages about what doctors need to know and how they act (Hafferty, 1998). Schools now recognize that students learn vicariously in multiple social and organizational contexts and are

working to clearly articulate professional values and to promote a learning environment that consistently supports and promotes these values (Ludmerer, 1999).

Medical school admissions, which have traditionally relied on quantitative measures such as scores on the Medical College Admissions Test and undergraduate GPA, have come to recognize that while quantitative measures are good predictors of academic achievement, they are not necessarily predictors of future professionalism. Admissions committees have been encouraged to take a more holistic approach and consider attributes like community service and diverse educational experiences in order to better identify candidates capable of developing and maintaining a professional identity (Wear & Castellani, 2000).

At the curricular level, schools have implemented a variety of reforms that have made professionalism a part of all aspects of undergraduate medical training. Many medical schools begin to address issues of professionalism in the first days of medical school, often during orientation, through ceremonial events designed to mark professional milestones (Inui, 2003). Students write professional oaths and participate in white coat ceremonies in order to symbolize their acceptance of the professional values and their transition into their new professional identity.

In order to teach students the habits of mind, values and attitudes associated with professionalism medical schools have worked to make both institutional and curricular changes that will enhance the professional qualities associated with doctors. Problem Based Learning, a small group teaching methodology, is now a major part of curricula at most medical schools in the United States (Thomasson, Higgs & Sugarman, 2001). This

learner centered method is designed to promote curiosity and team work and engage students in independent, deep and self-reflective learning.

In addition to adopting new teaching methods, most medical schools in the United States have added formal instruction related to medical professionalism to the core curriculum (Swick, Szenas, Danoff & Whitcomb, 1999). These instructional opportunities include workshops and courses addressing ethical reasoning, medical humanities, communication, teamwork, the doctor-patient relationship and professional values. These courses are designed to help students understand that while objective, scientific knowledge is an important part of medicine and patient care, it is only one of the many types of information and knowledge that physicians must access and use in their professional lives.

Medical schools are not only including opportunities for developing professionalism in the formal curriculum, they have also sought to emphasize the importance and value of professionalism to both students and faculty by including it in the formal assessment of students throughout their training (Stern & Papadakis, 2006). By including professionalism and its associated attributes as a part of the regular evaluation of students, educators hope to place these learning outcomes on equal footing with the basic and clinical science content that dominates teaching and evaluation in medical school. Additionally, regular evaluation of the learning outcomes associated with professionalism provides increased opportunities for mentoring and providing support for students struggling to achieve these outcomes. Subjective assessments in the clinical years, standardized patient exams, self-assessment, portfolios and peer evaluation are

some of the most common ways that medical schools have used to evaluate and document students' developing professionalism and provide feedback to trainees (Epstein & Hundert, 2002). In addition to assessing students' on-going professional development, some medical schools have developed "early warning" systems designed to identify students who display unprofessional behavior or lack skills related to communication and interaction and provide intensive, one-on-one mentoring to address perceived deficits (Papadakis, Loeser & Healy, 2001).

Outside of the formal curriculum, there are also an increasing number of opportunities designed to help students develop in each of the domains associated with medical professionalism. Medical schools are encouraged to provide service learning activities that move students outside of the academic medical center and engage them in responding to community requests and needs (Inui, 2003). Programs have been implemented to help students learn about neighborhoods and cultures that surround the hospitals where they are being trained. As a part of these programs, students and attending physicians provide continuing care to patients in their homes (Coller, Klotman, Smith, 2002). Other schools have encouraged students to participate in professional development groups. These groups operate outside of the formal curriculum but provide students with a safe venue in which to share experiences, enhance personal awareness and reflect on personal and professional challenges (Coulehan & Williams, 2001).

In spite of the increased emphasis on all aspects of professionalism both within and outside of the formal curriculum, there is still significant evidence that little progress has been made in promoting the development of professionalism in medical students

(Whitcomb, 2005). The knowledge that is a central part of medical professionalism is still viewed by most faculty and students as consisting primarily of scientific fact and objective data. Students are overwhelmed by the sheer quantity and complexity of disconnected facts for which they are held responsible and feel they have little time to focus on issues related to professional development (Coulehan & Williams, 2003). Courses that address other aspects of doctoring such as language, cultural construction of illness, communication or ethics are viewed as "soft" and are frequently considered to be taking time away from the more important business of teaching the basic sciences (Wear & Castellani, 2000). For most medical students, "thinking like a doctor" is synonymous with factual recall and objective detachment rather than the combined use of scientific information, tacit knowledge, experience, and emotion (Coulehan, Williams, McCrary & Belling, 2003).

Instead of developing in each of the domains associated with medical professionalism and assuming an integrated professional identity, research has shown that students leave medical school having adopted a technical persona that views being a doctor as a purely technical accomplishment (Coulehan & Williams, 2003). As students adopt this persona, they become increasingly cynical while gradually becoming less sensitive to those around them. Self-interest becomes conflated with patient's interest and graduates feel less confident in using their knowledge and incorporating contextual factors into their thinking and decision making (Gude, Vaglum, Tyssen, et al 2005). Throughout their education, medical students suffer erosion of their ethical and moral reasoning and behavior. Not only do students become less sensitive to moral and ethical

issues (Ginsburg, Kachan & Lingard, 2005), they restructure ethical problems in order to facilitate use of instrumental-relativist reasoning that addresses satisfying the needs of self rather than the needs of others (Patenaude, Niyonsenga & Fafard, 2003).

Efforts have been made to bring the hidden and informal curriculum out of the shadows and train mentors and role models who not only voice but enact the values associated with medical professionalism. In spite of these efforts, these elements are still powerful negative forces in the professional transformation of medical students. In spite of the acknowledged importance of reflection, students receive little time to engage in this activity. Evaluative efforts have reduced values to behaviors and processes that can be documented on a checklist. Work with patients in a clinical environment emphasizes objectivity, detachment and distrust over the empathy, communication and trust that are presented in the classroom (Coulehan, Williams, McCrary & Belling, 2003).

Efforts to help medical students develop professionalism and assume a professional identity have focused primarily on defining medical professionalism, providing opportunities for learning about and engaging in professional behaviors inside and outside of the classroom and evaluating aspects of students' developing professionalism. In spite of increased attention and effort by medical educators, students do not appear to be making meaningful progress toward the outcomes associated with medical professionalism. The lack of progress has led some to view educational efforts to develop and support medical professionalism as little more than "magic bullets" being advocated by educators unsure of how to teach the dynamic and complicated outcomes associated with medical professionalism (Rees & Shepherd, 2005). From an educational

standpoint, efforts to help students develop medical professionalism have been hindered by the lack of attention to the developmental foundations on which the complex outcomes associated with professionalism are based (Rees, 2005). While the developmental nature of professionalism is widely acknowledged, it has not been thoroughly explored. Tasks associated with the development of professionalism have not been identified. The interaction of multiple dimensions including the cognitive, interpersonal and intrapersonal aspects of development has not been addressed. In addition the role of educational context and environment in shaping the development of professionalism has not been thoroughly explored.

This project focused on medical professionalism as a developmental process. Questions that were considered included:

1. How does the development of medical professionalism unfold over time?
2. What are the developmental tasks associated with medical professionalism?
3. What factors mediate growth toward medical professionalism?
4. What educational or personal experiences promote the development of medical professionalism?

Importance of the Study

While institutional and curricular reforms over the past 15 years have sought to promote the development of medical professionalism, efforts have resulted in little change. Some students move through their medical training seemingly immune to the forces and experiences that surround them. They emerge with a sophisticated, integrated professional identity. Others acquire only the knowledge associated with medical

professionalism ignoring or discarding other aspects of the identity. By better understanding students' developmental progress toward professionalism, it may be possible to identify more productive ways to guide all students on this journey. While literature supports the notion of "developmentally appropriate" activities tailored to the changing needs of students as they move through training, there is little information as to where students are coming from and the challenges they face as they move through their education. This study may contribute to a better understanding of how to tailor educational experiences to promote student development in all three domains associated with professionalism. There is little agreement on how to best construct educational contexts to promote professional development and little in-depth understanding as to why informal and hidden curricula exert such a powerful influence on students' development. By helping educators to understand where students are coming from and the challenges they face, we will be better able to guide them on this educational journey.

CHAPTER TWO

LITERATURE REVIEW: MEDICAL PROFESSIONALISM AND THE IDENTITY OF DOCTOR

This chapter briefly describes the ways in which definitions of medical professionalism and the associated learning outcomes that are now the focus of medical education are, in fact, seeking to transform students and help them to acquire a professional identity. It then describes two bodies of literature that together provide a framework for examining and understanding the process through which medical students develop this identity. Sociocultural models of identity and the concept of discourse allow for the consideration of the forces shaping students' development of a professional identity. Constructive-developmental theory and the concept of self-authorship offer a lens through which to examine the growth and transformation of students' forms of meaning making as they move through medical education, attain the learning outcomes associated with medical professionalism and build a professional identity.

Medical Professionalism and the Identity of Doctor

Encompassed in the accepted definitions of medical professionalism are the multiple expectations that medical educators have for students as they complete medical school, move through residency and into their careers. These expectations make demands related to the ways students acquire and use scientific knowledge, the ways students perceive and interact with others and the ways in which students view themselves and employ this view of self to guide their actions. With regard to knowledge, medical professionalism requires students to develop a broad knowledge of concepts in various science disciplines. Students are expected to develop cognitive tools which will enable

them to critically appraise what they know, apply knowledge to solve problems and evaluate outcomes. In addition to gaining knowledge and using this knowledge in specific ways to achieve specific purposes, medical students are expected to use both experience and tacit knowledge appropriately in their day to day endeavors. As a result, the knowledge that students must acquire encompasses both a body of scientific knowledge and an integrated set of practices, values and beliefs related to how that knowledge is constructed, used and evaluated. Medical professionalism also requires students to develop mature, mutual relationships in which they are aware of, but not defined by, others. Within these relationships, students are expected to engage with and respect diverse populations and perspectives. Finally, medical professionalism requires students to develop an internal, integrated system of belief that includes an understanding of how they view themselves and what they believe. This internal system allows students to direct their own learning process, to engage in self-reflection and evaluation and develop enduring values that support ethical practice. By defining the elements of medical professionalism and identifying the learning outcomes associated with these elements, medical educators have moved beyond a focus on what students know and are seeking to fundamentally transform how students view and use knowledge, how they interact with others and how they view themselves. As it seeks to help students develop medical professionalism, medical education is, in fact, seeking to help students acquire an identity that encompasses specific ways of thinking, acting and interacting.

In order to understand the process through which students are expected to acquire this identity and to describe the qualitative transformations students experience in order

to achieve the outcomes associated with medical professionalism and the construction of a professional identity, the theoretical framework for this study calls upon two bodies of work: Gee's (2002) work related to identity construction and discourse and constructive-developmental theory and the concept of self-authorship (Kegan, 1980; Kegan, 1994; Baxter-Magolda, 2004b). Gee's sociocultural model of identity and acquisition of discourse provide a lens through which to examine the cultural, interactional and institutional forces shaping students' development of a professional identity. The concept of self-authorship provides a structure from which to examine the growth and transformation of students' forms of meaning making as they move through medical education and seek to build a professional identity and achieve the outcomes associated with medical professionalism.

Identity and Discourse

Sociocultural perspectives on identity and identity construction define identity not as fixed elements of a person or an internal state but as socially constructed and enacted ways of being (Moje & Luke, 2009). Identities are not sets of attributes that remain constant over time. Instead, identity is the process of being recognized as a specific kind of person in specific contexts (Gee, 2002). An individuals' identity is connected to his or her performance in social settings and is shaped in a variety of ways by historical, institutional and sociocultural forces.

Gee (2002) describes four perspectives that form, shape and sustain identity. The first perspective shaping identity is nature, referred to by Gee as N-identity. N-identity consists of those elements over which an individual and society have no control and

includes biological factors such as hair color and eye color. Development of N-identity takes place outside of the control of the individual and society but the recognition of N-identities and their meaning as identities comes through the work of institutions, social interactions and affinity groups. The second perspective for understanding identity is institutions (I-identity). Institutions provide the authority through which I-identities are recognized and defined. Laws, rules, practices or traditions provide institutions with the power to author certain I-identities and the individuals who hold those I-identities. The third perspective on identity is the discursive perspective (D-identity) in which the ways others treat, talk about or interact with an individual are the factors that determine identity. D-identity gains power and is recognized by virtue of the ascription or achievement assigned to an individual by others. The final perspective on identity in Gee's model is affinity (A-identity). A-Identity is determined by the shared practices and cultural affiliations of a specific group. A-identity achieves recognition through the distinct practices that promote and sustain group affiliation.

It is important to note that any identity can be understood in terms of any of the interpretive systems (Gee, 2002). Individuals can construct identities in different ways and can use the different perspectives to negotiate and contest how their identity is recognized. The identity that medical students are seeking to achieve can be viewed as I-identity based on the institutional practices that author the position of physician and allow individual to be recognized as holding the responsibilities that go with that position. This identity can be viewed as D-identity that is produced in the ways others talk about and to

individuals with this identity. Finally, the identity of doctor can be viewed as A-identity based on the practices and requisite experiences that sustain the group.

Central to each of these perspectives that form, sustain and shape identities are the social, interactional and linguistic resources that individuals call upon when constructing and enacting an identity (Blommaert, 2005). In order to be recognized and thus enacted, identities depend on discourse. According to Foucault, a discourse consists of the "practices that systematically form the objects of which they speak (Foucault, 1972, p. 49)." In this way, a discourse is the combination of ideas, opinions, ways of thinking and behaving enacted and recognized as having specific meanings in particular contexts. A discourse is the combination of elements that an individual must employ in order for the identity s/he is enacting to be recognized by others. This combination consists of the socially accepted ways of thinking, feeling, believing, valuing, acting, using language, objects, tools, technologies, and symbolic expressions that result in a particular identity being recognized in a given context (Gee, 1996). In order to enact the identity of physician, students must come to understand and participate in the complex, interwoven set of practices and beliefs which include the distinctive ways of thinking, acting, talking, speaking, valuing and knowing associated with medicine.

Conceptualizing identity in terms of the elements that allow an individual to be recognized as a certain type of person and focusing on the need for individuals to master a discourse in order to successfully enact an identity highlights two important elements related to how students' create identities. The first is the learning environments in which it is possible for students to master the discourse that will enable them to enact an identity

and the second is the role of language as a central resource in identity formation. According to Gee (1996), the type of mastery required to enact an identity can only happen through a process of acquisition. Acquisition occurs in environments in which learners are exposed to models in natural, meaningful, and functional settings. Acquisition requires a type of apprenticeship in which teachers or more advanced peers scaffold students' growing abilities within the discourse. Through this type of interaction with other members of a community, individuals gain access to the practices, ways of using knowledge and artifacts that will eventually allow them to enact an identity and be recognized as members of the community (Lave & Wenger, 2008). When examining how students construct an identity such as the one associated with medical professionalism, it is necessary to examine the contexts in which they are participating and the ways in which these contexts provide or limit access to the discourse of medicine.

In order to participate in a discourse and enact an identity in ways that will be recognized by others in that context, an individual must be aware of not only how language is used but also be able to engage in the kinds of sense making and communication used by members of that community (Sutton, 1998). While there is no research related to the discourse of medicine, descriptions of other, related discourses including the discourse of science provide some insight into the ways students must come to use language if they are to successfully enact a professional identity. These distinctive ways using language include the settings in which language is used, the goals associated with language use and the forms of speech and words used.

According to Tapper (1999), science discourse generally occurs in a tool rich setting like a laboratory. In this environment, participants' utterances are closely linked to on-going processes or visual artifacts that represent or describe processes. The goal of this discourse is to create a cultural object or knowledge claim. At the same time these cultural objects or claims are being created, language is used to maintain internal consistency between members of the community, what is known and what is observed (Kelly & Crawford, 1997).

Researchers have identified two primary forms of speech that compose scientific discourse and help members of this speech community achieve their goals: argumentation (Kuhn, 1993) and reflective speech (vanZee, 2000). When working toward understandings of previously unknown phenomena, proving new conclusions or breaking new theoretical ground, members of the community engage in argumentation. This form, which can be analytical, dialectical or rhetorical, requires speakers to use known facts to explain and validate conclusions (Jimenez-Aleixandre, Rodriguez & Duschl, 1999). Within this form members can use a variety of manners of speech including logic, debate, or persuasion.

While language is a key component of the "discovery phase" of science, members of this discourse also use language to refine understandings and resolve doubt. The speech form used during this type of transaction is reflective speech (vanZee, 2000). Reflective speech is characterized by three elements: members working to express their own thoughts and understandings; extended series of exchanges focused on helping participants to articulate beliefs and conceptions and exchanges devoted to helping

members understand one another's thinking. Unlike argumentation, these exchanges are not based on two opposing points of view but rather on misconception, misinterpretation or miscommunication of similar views. When engaged in this type of speech, participants work to refine their own understandings and to resolve contradictions in group members' conception. Both argumentation and reflective speech help participants achieve the goal of science discourse by providing community members with ways to create and validate knowledge claims while promoting and maintaining consistency among members of the community.

While argumentation and reflective speech can be seen in the discourses of many different fields, the exchanges within the discourse of science have distinct characteristics that differentiate them from utterances in other discourses. In science discourse, utterance are grouped according to macro-themes which are explicitly stated at the beginning of a series of utterances or implied through community members' shared knowledge of contextual relationships (Young & Ngyuen, 2002). These themes provide participants with an on-going frame of reference from which to interpret or understand contributions to the conversation. A series of utterances begins with the statement of the macro-theme. One of the most common types of utterances used in this discourse is questions which serve to engage members of the speech community in argumentation and to expose differences in understanding or interpretation (Chin, Brown & Bruce, 2002).

The words that comprise utterances also contribute to the unique features of science discourse. Lemke (1990) noted that words commonly used during science discourse focus speakers' attention on the metacognitive and metalinguistic functions

essential to participation in this community. Words such as classify, compare, hypothesize, judge, theorize, question, argue and generalize signal both how meaning is made and the activities essential to participation in this discourse. In addition, utterances in the discourse are characterized by certain grammatical patterns including the use of passive voice, the use of verbs of abstract relation rather than material action and the use of abstract nouns in place of verbs of material action (Lemke, 1990).

Taken as a whole, these descriptions indicate some of the likely features of the discourse of medicine and the ways in which it is different from other discourses that students may already possess. If students are to acquire this discourse and use it in order to enact an identity, medical education must provide explicit instruction in this language. Gee (2002), emphasizes that the only way for students to achieve an understanding of the ways language is used in a community of practice is by sharing the experiences, practices, and models of the field with more advanced peers and masters within the field.

Summary

Gee's sociocultural model of identity and the concept of discourse provide a lens through which to examine and understand the cultural, institutional and interactional forces shaping the development of students' identities. Of special importance within this framework are the environments in which students are exposed to and have opportunities to master the discourse of medicine and the types of language that students must understand and use in order to engage in the sense making and communication used by members of this community.

Constructive-Developmental Theory and Self-Authorship

While sociocultural models of identity and the concept of discourse provide a way to consider the forces shaping students' identity development, constructive-developmental theory and the concept of self-authorship provide a means for considering the qualitative transformations of students' forms of meaning making as they move through medical education, achieve the learning outcomes associated with medical professionalism and work to enact a professional identity. The constructive-developmental framework brings together two distinct theoretical resources: constructivism and developmental psychology. Central to this approach is Jean Piaget's conceptualization of knowledge and learning. According to Piaget, knowledge is not simply a representation of external objects, concepts and events. As a result, meaning cannot be passed from teacher to student via simple transmission. Instead, individuals actively construct reality and come to know and understand the world by virtue of organizing their experiences (Piaget, 1970). Intellectual development is not simply the product of maturation but rather results from the learner's active reorganization and reconstruction of systems of meaning making. In this view of learning and knowledge, what a learner knows and how a learner knows cannot be separated. Both develop in a dialectic relationship between the subject and the world around him or her. This view stands in contrast to views that focus on learning as a process of maturation in which developmental stage determines and limits what and how one can know. To constructivists, learning and development are inseparable (Twomey Fosnot, 1996).

The mechanism driving this development is equilibration which occurs when an individual encounters discrepancies between an existing way of structuring the world and a new experience. The resulting dissonance requires regaining cognitive balance. Piaget described equilibration as a dynamic process involving the counter behaviors of assimilation and accommodation (Piaget, 1977). Assimilation involves resolving challenges to structures of meaning making by incorporating new experiences into existing structures. Accommodation, on the other hand, is a reflective, integrative behavior in which existing structures are fundamentally changed in order to incorporate new experiences (Twomey Fosnot, 1996). Cognitive growth occurs as a result of the reconstruction of existing mental structures that accompanies accommodation.

While the constructivist tradition has focused on the ways that individuals actively organize experiences in order to construct meaning, developmental psychologists consider the growth and transformation of meaning construction throughout the lifespan. Because of their focus on the developmental aspects of meaning making, these scholars have examined the evolution of meaning making and advanced the notion that growth of the mind takes place according to regular principles of stability and change (Kegan, 1994). In describing the evolution of how we make meaning, researchers have demonstrated that systems of meaning making, or ways of knowing, are not simply sets of skills that are added to or replaced over time. Instead, these systems are transformative and incorporative. Each successive system incorporates principles from prior systems thus making the new way of knowing more complex and more inclusive (Kegan, 2001). As a result, these systems are developmentally related and allow for increasingly

complex ways of organizing experience. In addition, developmental scholars have not limited their exploration of how we organize experience to construct meaning to the realm of knowledge and cognition. They have explored experience more generally and considered the development of understanding related to perceptions of self and identity, emotional and moral reasoning and social interaction and interpersonal effectiveness (King & Baxter Magolda, 1996).

In bringing these two distinct traditions together, constructive-developmental theory advances these lines of reasoning in important ways and makes powerful theoretical resources available for understanding the transformation necessary to achieve the learning outcomes of medical professionalism which are not simply behaviors or skills, but demands on the way students organize their experience to make meaning. First, constructive-developmental theory focuses on individuals' active interpretation of their experiences in order to make meaning and learn but in doing so includes not just cognitive experiences but also intrapersonal and interpersonal experiences. As a result, this framework makes it possible to consider the interrelatedness of different aspects of development rather than focusing exclusively on cognitive complexity. A second important advance provided by constructive-developmental theory is that it moves consideration of development beyond childhood and early adolescence and looks at development as it continues through early and later adult life. In this way, constructive-developmental theory provides a lens through which to consider the complex tasks that are unique to adult life, higher education and medical professionalism such as engaging in self-directed learning, making informed decisions and judgments and creating and

sustaining productive, mutual relationships. Finally, in focusing on the ways that students understand, constructive-developmental theory provides the opportunity to consider how process and context may facilitate or hinder development.

Using a constructive-developmental approach, Kegan has described the internal structures that individuals use to organize experience and make meaning. He suggests that the deep structure of any meaning making system is the distinction between self and other or the subject-object relationship (Kegan, 1980). Object, according to Kegan, encompasses all of the elements of our knowing or organizing that are distinct enough from the self that we can operate on them in some meaningful way. This includes things that we can reflect on, negotiate, take control of, assume responsibility for, internalize or assimilate. Subject, on the other hand, refers to those elements of our knowing that we are identified with, fused with or embedded in (Kegan, 1994). Because we are essentially one with these elements, we cannot stand apart from them and, as a result, cannot be responsible for them, in control of them or reflect on them. In Kegan's words, "We *have* object; we *are* subject (1994, p. 32)."

The subject-object structure that Kegan describes can be seen in the work of other constructive-developmental theorists as well. The subject-object relationship is implied in studies related to the epistemological structures of college students. Perry (1970), Belenky, Clinchy, Goldberger and Tarule (1986), Baxter Magolda (1992) and King & Kitchener (1994) all described the transformation in ways of organizing experience as students move from unquestioning reliance on external authority to the internal creation of procedures for constructing, reflecting on, critiquing or judging knowledge.

Individuals are increasingly differentiated from what they know (subject) and able to distinguish themselves from their knowledge and thus consider and act on this knowledge in new ways (object). The subject-object structure can also been seen in work related to the development of identity. Erikson (1968), Chickering (1969), Josselson (1987) and Chickering and Reisser (1993) all describe identity development in terms of an individual's evolution from dependence on external forces and authority to an awareness of the possibility and need for constructing an identity that accounts for but is not unduly influenced by these forces. In this way, identity emerges from being subject and is transformed into object and can thus be reflected and acted on in meaningful ways.

The gradual differentiation and reintegration of the relationship between subject and object gives rise to the transformation and growth that constitutes development of our systems of meaning making. This changing relationship between subject and object is the defining feature what Kegan calls orders of consciousness (Kegan, 1982). As an individual develops, what was subject in a previous order of consciousness becomes object and is now available for reflection and negotiation. This process of making subject into object and thus separating ourselves from that within which we are embedded and identified is what constitutes development and growth of the mind (Kegan, 1994).

Two of the orders of consciousness described by Kegan, the third and fourth orders, are particularly relevant for understanding the meaning making activity of medical students as they seek to achieve the learning outcomes associated with medical professionalism. The third order of consciousness is one in which we are subject to and consumed by the external influences of those around us (Kegan, 1994). The cognitive

domain of this order of consciousness is characterized by the ability to reason abstractly and engage in hypothetical and deductive reasoning. Individuals at this level cannot, however, engage in systematically testing or evaluating hypotheses. In the social-relational domain, individuals operating from the third order of consciousness are aware of shared feelings, agreements and expectations and can subordinate their own feelings or needs to those of a larger group. They do not, however, have a generalized system through which they regulate and maintain relationships. In the intrapersonal domain, individuals operating by third order principles internalize others' points of view in what becomes a co-construction of personal experience. This results in a new capacity for empathy and for coordinating more than one point of view. Individuals operating from third order principles do not, however, have a system for organizing parts of the self into an integrated whole and thus do not see themselves as separate from their relationships. As a result of these structures, knowing in the third order embeds students in making meaning through shared realities. Decisions about constructing and evaluating knowledge, defining and enacting values and interacting with others are all made in the context of externally defined expectations (Kegan, 2001).

Third order meaning making allows students to engage in some of the activities and achieve some of the learning outcomes associated with medical professionalism. Students operating from the third order are able to engage in cognitive processes like abstract thinking and hypothetical deductive reasoning that allow them to apply knowledge. Other outcomes associated with medical professionalism such as evaluating potential outcomes, acting in accordance with personally defined values and engaging in

mutual relationships are not possible because students are consumed by external influences. Elements of meaning making are all subject and, as a result, not available for reflection, critique or revision. The subject-object relationship in the third order is one potential explanation of the powerful influence of peers and more advanced colleagues on how medical students determine what to believe about themselves, knowledge, values and their interactions with others. Because these students' sense of self may be co-constructed out of the relation between theirs and others' perspectives, these external relations have a significant influence on medical students' sense of self.

In the fourth order of consciousness, a new form of meaning making becomes possible. In the fourth order, values, beliefs, generalizations, ideals, abstractions, relationships and identity, which were previously co-constructed with others, emerge from this external influence and responsibility for these elements becomes internalized. Fourth order meaning making

> …takes all of these as objects or elements of its system, rather than the system itself; it does not identify with them but views them as parts of a new whole. This new whole is an ideology, an internal identity, a *self-authorship* that can coordinate, integrate, act upon or invent values, beliefs, convictions, generalizations, ideals, abstractions, interpersonal loyalties, and intrapersonal states. It is no longer *authored by* them, it *authors them* and thereby achieves a personal authority. (Kegan, 1994, p. 185)

Self-authorship involves a shift from uncritical acceptance of values, beliefs, relationships and identity from external authorities to forming and coordinating these elements internally (Baxter Magolda, 2008). As a result, it provides individuals with the foundation from which to collect, interpret and analyze information and reflect on one's own beliefs in order to form judgments and take actions in ways that are consistent with

an internally defined identity. It is the capacity for self-authorship, rather than the acquisition of isolated skills or behaviors that provides the foundation for medical professionalism and the associated learning outcomes.

Self-authorship has cognitive, intrapersonal and interpersonal dimensions (Baxter Magolda, 2004b). Rather than functioning independently, each of these dimensions functions in an integrated fashion as a part of a single organizing structure through which an individual interprets experience and constructs meaning. The cognitive domain of this meaning making activity addresses an individual's epistemic assumptions about the nature, limits and certainty of knowledge (Kitchener, 1983). These assumptions transition from the belief that knowledge is certain and possessed by authorities to the belief that knowledge is constructed by individuals in a context. This transition in epistemic assumptions is accompanied by a shift from seeing oneself as a receiver of knowledge to an active constructor of knowledge. This transition from the role of receiver of knowledge to constructor of knowledge is central to self-authorship because it brings responsibility for interpreting experience and constructing understanding into the self. The intrapersonal dimension of self-authorship addresses assumptions about self and identity (Baxter Magolda, 1999a). Growth in this domain involves identifying enduring qualities of the self, assuming responsibility for and creating one's own inner psychological life rather than responding to impulses and drives. Like the transition from receiver of knowledge to constructor of knowledge, this transition is key for the development of self-authorship because it provides a stable identity from which to decide how to construct knowledge and engage with others (Baxter Magolda, 2000). Finally, the

interpersonal dimension of self-authorship is based on assumptions about the relation of self to others. Transformation in the interpersonal domain involves moving from a lack of coordination of one's own perspective with that of others, through a period in which one's views are subsumed by the expectations of others to a system that coordinates and regulates one's own perspectives with those of others resulting in mutual rather than dependent relationships. This view of interpersonal relationships is required for self-authorship because it allows consideration of multiple perspectives without threat to personal identity and allows the self to participate in relationships without being consumed by them.

Baxter Magolda's (2004b) longitudinal research on young adults' development from the time they entered college through their early thirties revealed three driving questions that these young adults grappled with as they moved through college and into the adult world of careers, relationships and family. The questions of "How do I know?" "Who am I?" and "What kinds of relationships do I want with others?" were brought about by the expectations these students faced in contemporary society including the need to make life choices, the expectation that they would work independently in rapidly changing and complex settings, and uncertainty they faced when encountering individuals different from themselves.

Exploration of these questions in various contexts propelled these students on their journeys toward self-authorship and revealed the dynamic and integrated nature of this developmental process. Annual interviews with participants revealed that development in any one domain was insufficient for self-authorship (Baxter Magolda,

1998b). Adopting contextual assumptions about knowledge, evaluating evidence and choosing the best knowledge claims was insufficient for self-authorship because without an internal sense of identity from which to choose what to believe, participants were still dependent on external authority. Lack of an internally defined identity also prevented interpersonal growth required for self-authorship. Without an internal sense of self, relationships were constructed to please others without regard for personal needs. Similarly, without an internal sense of self, beliefs, values and identity were defined by others, a substantial barrier to achieving self-authorship. While the driving questions related to development emerged from Baxter Magolda's inductive analysis and provide the most substantial and complete descriptions of the integration of the three dimensions of development and their contribution to self-authorship, extensive literature exists about each domain and the progression of each from simple to more complex forms.

The Epistemological Dimension

Longitudinal studies of college students and adults have resulted in four primary models which describe the development of students' epistemic assumptions. Perry's (1970) model of Intellectual and Ethical Development in College, Belenky, Clinchy, Goldberger and Tarule's (1986) model of Women's Ways of Knowing, King and Kitchener's (1983) Reflective Judgment Model and Baxter Magolda's (1992) Epistemological Reflection Model.

Model of Intellectual and Ethical Development in College

Perry (1970) provided the first comprehensive account of students' intellectual development during the college years. A qualitative analysis of students' descriptions of

their experiences and transformations during their undergraduate years resulted in a model that described consistent changes in the way students approached learning and understanding subject matter in their courses. Based on these descriptions, Perry identified nine distinct positions from which students viewed the world and approached learning. These nine positions can be grouped into four major categories: Dualism, Multiplicity, Contextual Relativism and Commitment within Relativism (Moore, 2002).

In the first category, Dualism, students view knowledge and truth as absolute and authority as unquestioned (Perry, 1970). Students' thinking in this category is characterized by dichotomies and dualisms such as right vs. wrong, us vs. them and good vs. bad. Distinguishing one category from the other is based, without question or critique, on the views of authority figures. In Dualism, all knowledge is known and certain. While individuals in the later position within Dualism acknowledge the existence of different perspectives and beliefs, these are dismissed as wrong without additional consideration.

Perry described students' transition from Dualism to the next category, Multiplicity, as an effort to modify the right-wrong dualism that characterizes the first category in order to account for differences in opinion and experience (Perry, 1981). In this category individuals, for the first time, acknowledge the existence of uncertainty in the world. Students in this category recognize some knowledge as right, some as wrong and some as not yet known. Deciding how to resolve the uncertainty and make the unknown known is a key intellectual task during this period of development. In Position 3, the early position within Multiplicity, students address this problem by focusing on the right ways or methods for resolving uncertainty. As a result, a primary focus of their

efforts is on identifying the "correct" process or methodology for finding answers. In Position 4, the later position in this category, students begin to focus on uncertainty as something that cannot be resolved. The belief that certainty can never be established results in a new focus on one's own thinking. Self-processing and a new ownership of and personal commitment to ideas increases but, since a nonarbitrary way of determining right from wrong does not exist, students' thinking and learning is characterized by a "do your own thing" approach (Moore, 2002).

Movement into the third category, Contextual Relativism, represents the most fundamental transformation in forms of meaning making and results in an emerging understanding of the self as an active maker of meaning (Perry, 1970). In this category, the world is no longer dualistic. Instead, it is viewed as relativistic and context bound. In this way, the act of knowing requires assuming and acknowledging a point of view and placing oneself in a position relative to other perspectives or ideas. Together, the first three categories represent the cognitive portion of students' journey toward more complex epistemic assumptions and ways of knowing and understanding the world.

The final category, Commitment within Relativism, shifts emphasis from the epistemological dimension of development to consider more affective dimensions contributing to the development of students' meaning making (Perry, 1970). In the later positions that comprise Commitment within Relativism, individuals are concerned primarily with issues of identity and commitment in a world that is acknowledged to be relativistic. Individuals are now engaged in what Perry describes as considered choices. These choices are made in the face of legitimate alternatives, after experiencing

meaningful and genuine doubt. Considered choices reflect an affirmation and confirmation of one's chosen perspective. In this way, the commitments made from the later positions in Perry's scheme confirm the reflective and enduring nature of the positions or points of view adopted when individuals come to recognize themselves as active makers of meaning.

Perry himself recognized that the positions which compose the final category, Commitment within Relativism were fundamentally different from those composing earlier categories. Perry's assertion that the later positions in the model reflect a process of defining, refining and making a commitment to one's identity in a relativistic world is the first indication that the emergence of complex ways of organizing meaning, such as those associated with self-authorship, involves changes not just in the epistemological dimension but also in the intrapersonal dimension. While Perry's work alludes to students' development in multiple, interrelated dimensions, dimensions other than the epistemological or intellectual one are not thoroughly considered.

Women's Ways of Knowing

Because Perry's scheme of intellectual development was based on a predominantly male sample, Belenky, Clinchy, Goldberger and Tarule (1986) created a model that focused specifically on the intellectual development of women. Using qualitative interviews conducted with women attending a wide range of educational institutions from selective liberal arts colleges to community colleges to social service agencies serving women in poverty, these researchers set out not to build a model of women's epistemological development but rather to understand how educational

structure and practices impacted women. As the research proceeded, women's epistemological assumptions emerged as central to women's perceptions of themselves and their experiences in institutional structures. The resulting model described five different perspectives from which women approached issues of truth, knowledge and authority. While Perry's positions focused primarily on students' view of the nature of knowledge and truth, the five perspectives addressed women's relation to knowledge and truth and their understanding of their own identity as learners and knowers (Clinchy, 2002).

The first perspective in the model is Silence and women who had this perspective described themselves as not knowing, voiceless, powerless and incapable of participating in dialogue. Unlike individuals in early positions in Perry's scheme, who are capable of listening to authorities and voicing knowledge in its absolute form, women in the Silence perspective view themselves as incapable of giving voice to thoughts and opinions (Belenky, Clinchy, Goldberger & Tarule, 1986). While Silence is often presented as the first stage of women's epistemological development, Goldberger (1996) points out that it actually represents a position of not knowing and as such is a failure to develop resulting from specific circumstances including isolation, rejection, poverty and subordination. While the perspective is clearly documented and must be acknowledged when discussing women's epistemological development, it should not be viewed as the first step in this development.

The second perspective is that of Received Knowing. This perspective, like the positions that constitute Perry's Dualism, focuses on truth as absolute and unambiguous

(Belenky, Clinchy, Goldberger & Tarule, 1986). Students who have this perspective depend on authorities to dispense knowledge and view knowledge as something to be recorded and reproduced rather than used or questioned. While women who operate from this perspective are dependent on authorities, this perspective represents important intellectual achievements including being receptive, willing to take in information and willing to take in and use the expertise of others (Clinchy, 2002).

The third perspective in this model of women's ways of knowing is Subjective Knowing. Truth for individuals with this perspective is personal, private and based on intuition and feelings rather than on ideas supported with evidence (Belenky, Clinchy, Goldberger & Tarule, 1986). Individuals with this perspective, unlike Received Knowers, tend to be suspicious of external authority, depending instead on the authority of an internal voice. This internal authority, however, is not a subject for reflection. As a result, there is no possibility for genuine dialogue with other points of view. These points of view, while acknowledged, are not examined or explored.

Both the Received and Subjective perspectives represent what Clinchy (2002) refers to as uncritical ways of knowing. Whether the source of knowledge is the external authority or the internal voice neither is examined nor questioned. As a result, knowing from these perspectives is a passive process that lacks systematic methods for organizing or evaluating ideas. The vision of knowledge acquisition as an active process requiring work emerges in the fourth perspective, Procedural Knowing (Belenky, Clinchy, Goldberger & Tarule, 1986). From this perspective, knowing requires techniques and procedures for acquiring, evaluating and validating knowledge. In this way, the quality of

the knowledge depends on the skill of the knower in developing and applying appropriate procedures. Within this perspective, women adopted two different procedures for knowing: Separate Knowing and Connected Knowing. The procedures associated with Separate Knowing involve assuming a distanced, skeptical and impartial stance toward that which one is trying to know or understand. The goal of knowing from this stance is to justify, test, refine and finally be convinced of the validity of an interpretation. The procedures associated with Connected Knowing, on the other hand, are characterized by a believing stance and a desire to enter into and understand a perspective from within by assuming that point of view. For example, a Connected Knower might try to analyze and understand a particular view by adopting that perspective and looking at the world through that particular lens rather than deconstructing a viewpoint and standing in opposition to it.

The final perspective, Constructed Knowing, is the perspective from which individuals understand truth as contextual, knowledge as tentative and the knower as an active constructor of the known (Belenky, Clinchy, Goldberger & Tarule, 1986). From this perspective, knowing requires acknowledging the subjective reality of the other. However, while Subjective Knowing accepts these multiple realities without question, Constructed Knowing requires engaging these realties in genuine dialogue and viewing them as viable alternatives depending on the context. This perspective values multiple approaches to knowing but the self is the central element in the knowing process (Goldberger, 1996).

While Belenky, Clinchy, Goldberger and Tarule's (1986) model, like Perry's, explicitly addresses development within the epistemological domain, this model alludes to other domains which make meaningful contributions to the development of more complex ways of organizing experience and constructing meaning. The five perspectives in this model focus explicitly on women's views of themselves as knowers and their relation to knowledge. They also imply an interpersonal component which deals with the relationship between self and other. In the early perspectives of Silence and Received Knowing the relationship between self and other is dominated by the other. The women do not contribute to this relationship and instead are consumed by others' perspectives. In Subjective Knowing, both self and others are recognized but the balance of interpersonal relations shifts in the opposite direction and views of the other are suppressed in favor of an internally generated voice. Procedural Knowing marks the beginning of a true negotiation between the parties in a relationship as women worked to validate knowledge by adopting strategies that distanced them from the perspectives of others or embedded them in these perspectives as a way of coming to know. Finally, Constructed Knowing involves placing the self at the center of interpersonal relationships while engaging others in order to construct meaning that holds personal authority. The intrapersonal domain of development is similarly implied but not explicitly explored in this model. In order for the self to become central to the process of meaning making, as occurs in the perspective of Constructive Knowing, an individual must develop an understanding of who the self is that is not defined or influenced by external authority.

Reflective Judgment Model

A third picture of epistemological development was described by King and Kitchener (1994) in their Reflective Judgment Model. This model was also built on the foundations of Perry's work but focused specifically on the thinking used when individuals encounter problems for which a solution can not be identified using only inductive or deductive logic. As they considered other characteristics of reasoning used in solving such problems, King and Kitchener found that assumptions about what can be known and how something can be known shape how individuals frame a problem and justify conclusions in the face of uncertainty (King & Kitchener, 1994).

The Reflective Judgment Model identified seven developmentally related sets of assumptions about the process of knowing and how knowledge is acquired. These seven sets of assumptions can be grouped into three major periods: Prerefelctive Reasoning, Quasi-Reflective Reasoning and Reflective Reasoning. Each period is characterized by a complex and effective form of justification of beliefs (King & Kitchener, 2002).

Prereflective reasoning, like early positions in Perry's model and early perspectives in Belenky, Clinchy, Goldberger and Tarule's (1996) model, is characterized by the belief that knowledge is gained through authority figures or through first hand observation (King & Kitchener, 1994). Individuals who hold Prereflective beliefs do not perceive that knowledge is uncertain. They do not acknowledge that problems for which there may not be a single correct answer exist and they do not use evidence to reason toward a given conclusion. Early stages in this period are characterized by a single-category belief system that focuses on knowledge as a copy of an external reality. In

these stages, knowledge is pre-determined and fixed. Legitimate alternatives do not exist. Later stages in the period recognize temporary uncertainty in some areas but, individuals in this stage believe that everything can, eventually be known with absolute certainty.

Unlike Prereflective thinking which views all knowledge as certain, Quasi-reflective thinking is characterized by the belief that nothing can be known with certainty. Uncertainty of knowledge claims is attributed to missing information or to the methods used to obtain evidence. As a result, knowledge claims and judgments are highly individual and knowing always includes ambiguity that cannot be resolved (King & Kitchener, 1994). This recognition that knowledge claims are highly idiosyncratic opens up the possibility for recognizing and tolerating alternative perspectives. A system for comparing, evaluating or deciding among these perspectives, however, is still lacking.

Individuals who use Reflective thinking recognize that knowledge is neither a replication of an external reality nor a completely subjective claim. Instead, individuals using this type of thinking focus on knowledge as something that must be actively constructed and understood in relation to the context in which it was generated (King & Kitchener, 1994). Knowledge claims must be based on relevant evidence and conclusions must be open to evaluation and reinterpretation. The growing recognition that true problems, those without a single correct, defined answer, exist pushes individuals to become active inquirers, engaged in advancing their own conclusions and critiquing the conclusions of others. Individuals who use this type of thinking have both the cognitive flexibility and habits of mind that allow them to identify complexity, imagine new

possibilities, apply experience and change their views when such changes are demanded by all available evidence (King & Kitchener, 2002).

King and Kitchener's model, like other models of college students' epistemological development, focuses explicitly on the cognitive domain of development. Descriptions of development in this domain, however, allude to the integration of other developmental domains and their role in promoting epistemological development. Central to the development from Prereflective to Quasi-reflective to Reflective Thinking is a changing sense of self and identity. Individuals who use reasoning typical of the Prereflective period are primarily dependent on the experiences of others. The self contributes little or nothing to the process of acquiring knowledge and justifying beliefs. In later periods, the self emerges as one of many perspectives, all of which are equal and without authority. Finally, the self emerges as an authority capable of engaging in and directing the process of inquiry and problem solving. In this way, epistemological development is linked to intrapersonal development and requires an identity that neither ignores nor is consumed by alternative perspectives.

Epistemological Reflection Model

The final picture of development in the epistemological domain emerged from Baxter Magolda's (1992) longitudinal research focusing on gender-related patterns in students' intellectual development during their college years. The Epistemological Reflection Model was initially based on interviews conducted with students during their four years in college but was then refined during the post-college phase of the study which continued to interview students annually for eight years following their graduation

(Baxter Magolda, 1999c). The Epistemological Reflection Model describes four ways of knowing, each characterized by its own set of epistemic assumptions. These assumptions result in clear perspectives on the role of students, teachers and peers in teaching and learning. In addition to being driven by a unique set of epistemic assumptions, each of the four ways of knowing encompasses two gender-related patterns of reasoning, one which focuses on relationship and connection and one which focuses on individual agency and separation (Baxter Magolda, 1992).

The first way of knowing identified in this model is Absolute Knowing. Like early positions in all other models of students' intellectual development, Absolute Knowing is characterized by learners' assumptions that knowledge exists in an absolute form, is either right or wrong and comes from authorities (Baxter Magolda, 1992). While uncertainty does not exist in knowledge, students may be uncertain due to their lack of knowledge or expertise in a given area. As a result of these assumptions, Absolute Knowers focus on obtaining information and expect instructors to communicate knowledge clearly and thus facilitate learning. Peers are able to share what they have learned from authority figures but, beyond sharing knowledge they have acquired, have no legitimate role in learning. When students do encounter discrepancies in the learning process, they tend to address these differences as variations in the quality of an explanation rather than true differences in knowledge and will turn to an authority to provide "the answer."

Within Absolute Knowing, Baxter Magolda (1992) identified two gender-related reasoning patterns. The first, which she labeled Receiving, was used more often by

women than by men. The receiving pattern was characterized by a more passive, internal approach. Students using this pattern emphasized the importance of listening in order to obtain knowledge, the need to be comfortable in the learning environment and the importance of relationships with peers. The second pattern, Mastery, was used more often by men than by women and was characterized by an active approach that involved asking and answering questions. While both Receiving and Mastery students depended on authorities to provide knowledge, Receiving students appeared to listen to the voice of authority and reproduce it in order to demonstrate learning while Mastery students imitated the voice of authority in an effort to identify with and demonstrate the acquisition of knowledge (Baxter Magolda, 1992).

The next way of knowing described by the Epistemological Reflection Model is Transitional Knowing, which like intermediate stages in other models, involves the individual's growing realization that not all knowledge is certain and that authorities are not all-knowing (Baxter Magolda, 1992). Transitional Knowing is characterized by the assumption that while knowledge is uncertain in some areas, it remains certain and absolute in others. This shift in assumptions about the nature of knowledge led to a corresponding shift in students' views of their role and that of instructors and peers. Students now view their primary role as understanding, rather than simply acquiring knowledge. This requires instructors to use methods that are aimed at understanding rather than simply explaining. Peers also took on a more active role assisting in the type of exploration necessary for understanding.

Transitional Knowing, like Absolute Knowing, was characterized by two gender-related patterns. The Interpersonal pattern, used more frequently by women, involved interacting with peers in order to be exposed to and collect new ideas, developing rapport with peers and instructor in order to facilitate self-expression and resolving uncertainty through personal judgment (Baxter Magolda, 1992). Individuals using this pattern tended to focus on areas of uncertainty and use these as vehicles to express their opinion, often for the first time. In the Impersonal pattern, used more frequently by men, relationships and rapport were not an important feature of learning. Instead, individuals using this pattern wanted to be challenged to think, to exchange views through debate and resolve uncertainty through individual exploration and research. These students identified challenge as more central to learning than caring (Baxter Magolda, 1992).

The third way of knowing, Independent Knowing, is like positions in other models in which all knowledge is viewed as uncertain and authorities are no longer the only source of knowledge but are now equal with students who, for the first time, view their opinion as valid (Baxter Magolda, 1992). The role of the student is to think independently and develop his/her own perspective. Instructors are expected to provide contexts for expressing these new found views and hearing the views of others. Peers are now viewed as a source of knowledge and Independent Knowers emphasize open-mindedness and valuing all opinions equally. Like middle periods in other models, Independent Knowing is characterized by a belief that every individual has their own truth. This new core assumption about knowledge leads independent knowers to focus on thinking for themselves while exchanging ideas with peers to expand possibilities.

Independent knowers expect instructors and peers to promote independent thinking and to avoid judging since truth and knowledge are within the individual.

Within Independent Knowing, students who had used Receiving and Interpersonal patterns in earlier structures struggled to give voice to their own views in the presence of other perspectives which were viewed as equally correct (Baxter Magolda, 1992). Students using this Interindividual pattern tended to be women and were amenable to changing their views since all perspectives were seen as equal. In contrast to this struggle to have their voice heard among many opinions, students who had preferred their own voice in earlier structures tended to hold tightly to their own views and struggled to listen to other voices even while acknowledging the equality of all perspectives. This Individual pattern was used primarily by men who espoused thinking independently and listening to all views but often experienced great personal conflict as they tried to put this practice into action (Baxter Magolda, 1992).

Independent Knowers, initially comfortable with the freedom provided by this structure soon begin to encounter issues of better and worse and the need to provide rationale for decisions or stances. This dissonance led to another shift in epistemological assumptions. These new assumptions are characterized by the belief that knowledge is constructed in a particular context. Contextual Knowing requires not only the use of multiple perspectives and making one's owns choices that emerged in Independent Knowing but also making judgments about those perspectives and developing criteria to use when evaluating those choices (Baxter Magolda, 1992). The process of not only recognizing multiple perspectives but making sense of them and making judgments about

them led the gender related patterns seen in earlier epistemic structures to merge. Participants came to recognize both patterns and identified ways in which their new way of organizing experience and making meaning necessitated the use of both. Contextual Knowers depended on rationality as they consulted experts and processed available evidence but they also valued their own experience and perspectives (Baxter Magolda, 1998a).

The Epistemological Reflection Model, more explicitly than the other three models of epistemic development, brings to light the three domains involved in student development and the extent to which development in the cognitive, intrapersonal and interpersonal domains mediates students' relationships with knowledge, self and others (Baxter Magolda, 2002). As epistemic assumptions evolved, a student voice emerged and gradually changed from a repetition of authority to an expression of an individual perspective. As this new voice emerged, relationships with authorities and peers were redefined. Authorities were no longer omniscient but were instead viewed as experts in a specific context whose ideas were available for critique and revision. Peers and others, once only capable only of explaining what authorities said, came to be viewed as valid partners contributing to process of constructing knowledge.

Even as these models focus rather narrowly on epistemological development, each demonstrates to some degree the integrated nature of cognitive, intrapersonal and interpersonal development and the importance of including these domains when exploring the development and transformation of students' meaning making structures and their identity development.

The Intrapersonal Dimension

The Intrapersonal Dimension of development focuses on how people view themselves and encompasses a body of research that includes ego development, identity development, perceptions of identity and self-development. This broad category of literature addresses a range of topics from moral development which considers ways that people create values and belief systems and use these systems to make life choices to social identity development which focuses on the ways individuals interpret and enact social identities based on factors such as race, ethnicity, class, sexual orientation and religious affiliation.

Erikson (1968) proposed that identity development was a psychosocial process that began in adolescence and continued through early adulthood. This process emerged from the interactions of physical and cognitive growth within the demands of the environment. The formation of an enduring adult identity required individuals to merge past experiences, an anticipated future and socially meaningful roles into a coherent personal vision of the self (Erikson, 1968). In this way, identity development was viewed as an evolving process in which the sense of self was continually reworked as individuals encountered experiences that challenged and called into question existing understandings of the self. Successful resolution of these challenges results in a sustained identity which provides a sense of well being, direction and inner security which form the basis of adult life and allows for mature interpersonal relationships.

Chickering's (1969) theory of college students' identity emerged from this conceptualization of identity development as a psychosocial process. This model contains

seven vectors each of which includes a series of developmental tasks, a source of anxiety or dissonance and an end result. These seven vectors include developing competence, managing emotion, developing autonomy, establishing identity, freeing interpersonal relationships, developing purpose and developing integrity. As individuals encounter challenges or stimulation in the college environment, they respond to these new experiences, determine what fits with their vision of who they are and work to integrate this information with their self-concept. This process gives rise to the development of a stable adult identity. Relationships with others play a key role in identity development as individuals use others as a point of comparison. Through these comparisons and interactions with others, identity is challenged, confirmed or modified.

Josselson's (1987) theory of women's identity development portrayed a similar process of evolution in which women's sense of themselves is continuously reworked as they encounter challenges in their relationships and in the environment. Four different ways of responding to these challenges, based on varying levels of exploration and commitment, resulted in four different pathways by which women constructed adult identities. Guardians tended to make a commitment to an adult identity without engaging in exploration of options. These women tended to focus on their adult lives as continuation of roles defined in childhood. They were dependent on their families or important others to define values and beliefs. Drifters were those women who had neither explored options nor found a system for choosing among these options. Choices about identity tended to be made in the moment and lacked sense or coherence. Searchers were those women who recognized many possible identities but struggled to find the correct

role among the many choices available to them. Unlike Drifters, they recognized the many alternatives available but lacked a method for determining which of these many options was the right choice. Finally, Pathmakers were those women who, through an intense period of exploration had developed an integrated, stable sense of who they were and made choices based on this adult sense of themselves.

Each of these theories focuses on intrapersonal development as a process of increasing independence and individuation from others. As a result, the process of identity development, as characterized by these models, seems to require the development of agency and the ability to separate oneself from others in order to function as an autonomous individual (Baxter Magolda, 1999a). Like epistemological development which requires increasing separation from authority, intrapersonal development requires separation from others in order to achieve control and autonomy.

Additional research focused specifically on women's identity development provided a different perspective on identity development which was based on the idea of communion and connection rather than individuation and autonomy. Best known in this body of literature is Gilligan's (1982) work which focused on moral development in the context of gender. Gilligan argued that when making moral judgments, women exhibited a preference for connected, relational ways of making judgments resulting in a care voice. This voice stood in contrast to preferences seen in studies of men who demonstrated a more separate and individual voice focused on justice and rights. This connected voice, which emphasized the ability to come together and function collaboratively, was further described by Straub (1987) who concluded that while

developing autonomy was, as Chickering and others had asserted, an important part women's identity development, women achieved this goal in ways that differed significantly from the methods typically employed by men.

The work of Gilligan (1982) and others has clearly demonstrated different patterns in the development of identity. It is important to note, however, that while there are multiple ways to achieve an integrated adult identity, the underlying structure remains the same. Kegan's (1994) description of subject-object relationship, the deep structure of all meaning making systems, is useful in understanding how a single goal – self-definition and an integrated, internal identity can be achieved through very different stylistic means. In describing the orders of consciousness, Kegan focuses on the structural elements of our meaning making systems. Identity development is a process of transforming our ways of organizing our experience and developing the capacity to create an internal identity that is not dependent on external authority. This process and the resulting change to meaning making structures can be achieved through a number of different approaches or methods all of which lead to the same end result. Kegan (1994) describes this difference in terms of deciding for oneself as opposed to deciding by oneself. The goal of identity development is to construct an enduring sense of self that is the source of belief and allows one to decide for oneself how to act, believe and relate to others. Just like the construction of knowledge exhibited by Connected and Separate Knowers, identity construction can take place by standing apart from others in order to define oneself or standing with others in order to define oneself. The goal is a structural

change to ways of making meaning that allows us to consider elements of our identity without being subject to or consumed by them.

Another line of research has addressed particular dimensions of identity development including factors related to racial and ethnic identity and sexual orientation. Many models of racial identity development were influenced by the work of Erikson (Jackson, 2001). These models, like Erikson's, describe stages of development in which individuals move from a period of identification with the dominant or other culture to an empowered identity that resists social oppression. In his theory of Black Identity Development (2001), Jackson proposed five stages related to the development of racial consciousness and identity. The first stage, Naïve, was characterized by the absence of social consciousness or identity. The next stage, Acceptance, focused on the uncritical acceptance of the dominant culture's views related to Black people, culture, and experience. Moving beyond Acceptance, individuals entered a stage of Resistance during which the majority culture's definitions were rejected and Black people and culture were valued. The fourth stage, Redefinition, is characterized by the renaming, reaffirming and reclaiming of a personal sense of blackness, Black culture, and racial identity. The final stage, Internalization, results in the creation of an integrated racial identity that incorporates all aspects of one's self concept.

Similar models have been proposed for understanding the process of racial identity development for all minority students. The Minority Identity Development model (Atkinson, Morten & Sue, 1993) also proposes five stages beginning with Conformity in which the individual internalizes attitudes that reflect the dominant race. Dissonance, the

second stage, is characterized by feelings and attitudes that reflect racial and cultural confusion and conflict. Individuals then move into Resistance, the third stage during which values of their culture of origin are embraced and values of the dominant culture are rejected. During Introspection, individuals engage in a period of reflection and evaluation in which all values, those of the culture of origin and those of the dominant culture, are considered. The final stage, Awareness, results in a sense of self-fulfillment as previous conflicts are resolved and the individual selects values and beliefs.

Similar models have been developed to explain racial identity development for Asian Americans (Kim, 2001) and Whites (Hardiman, 2001). Like Black Identity Development and Minority Identity Development, these models are characterized by stages which involve first a lack of awareness of the role or presence of race in one's identity and progress through periods of conflict and confusion related to race and emerge, finally with an integrated racial identity that acknowledges and affirms the complexity of race (Howard-Hamilton, 2000).

Models related to Latino identity development (Ferdman & Gallegos, 2001) and Native American identity development (Horse, 2001) also acknowledge gradual construction of an integrated racial identity that is shaped over time in response to a variety of experiences. These models, unlike those that describe the development of racial identity for African Americans and Asian Americans focus less on defining stages and more on orientations, which like the stylistic preferences of separate versus connected ways of knowing and relating, guide and influence the ways in which individuals go about making meaning of experiences and constructing their identities. In models of

Latino identity development (Ferdman & Gallegos, 2001), these orientations range from Latino-integrated which focuses on the backgrounds and cultures of Latino sub-groups and defines individual identity in a group context to Undifferentiated in which individuals orient first to the individual and then to the group. Models of American Indian identity development focus similarly on orientations and influences as individuals work toward the construction of an internal identity. Some of the influences identified include grounding in vs. separation from native language and culture and connection vs. separation from a traditional worldview (Horse, 2001).

Research into students' construction of their identity as lesbians (Abes, Jones & McEwen, 2007), highlighted the interaction of the progressive evolution of meaning making structures and contextual influences and orientations in the development of integrated identity. Women in this study demonstrated progression from organizing assumptions that relied on external expectation to an internally generated sense of self. Throughout this evolution, contextual influences played various roles. Women who relied on external formulas in the construction of their lesbian identity were strongly influenced by contextual factors such as family, friends and social norms. As women moved from a reliance on formulas toward a period of selecting one's own identity, contextual factors were increasingly filtered and exerted less power on women's identity.

Taken as a whole, research related to identity development demonstrates that just as epistemological development is a process of redefining the relationship between the self and knowledge, identity construction is a process of redefining the self in relation to society and others. Central to this process is the growing awareness of the self as distinct

from others. As a result, individuals move from a lack of awareness of and dominance by external definitions to an internally defined perspective that affords the ability to consider, but not be consumed by, external influences and expectations.

Interpersonal Dimension

Because development in the intrapersonal and epistemic domains involves a growing awareness of the self as separate from others and an increase in personal autonomy, the developmental process can easily be viewed as an egocentric journey which involves little more than a heightened awareness and reliance on the self and a separation of the individual from others. The third domain of development, the interpersonal dimension, however focuses on the changing nature of an individual's connection to and functioning with others.

Theories of development in the epistemic and intrapersonal domains clearly emphasize elements of agency and the ability to separate oneself from others to achieve control and independence. Perry's (1970) focus on intellectual development as increasing separation of self from authority and achievement of autonomy in relation to knowledge and knowing can be viewed as a description of increasing agency in the epistemic domain. Chickering's (1969) conceptualization of identity development as the process of constructing a sense of self apart from external forces provides a description of increasing agency in the intrapersonal domain.

The research related to women's epistemic and identity development demonstrates, however, that issues of agency and separation are only a part of the developmental picture. Communion, or the ability to participate productively as a part of

a larger whole, is an equally important part of the development. Women's development in both intrapersonal and interpersonal domains is characterized not by separation but rather by a connection to and fusion with others (Brown & Gilligan, 1992). Belenky, Clinchy, Goldberger and Tarule (1986) and Baxter Magolda (1992) documented gender related patterns indicating that complex ways of knowing can be achieved through methods and patterns that are connected, relational and interdependent in nature.

The challenge that is presented when considering interpersonal development arises from the fact that agency and communion are typically viewed in terms of a dichotomy (Jordan, 1997). Individuals who follow the path of agency can be viewed as sacrificing others' needs in the pursuit of autonomy while individuals who develop communion can be seen as dependent and self-sacrificing. Interpersonal development can more productively be considered as the growth of what Jordan (1997) describes as mutuality. Mutuality is neither agency nor communion but a combination of the two that allows for authentic connection to others. When viewed this way, development in the interpersonal domain involves a coming together of the self and other in way such that neither is sacrificed. When this balanced view of self and other is achieved, relationships transcend and sustain both individuals (Jordan, 1997). Development in the interpersonal domain involves simultaneously enacting agency through an awareness of our thoughts and actions and enacting communion through the consideration of how our actions impact others.

The development of this complex relationship between self and others is the least explored of the developmental domains. Research related to the interpersonal dimension

has however, documented the growth of mutuality as individuals move from an individualistic, egocentric perspective consumed with meeting personal needs, to a perspective that acknowledges and accepts difference and finally to a perspective that not only acknowledges difference but explores the nature, source and effects of difference (Baxter Magolda, 2000). It is this perspective that allows individuals to engage in interactions with diverse others that are interdependent, respectful and mutually negotiated.

Describing the interpersonal development of college students, Chickering and Reisser (1993) characterized students in the early positions of interpersonal development as lacking awareness of society as an organized and communal entity. These students were dependent on like-minded others for social affirmation, viewed perspectives that differed from their own as wrong and were generally naïve as to how social systems affected group norms. Students in intermediate positions interacted with others without judging them and demonstrated a budding awareness of the interconnection of social systems and group norms. In the later positions of interpersonal development students demonstrated the ability to engage in meaningful relationships grounded in a critical awareness of difference.

Research related to multicultural education and the development of multicultural competence has also informed our understanding of development in the interpersonal domain. This research has demonstrated that early levels of interpersonal development are characterized by an ethnocentric world view where self-interest is predominant (Howard Hamilton, 2000). Intermediate levels of development reflect personal views and

experiences but these are often sacrificed in pursuit of acceptance and to avoid hurting others. Mature levels of intercultural interaction are characterized by the capacity to engage in relations that are informed by cultural understanding and thus negotiated. At the later levels of interpersonal development, individuals can move between cultural perspectives and act as informed advocates (King & Baxter Magolda, 2005).

As individuals work to redefine their relation to knowledge and their sense of self in relation to society, they also develop new ways of understanding the self in the context of relationships with others. Just as epistemological and intrapersonal development require renegotiation of self and self in relation to others, interpersonal development involves a reformulation of relationships with others. Individuals move from being unaware of others and exclusively focused on themselves to a period of self-sacrifice in the pursuit of relationships and finally to a position of mutuality where both self and other can be sustained in the context of a productive, engaging relationship.

The Development of Self-Authorship

Consideration of the three domains of development illustrates the complexity of achieving self-authorship. Self-authorship is simultaneously the ability to construct knowledge in a context, the ability to construct and maintain an identity independent from external influences and the ability to engage in mutually productive relationships that sacrifice neither self nor others (Baxter Magolda, 2008). Exploration of these domains also illustrates that development is an integrated phenomenon. Development in any one domain is necessary but, in and of itself, insufficient for achieving self-authorship. By assuming that knowledge is uncertain and judged in light of evidence

relevant to the context, self-authored individuals are able to integrate information from many different sources to make decisions. This capacity calls for an internal belief system from which to make such judgments. This belief system requires an internal identity that integrates various elements to form a coherent whole. This identity, that is influenced by but independent of others, supports drawing one's own conclusions, an aspect of cognitive maturity, while simultaneously enabling mature relationships that respect self and other.

It is the capacity for self-authorship and the forms of meaning making that are associated with it that allows students to achieve the complex learning outcomes associated with medical professionalism. Medical professionalism requires students to create and evaluate knowledge, critically appraise resources, attend to and reflect on mental processes, tolerate ambiguity and uncertainty and be aware of and use both explicit and tacit knowledge. In order to do these things, students must achieve a level of cognitive maturity that allows them to view knowledge as contextual while operating from and maintaining an internal belief system that guides thinking and behavior. Medical professionalism also requires students to engage in mutually productive relationships that respect diverse populations and perspectives, to identify and avoid conflicts of interest and act with empathy. This necessitates interpersonal maturity that supports managing relationships in such a way that the self is not defined or overshadowed by external expectations and that others' perspectives and needs are taken into account in a manner that supports interdependence rather than self-sacrifice. Finally, medical professionalism requires students to engage in self-reflection and evaluation, to

direct their own learning, to define and act according to values that support ethical practice and to find a balance between self, patient and team. This requires an intrapersonal identity based on an internally generated sense of self that is capable of regulating interpretation of experiences, interactions and choices.

According to Baxter Magolda (2004b), the process of shifting meaning making capacity from outside of the self to inside the self and the development of integrated, self-authoring identities can be described as a developmental journey during which individuals become aware of the role of external forces in their thinking and relating and gradually extract themselves from these influences and establish an internally defined self. For the participants in her study, this journey began in college and occurred in four phases: Following External Formulas, the Crossroads, Becoming the Author of One's Own Life and Internal Foundations. When considering these phases, it is important to recognize that they are not intended to represent universal stages through which individuals progress. Rather, these phases are characterizations and descriptions of the meaning making structures people use to interpret their experiences.

Following External Formulas

The college phase of Baxter Magolda's 21-year longitudinal study of young adults' development identified Following External Formulas as the first phase in the development of self-authorship (Baxter Magolda, 2004b). This period was characterized by participants' reliance on the direction and plans of others. Following external formulas provided by family, peers, teachers or mentors was key to helping participants achieve success during this time. Living up to expectations of a "good daughter/son," "good

student" or "good employee" helped these participants achieve their goals during college and immediately following graduation. College policies and directives related to academic and career planning provide many undergraduate students with readily available models for success. College students are able to follow these recipes and with little thought achieve an externally defined category equated with success. According to Pizzolato (2007), students' reliance on external formulas is reinforced by the availability of formulas that take the form of guidance and support. In this way, the structure that is intended to support students' development and prepare them for the expectations of contemporary society and adult life may actually prevent some from moving forward on the journey toward self-authorship.

While this period of the transformation toward self-authorship is characterized by a reliance on external authority, students' epistemological orientations underwent significant changes during this time (Baxter Magolda, 2002). Students who entered college relying exclusively on authorities to provide knowledge and answers came to recognize uncertainty in some areas, the need to consider knowledge in context and the importance of making their own decisions. Even though these students' epistemological development had brought them to a place where they recognized the importance of making their own decisions, they lacked the internal mechanisms from which to make these decisions and, consequently, were still dependent on external authorities (Baxter Magolda, 1999a). As a result, external views of what should be and overemphasis on achieving pre-defined categories overshadowed considerations of what could be.

The period of Following External Formulas can be characterized as a time in which development in the epistemological domain precedes without concomitant development in the intrapersonal or interpersonal domains. This is not surprising given that most educational environments focus almost exclusively on cognitive development leaving interpersonal and intrapersonal development to the realm of co-curricular and extra-curricular activities (Baxter Magolda, 2006). Individuals in this phase have come to view knowledge as complex and socially constructed in a context, but do not possess an internalized sense of self from which to approach this construction.

The Crossroads

While Following External Formulas helped students to find success while in college, employment, educational and personal contexts after college highlighted the limitations of external definitions and brought the intrapersonal dimension of development to the forefront. This led participants to the Crossroads, the next phase in the development of self-authorship (Baxter Magolda, 2004b). This period is described as a time of growing awareness of the limitations of external formulas, increasing discontent and disequilibrium and a realization of the need to work toward self-definition. As a result, during this period individuals recognize the need to move away from external influence and establish an internal identity.

Individuals arrive at the Crossroads through experiences that revealed the failure of external formulas to produce desired results. Through failed relationships, uncertainty in work and career or growing feelings of internal conflict, participants came to a point where they realized that external sources of definition were insufficient. As a result of

reaching this point on their journey, they began to express an awareness of the need for internal sources of belief and definition (Baxter Magolda, 2004b). In response to this awareness, individuals pursued new career paths, chose not to get married or to delay to having children or simply worked to express themselves in the context of work and personal relationships.

While the first phase of the journey toward self-authorship is defined by development on the epistemological domain, the Crossroads represents the first place where development on all three domains begins to occur in an integrated fashion. Dissatisfaction with external formulas led participants to meaningfully address issues of identity and the question of "Who am I?" This exploration of the intrapersonal realm required renegotiation of epistemic and interpersonal stances. Participants emerging sense of self provided them with a new set of beliefs and perspectives from which to construct and evaluate knowledge. Similarly, their growing awareness of self led them to take a new position in their relationships with others as they worked to bring the emerging self into interactions with others.

The Crossroads, with its growing awareness and integration of the three domains of development, is a time that is characterized by tension (Baxter Magolda, 1999a). Individuals are becoming aware of the limitations of external formulas but are still in the process of developing an internal identity and an internal plan. As a result, the emerging, internal voice is often in conflict with the existing, externally defined ways of being. The Crossroads is marked by experiences in school, the workplaces or personal relationships that challenge one aspect of development and, in doing so, promote exploration of others.

Becoming the Author of One's Own Life

While the Crossroads is a period of development marked by tension and dissonance and simultaneous consideration of the epistemic, intrapersonal and interpersonal domains, the next phase of the journey toward self-authorship is characterized by increased self-reflection and a growing acceptance of uncertainty and ambiguity. Having arrived at an awareness of the need to bring the meaning making process inside themselves, individuals in the process of Becoming the Author of Their Own Life engage in intense self-reflection in order to determine who they want to be and develop a guiding framework for their life (Baxter Magolda, 2004b). During this time, as they work to reconstruct their beliefs about knowledge, themselves and themselves in relation to others, individuals begin to express the difference between being an expert and being an authority. While they acknowledged the limitations of what they knew and the need to remain open to new knowledge and new contexts, they also recognized that the construction of an internal belief system instills them with authority to make decisions (Baxter Magolda, 2004a). Experiences, knowledge and relationships were now analyzed in terms of how they contributed to an established but evolving belief system. Participants recognized that their belief system was continually changing but their confidence in that belief system made uncertainty and ambiguity in all aspects of their life manageable and even welcome.

Individuals' life circumstances were particularly important during this period of development toward self-authorship (Baxter Magolda, 2004b). Personal experience mediated which domain of development was most salient during this time. For some,

self-reflection pushed questions of what to know and believe to the forefront. For others, self-reflection raised questions about the nature of relationships and defining the self in relation to others. Regardless of which domain is brought to the forefront during this phase of the journey, the move toward self-authorship brings each domain into play. As new beliefs are formed and solidified, choices must be made about how to enact those beliefs. As the new belief system is constructed, relationships must be revised. What marks this phase of the journey is that the internally constructed identity has become the core organizing principle that coordinates making meaning of self, knowledge and others.

Internal Foundations

The final phase of the journey toward self-authorship represents a shift from the active construction of beliefs, goals and values to enacting this new system of belief. Individuals have arrived at a grounded sense of self that allows them to choose core beliefs and use these beliefs to guide their lives (Baxter Magolda, 2004b). Similarly, this sense of self provides a place from which to engage in authentic, mutual relations with others. Relying on an internal foundation allows the exploration of new perspectives without threat and the ability to know, accept and manage uncertainty. This, in turn, leads to an openness and flexibility in approaching life. Instead of seeking a "finished product" participants work toward evolving but increasingly satisfying definitions of self. Individuals no longer attempt to control the external world but instead work to control how they make meaning of and act in the world (Baxter Magolda, 2004b). Individuals who have reached this phase of the journey take responsibility for making meaning of

their internal and external worlds and they use their internalized sense of self to approach the world, react to events and mediate interactions.

Making the Journey

Engaging in this journey and creating an internal belief system and sense of self from which to operate, is essential to achieving the learning outcomes of medical professionalism. Educators hope that students will experience this transformation from reliance on authority to complex ways of making meaning so that they are prepared to join the professional community engaged in self-authorship, capable of integrating multiple perspectives and making informed judgments. There is considerable evidence, however, that educational contexts are not well suited to helping individuals develop these capacities (Baxter Magolda & King, 2004).

In his theoretical work on the demands of contemporary adult life, Kegan (1994) proposes that one-half to two-thirds of adults still operate from the third order of consciousness in which they have the cognitive processes to engage in knowledge construction but are still embedded in meaning making through shared realities with external others. Research on the epistemological domain of development supports this conclusion. The work of Perry (1970), Belenky, Clinchy, Goldberger and Tarule (1986) and Baxter Magolda (1992) indicates that students emerge from college no longer relying on authorities for knowledge and beliefs but unable to articulate an internally derived system from which belief and knowledge are generated. In this way, individuals are moving toward self-authoring capacities but still lack crucial elements associated with this form of meaning making.

Baxter Magolda's longitudinal research demonstrates that it is not until well after college in the context of professional life, graduate education, adult relationships and family responsibilities that individuals encounter the contexts that promote the development of self-authorship and, as a result, move toward the later phases of this developmental journey (Baxter Magolda, 2006). She argues that self-authorship can only emerge when there is sufficient challenge to create dissonance and disequilibrium and sufficient support to sustain individuals through a period of questioning which allows the emergence of an internal voice (Baxter Magolda, 2004b).

Environments that support the development of self-authorship consistently demonstrate three key assumptions (Baxter Magolda, 1999b). First, they convey a view of knowledge as complex and socially constructed. These environments seek to model the complexity of the real world. They present multiple interpretations and the need to negotiate what to believe and how to act with others. In these environments, understanding is viewed as the ability to choose from among many acceptable alternatives and then explain and support the choice. Second, environments that support the development of self-authorship focus on the central role of self in knowledge construction. Individuals are encouraged to bring themselves and their experience to their learning and their work. Students are encouraged to analyze their own and other's perspectives and take responsibility for decisions. In this way, experience and existing knowledge is used as a base for continued learning and decision making. Finally, environments that support the development of self-authorship view authority and expertise as shared in the mutual construction of knowledge. Individuals in these

environments are viewed as equal partners, functioning interdependently with others. In this way, individuals' knowledge is connected in order to arrive at new and more complex understandings and decisions.

By following a single group of adults for an extended period of time, Baxter Magolda's (1999b) research has played a central role in documenting the development of self-authorship and describing the contexts that promote self-authored ways of knowing. Exclusive focus on a single, homogeneous group, however, seems to propose a single, somewhat linear developmental trajectory. Recent research related to the development of self-authorship for high-risk students (Pizzolato, 2003, 2004, 2005) and the development of self-authorship in diverse student populations (Jones, 1997, Jones & McEwen, 2000; Torres & Hernandez, 2007) demonstrates that while the phases of the journey appear to be relatively consistent, the timing and characteristics these phases assume differs depending on life experience, context and personal attributes.

Baxter Magolda's (1999b) research indicates that the self-authorship journey does not begin until after college. While students engage in important epistemic transformation during college, it is the contexts after graduation, including work, personal life and family that illuminate the inadequacy of external formulas and lead these adults to seek out internally defined goals, beliefs and values. It was entering the Crossroads and experiencing this crisis and subsequent exploration that eventually led them to internal foundations and self-authored ways of knowing. Pizzolato's (2003) investigation of the experience of first generation and high-risk college students found that these students'

goals and life experiences caused them to experience the Crossroads, develop internal foundations and engage in self-authorship at a much earlier point in their lives.

Unlike participants in Baxter Magolda's study who had readily available external models for success, the participants in Pizzolato's (2003) study, whose parents and peers had not attended college, lacked such models. As a result, early recognition as good students and encouragement to attend college created significant dissonance and moved these students into the Crossroads long before they entered college. By envisioning themselves as college students, in a context without available formulas to achieve this goal, these students developed internal foundations which served as an anchor as they worked toward their goals. This internal sense of self was further developed as these students worked to apply to, succeed in and pay for college.

Other research has indicated that adults who experience oppression or marginalization also enter the Crossroads and develop internal foundations and self-authorship earlier than their peers. Torres and Baxter Magolda (2004) documented the ways in which Latina college students' early attempts to find self-definition by relying on external formulas and authority led to dissonance as they tried to reconcile existing ethnic identities with perspectives that diminished their ability and potential in higher education. Confronted with this conflict, these women solidified an internal identity and used this as the basis from which to express themselves and create success in a college environment. In the same way, the process of constructing an integrated lesbian identity in the face of heterosexist messages caused students to question how they wanted to construct relationships and use an internally generated sense of self to guide their interactions with

others (Abes, Jones & McEwen, 2007). While some individuals may be driven to seek internally defined values, beliefs and goals through experiences that demonstrate the inadequacy of external formulas, others may reach the Crossroads and move toward internal definitions because no external formulas exist. In this way, creating a vision of a possible self becomes the catalyzing event in the journey toward self-authored ways of knowing.

In addition to demonstrating that individuals can enter the Crossroads and engage in self-authorship before and during college, recent research has also provided insight into the complexity of the Crossroads. All research related to the emergence of self-authorship demonstrates that the move from external to internal foundations requires moving through the Crossroads. The discontent and disequilibrium that characterize this time period propel individuals to seek internal definition and as a result, the Crossroads can be viewed as a distinct point on the continuum between internal and external definition. Pizzolato's (2003) research demonstrates that for some, the Crossroads represents an extended phase of this developmental journey. For some first generation and high-risk students, the Crossroads consisted of multiple experiences each of which demonstrated the need for internal definition but none of which resulted in commitment or action toward internal foundations. As a result of these experiences, students began to consider and reflect on possible changes and new selves but did nothing to make these potential identities a reality. For these students, the Crossroads actually represented a series of experiences, each of which creates disequilibrium and contributes to the consideration of possibilities without bringing about commitment or action.

The move from the Crossroads, where options were considered to taking action toward self-definition eventually resulted from what Pizzolato (2005) calls the Provocative Moment. The Provocative Moment represents the culmination of disequilibrium and brought individuals to commit to a new vision and take action to achieve it. This demonstrates that the dissonance which leads to self-authorship may take very different forms. For some, it might be a single significant event. For others, it might be a summation of multiple events. This also highlights the importance of the Crossroads not simply as the place from which the development of internal foundations can begin but also as a "holding environment" from which individuals can consider and explore alternatives and possible selves before taking action.

Research has also demonstrated that a number of factors including environmental structure and support and personal characteristics influence students within the Crossroads. Pizzolato (2004) found that students who had high degrees of procedural support when applying to college were less likely to make the commitment to acting in internally defined ways in spite of expressing well solidified elements of an internally defined identity. Lack of external formulas led these students to create internally defined identities but because of the support they received, they did not have to take action to make this self possible. As a result, the environment slowed the action that was necessary to fully engage in self-authorship. While Baxter Magolda and King (2004) highlight the importance of supportive environments in helping students to achieve self-authorship, Pizzolato's findings indicate the nature and quality of support that promotes self-

authorship. Support must engage students in the process of acting rather than providing readymade answers and protection from the experience itself.

Pizzolato's (2005) research also demonstrates that high levels of volitional self-efficacy and self-regulation facilitated students' journey through the Crossroads. Students who possessed these characteristics were less likely to become overwhelmed by the emotional elements of a Crossroads experience and focus instead on goals and how, given the situation, they could move from where they were to where they wanted to be. It is difficult to say whether the personal characteristics Pizzolato identifies are independent from development or result from the integrated development which enables students to see themselves as actors and creators of experience. It does, however, reinforce the concept that in order to develop and act in self-authored ways individuals must view themselves as capable of acting rather than dependent on authority.

Research related to the development of self-authorship in diverse student populations and diverse settings also demonstrates that the journey does not end when students leave the Crossroads and act from internal foundations. Self-authored ways of knowing not only emerge early in response to life contexts, they can also retreat in response to perceived threat and hostility (Pizzolato, 2007b). Students with diverse experiences who entered college environments fully engaged in self-authorship frequently retreated from their internal foundations when they faced challenges that called these foundations into question but lacked support to maintain their internal foundation (Pizzolato, 2004). For example, students who were engaged in self-reflection and identified factors contributing to academic difficulty sometimes refused to seek the

academic support their internal foundations told them they needed. This refusal came from feelings that seeking support would confirm others' views of them as less capable than their peers. While Baxter Magolda (2004b) seems to suggest that once students have achieved self-authorship and use internally defined structures to organize and understand experience, they are capable of managing external influences. These students' experience demonstrates that in situations where outward expression of an internal foundation is viewed as counterproductive, students will retreat from an internal identity and once again become subject to external influences. This retreat from self-authorship may be due to the fact that acting in ways consistent with internal foundations is perceived as a threat to the maintenance of that identity (Pizzolato, 2005).

This not only demonstrates that self-authorship is likely to emerge, retreat and reemerge in response to a individuals' perception of context but also that self-authored ways of knowing can be split into processes of reasoning and acting (Pizzolato, 2007a). Reasoning consists of the ability to cognitively make sense of a situation and how it impacts the internally defined self. Action involves behaving in ways that are consistent with this understanding. When threatened, students may engage in the reasoning that is characteristic of self-authorship but not the associated action. Action requires not only the ability to reason in self-authored ways but the belief that the cost of acting in accordance with this identity will not outweigh the benefits. Reintegrating reasoning and action requires support and guidance that helps students to see possible ways to act in a new environment in ways consistent with already existing internal foundations.

Taken as a whole, this research indicates that the development of self-authorship is cyclical in nature and follows multiple, complex and nuanced paths. Self-authorship may emerge early in response to life circumstances, may exist as reasoning and action depending on support and threat and may result from foregrounding of one aspect of development over others. In spite of these subtleties, certain elements remain constant in the evolution of self-authored ways of knowing. Individuals must develop and trust an internal voice, use this voice to create an internal system of beliefs and then move from voicing this system to living and enacting it (Baxter Magolda, 2008).

Summary

Modern definitions of medical professionalism and the associated learning outcomes have shifted the focus of medical education from providing students with the skills and knowledge necessary to be physician to fundamentally transforming the way students view and use knowledge, how they interact with others and how they view themselves. In defining medical professionalism and the associated learning outcomes, medical education is seeking to help students acquire an identity that encompasses the specific ways of thinking, acting and interacting used by doctors in the practice of medicine. Two bodies of literature are useful in considering the developmental nature of this transformation and the contexts that support the acquisition of a professional identity. Sociocultural perspectives on identity and identity construction focus on identity as the process of being recognized as a specific type of person in specific contexts. Individual's identities are connected to performances in social settings and the ability to engage in the ways of thinking, acting, speaking and being associated with a community. This research

provides a lens through which to consider the interactional and institutional forces shaping students' development of a professional identity. Constructive-developmental theory and the concept of self-authorship provide a framework through which to examine the transformation of students' forms of meaning making as they move through medical school, develop medical professionalism and construct a professional identity. Constructive-developmental theory and the concept of self-authorship focus on individual's active interpretation of experience in order to make meaning and learn. They allow consideration of the interrelatedness of the cognitive, interpersonal and intrapersonal domains of development and the unique elements of medical professionalism including engaging in self-directed learning, constructing and operating from an internally defined system of belief and creating and sustaining mutual relationships.

CHAPTER THREE

METHODOLOGY

The broad goals of this study were to understand how the development of medical professionalism and the construction of a professional identity evolve over time and to identify factors that mediate and promote this developmental process. In order to accomplish this, it is necessary to identify and describe the structures that medical students use to organize their meaning making and the ways in which these structures contribute to the learning outcomes associated with medical professionalism and the construction of a professional identity. Inherent in these goals are two broad assumptions. The first assumption is that reality does not exist outside or separate from individuals' experiences and people's actions are not a simple representation of reality. Rather, reality is an active construction that results from people composing, processing and making sense of an experience. Second, people come to and interpret experience through the lens of specific meaning making structures. These meaning making structures can only be understood by learning how people make sense of an experience and exposing the knowledge constructions that support their organization and interpretation. The study design best suited to meet the goals of this project is a case study design employing a constructivist methodology.

Although case studies are prevalent in educational research, definitions of case study design vary widely. Case studies have been described simply as providing a slice of life or as thorough examination of an issue or event. Case studies are used to follow the experience of single individuals, to describe and analyze the experiences of cultural

groups in specific contexts or to describe and analyze specific programs, practices or interventions. In defining case study as a research strategy, Yin (2003) identifies scope and technical characteristics as the most important elements that differentiate case study from other research approaches. A case study investigates a complex, contemporary phenomenon within its real life, bounded context. In attempting to do this, a case study relies on multiple sources of evidence and data that converge to provide triangulation and illuminate the issue under study (Yin, 2003). Through intensive examination of a defined and limited context, case study design allows the researcher to gain an understanding of the situation and meaning for those involved (Merriman, 2001). The end product of a case study is rich, thick description of the system being examined. This complete and literal description serves to illustrate the complexity of a situation by focusing on multiple, contributing factors while remaining grounded in the experience of the participants. In this way, case study design provides an intensive, holistic and lifelike description of a phenomenon. This description can then be used to construct an interpretative portrayal of the context and participants. As a result, case study design is heuristic in nature and seeks to arrive at new understandings and explanations of a problem or situation (Stake, 2000). This study was framed to understand the structures medical students use in meaning making, the evolution of these structures during medical education and the contribution of these structures to the complex learning outcomes associated with medical professionalism. The complexity of these processes and contexts called for a case study design.

The specific methodology employed in a case study is driven by the theoretical orientation of the project itself. In keeping with the constructive-developmental framework which allows for consideration of the growth and transformation of individuals' forms of meaning making over time, this case study employed a constructivist methodology. As described by Charmaz (2006), a constructivist methodology uses members' experience as the starting point for inquiry and then pursues an understanding of how members construct that experience. As a result, constructivist inquiry differs from other paradigms in three significant ways (Guba & Lincoln, 1989). First, it assumes multiple, socially constructed realities devised by individuals attempting to make sense of experience. These constructions are continually revised and altered and "truth" is a matter of developing better informed and more sophisticated constructions. Second, because there is not a single objective reality but rather multiple socially constructed realities, constructivist inquiry views data as created in the interaction between researcher and participant. As a result, it is impossible for the researcher to stand objectively apart from the research process and findings. The values of the researcher and participants alike must be acknowledged and the influences these values exert on data construction must be recognized. Finally, inquiry must be conducted in such a way that it will reveal the constructions of participants and lead to successively better joint understandings of these constructions. This type of inquiry must use methods that will allow the researcher to enter the phenomena under study, gain multiple views in order to expose constructions and then situate those constructions within a larger context.

Guba and Lincoln (1989) describe four criteria that a constructivist methodology must meet in order to expose constructions and lead to better joint understandings. The first requirement is that the study be conducted in the setting the researcher is seeking to understand. If multiple realities exist and each is influenced by the context of the individuals constructing them, these constructions can only be seen in the context in which they are created. Second, a constructivist methodology must employ highly flexible and adaptive instruments. Because individuals make meaning, researchers may not know exactly what issues are relevant in a given situation. The instruments used to illuminate and understand meaning making structures must be flexible enough to discern what is salient to participants and help the researcher focus on those elements. Third, methods used for data collection must be those best suited to gaining deep insight. For this reason, methods such as interview and observation, which allow collection of a range of verbal and non-verbal data, are primary methods in constructivist inquiry. Finally, constructivist inquiry relies upon the use of tacit knowledge. Tacit knowledge is defined as all that we know minus all that we can say (Polanyi, 1964). Tacit knowledge consists of informed judgments and understandings, which although they cannot be specified, help the researcher to identify what might be relevant in a situation or context. In this way, tacit knowledge provides an important starting point for constructivist inquiry. These assumptions and requirements formed the foundation for the methodology of this study.

Study Context

This study was conducted at the University of Arizona College of Medicine, Tucson Campus which is a part of an urban, Research I university located in Tucson, Arizona. The College of Medicine was established in 1967 and is considered a relatively young medical school by national comparison. While the College of Medicine is the only medical school in the state, a second campus in Phoenix was created in 2007. Admission to the University of Arizona College of Medicine is open to residents of all states but because this policy has only been in effect since 2009, the student body is composed primarily of state residents. Each year, 119 students gain admission to the Tucson campus of the College of Medicine resulting in a relatively small student body. As students move through the educational program they may take a leave of absence for personal reasons, temporarily leave the medical program to complete requirements for dual degree programs such as MD/MPH, MD/PhD or MD/MBA or repeat a year due to academic difficulty. As a result of this fluidity within classes, enrollment in a given class sometimes drops as low as 100 students or increases to excess of 125 students.

In recent years, the number of women accepted into each class has increased to the point that the number of women enrolled in most classes is equal to or slightly higher than the number of men. For the past fifteen years, the University of Arizona College of Medicine has worked to accept a class that reflects the diversity of the state. This diversity can be seen in the ethnic and racial backgrounds of the student body, the age range of the students in each class, and the academic and professional experiences represented in each class.

The curriculum at the University of Arizona College of Medicine is a four year curriculum. The first two years, commonly referred to as the basic science years, are designed to introduce students to the scientific principles of health and disease. The curriculum during these two years consists of 9 blocks which vary in length from 1 week to 12 weeks. Each block focuses on one or more organ systems or topics. Content from all relevant disciplines including anatomy, histology, physiology, pathology, pharmacology and embryology are integrated into the block. The integrated block curriculum, which is used by most medical schools in the United States, was not introduced at the University of Arizona College of Medicine until 2006. As a result, it is still relatively new and the process of revision and change is on-going.

During the first year, students complete six blocks: Prologue, Foundations, Nervous System, Musculoskeletal System, Cardiovascular, Pulmonary and Renal Systems, and Digestion, Metabolism and Hormones. Prologue is designed to introduce students to the culture of medicine and the demands of the medical profession. Foundations presents basic concepts such as histology, immunology, pathologic processes and principles of pharmacology that are necessary for understanding information presented in future blocks. Nervous System and Musculoskeletal System are the first blocks in the curriculum devoted to the study of specific organ systems. These blocks present the normal structure and function of these two systems as well as pathologic processes specific to them. The Cardiovascular, Pulmonary and Renal Systems block presents the basic structure, function and pathology of these organ systems and provides students with their first encounter with multisystem function and pathology.

The Digestion, Metabolism and Hormones block presents the structure, function and pathology of the gastrointestinal and endocrine systems and also presents concepts of metabolism and nutrition.

During the second year, students complete three blocks: Infection and Immunity, Life Cycle and Advanced Topics. Immunity and Infection provides a detailed look at immunology and microbiology including concepts related to immunobiology, bacteriology, virology, parasitology, mycology and mechanisms of antimicrobials. The Life Cycle block presents information related to the structure, function and pathology of the reproductive system. This block also provides students with their first experience with the organism as a whole as it also focuses on the life span from conception through death. As a result, students have their first in-depth encounters with topics such as growth and development, sexuality, and death and dying that are essential to the practice of medicine but are not "hard" sciences. Advanced Topics is the final block of the first two years and is designed to begin the process of transitioning students from the basic science years to the clinical years. It presents information related to complex, multisystem function and disease, clinical reasoning and patient care.

In addition to the blocks, all students participate in the Societies program during their first two years of medical school. This longitudinal program is designed to introduce students to patient interaction and care early in their medical education and to provide the opportunity for students to apply basic science knowledge being learned in the blocks in a clinical setting. Groups of five students are assigned to a clinical mentor. The groups meet once a week throughout the first two years to learn and practice clinical skills

including how to take a patient history and conduct a physical exam. In addition, students and mentors work with patients in the hospital to practice specific skills related to the content of each block. For example, during the Nervous System block, students and mentors visit hospitalized patients with neurological complaints. Students then have the opportunity to conduct neurologic examinations on these patients under the supervision of their clinical mentor. Students' skills are periodically evaluated through structured clinical exams during which students take a history and conduct a clinical exam on a standardized patient who is trained to portray a specific patient complaint and rate students' performance based on whether or not they asked appropriate questions and conducted an appropriate exam. In addition to helping students learn clinical skills, mentors are also responsible for working with students on issues of professional development. Students and their mentor meet one or two times during each block to discuss topics such as ethics, physician self-care, professional boundaries, dealing with authority and stress management.

The curriculum in the first two years utilizes three different teaching modalities, each of which is designed to help student engage actively in their learning and develop different skills related to the practice of medicine. The first of these modalities is Interactive Lecture. Like traditional lecture, Interactive Lecture is used to present large volumes of content efficiently. Throughout the lectures, faculty are encouraged to employ a variety of interactive methods including Think-Pair-Share, case studies and short discussion prompts in order to help students to apply what they are learning and allow them to evaluate their developing knowledge base.

The second teaching modality used in the curriculum is Case Based Instruction (CBI). CBI is modeled after Problem Based Learning and is designed to engage students in independent learning and problem solving. Under the guidance of a facilitator, a small group of students is presented with a patient case. Students work cooperatively to identify what they need to learn and what resources they are going to use to accomplish their learning goals. During the discussion, the group facilitator acts as a guide encouraging collaboration, helping students to refine questions, prioritize learning issues, or when necessary, suggesting alternative directions the group might consider. Between case sessions, students engage in independent research to address their learning issues and answer the questions they have developed. During a subsequent case discussion, students have the opportunity to apply what they have learned during their self-directed study to the case and consequently to evaluate and revise their initial conclusions. The final teaching modality used during the first two years of the curriculum is Team Learning. Team Learning is designed to provide students the opportunity to work closely with a team of peers to apply knowledge and solve complex, real-life problems.

Upon completion of the first two years of medical school, all students are required to take Step 1 of the United States Medical Licensing Examination (USMLE). Step 1 tests content taught in the first two years of medical school and is designed to ensure mastery of not only the sciences that provide a foundation for the safe and competent practice of medicine, but also the scientific principles required for maintenance of competence through lifelong learning. This exam is the first in a series of three national exams that students must take throughout their undergraduate and graduate medical

education in order to first graduate from medical school and then become licensed to practice medicine. Success on the exams that are administered as a part of the blocks is strongly correlated with success on USMLE Step 1.

The third and fourth years, referred to as the clinical years, engage students in learning about the practice of clinical medicine in highly supervised settings. During their third year, students complete five required clerkship blocks: Transition, Obstetrics/Gynecology/Surgery, Family Medicine/Pediatrics, Internal Medicine, and Psychiatry/Neurology. Transition is a two week block that is designed to introduce students to the clinical environment and provide information essential to all future rotations such as how to present a patient history and how to access patient records. Each subsequent block consists of two five week periods each focused on one specialty. Students spend five weeks learning and working with physicians and residents in outpatient clinics and hospital settings and attending didactic sessions. Late in the third year, students have one elective period during which they are allowed to schedule a rotation in the specialty of their choice, at a location of their choice. This elective provides students with an opportunity to explore areas of specialty they are considering before they begin planning their fourth year. At the end of the third year, all students are required to take and pass Step 2 of the USMLE. Step 2 is designed to test students' ability to apply medical knowledge, skills, and understanding of clinical science essential for the provision of patient care under supervision. Passing Step 2, like Step 1, is a requirement for graduation and eventual licensure as a physician.

The fourth year consists of two required clerkships in Emergency Medicine and a surgical subspecialty. After completing these required rotations, the remainder of the educational program consists of electives. During this time, students pursue additional hours in clerkships related to future specialties, complete international rotations, engage in research and gain more intensive clinical experience during sub-internships. The fourth year is designed so that each student can gain the specific experience necessary to pursue the specialty of his/her choice and be prepared for the requirements of his/her chosen residency program.

Summary

This study was conducted at the Tucson campus of the University of Arizona College of Medicine. The curriculum in which students participate is a four year curriculum. The first two years are designed to teach students about the scientific principles of health and disease and provide training in basic clinical skills including taking a patient history and conducting a physical exam. During these two years, students participate in nine integrated blocks, each of which focuses on the function of one or more organ systems. In addition to the blocks, students participate in the Societies program, a longitudinal program in which students learn basic clinical skills under the direction of a physician mentor. The curriculum in the first two years uses three different teaching modalities: Interactive Lecture, Case Based Instruction and Team Learning. Each teaching modality is designed to help students engage actively in the learning process and develop a variety of skills related to the practice of medicine. The third and fourth years of the curriculum engage students in the learning about the practice of

clinical medicine in highly supervised settings. During the third year students complete five required clerkships. The fourth year consists of electives during which students explore specialties of interest, conduct research and gradually assume more clinical responsibility.

Research Participants

The goal of this study was to gain insight into and understand the developmental transformations associated with medical professionalism. In order to accomplish this goal, it was essential to select study participants from which the most could be learned. For this reason, this study employed purposeful sampling. According to Patton (1990), purposeful sampling provides the researcher with the opportunity to select information-rich cases that will provide deep insight into the issues central to the purpose of the study. Building a purposeful sample begins with the identification of essential attributes for participants. These attributes must directly reflect the purposes of the study because they become the criteria used for selecting participants.

Because the goals of this study were to understand how professionalism unfolds over time, identify factors that mediate growth toward professionalism and experiences that promote the development of professionalism, the first criterion was that the participants represent widely varying instances of the experience of medical education. According to Glaser and Strauss (1967), this diversity is particularly useful for identifying shared patterns that cross widely varying cases. For this reason, selection of study participants sought to ensure maximum variation. Using an approach to ensure maximum variation among participants involves first considering the potential population

in order to carefully assess the range of individuals and experiences represented in the group (Seidman, 1998). Study participants were selected to represent all phases of medical education from entering first year students to students completing their fourth year and preparing to enter residency. In addition, participants were selected to represent the broadest possible range of backgrounds and experiences within each class. In order to accomplish this, an e-mail was sent to all members of the student body explaining the goals of the research project and soliciting participants who felt they represented some aspect of the diversity of the class or medical school student body. Using a form of snowball sampling, (Merriman, 2001), students who identified themselves and agreed to participate in the study were then asked to identify other students whom they considered to be representative or information rich cases for the study. These students were then approached and asked to participate in the study. This snowballing process continued until a form of saturation was reached and students identified were already participating in the study or were not interested in participating.

The resulting sample consisted of thirty two student participants. Brief profiles of each student are provided in Appendix A. Twelve students enrolled in the study during their first year of medical school. Eight students enrolled in the study as second year students. Six students enrolled in the study in their third year of medical school and six students enrolled in their fourth year of medical school. The group consisted of 13 women and 19 men and included one African American student, five Hispanic students, two Native American students, two Asian American students and twenty three Caucasian students. In addition to the racial and ethnic diversity of the sample, student participants

represented a wide range of personal, educational and socioeconomic backgrounds. The majority of the participants were from Arizona and had grown up in the urban centers of Tucson and Phoenix. Five of the students grew up in rural communities throughout the state. Four students were born in other countries and came to the United States as children. While several of the participants had family members who had completed graduate or professional education, five identified themselves as the first in their family to earn a college degree. Ten of the student participants were married, and four of the participants have children.

The participants also represented widely varying educational experiences. Since an undergraduate degree is a requirement for admission to the University of Arizona College of Medicine, all had completed a bachelor's degree. The majority of the participants had obtained their degrees from one of the three state universities. Six of the students had attended colleges or universities outside of Arizona. The majority of the group held science degrees with majors in a variety of disciplines including biology, chemistry, biochemistry, physics, physiology and biomechanical engineering. Other participants held degrees in the humanities or social sciences with majors including psychology, Latin American Studies, Public Health, English, Marketing, Theater Arts and Hotel and Restaurant Management. Four of the participants had completed Master's degrees and one had completed a doctoral degree prior to entering medical school.

In addition to the various educational experiences represented by the participants, students had widely varying experiences prior to entering medical school. Only eight of the participants entered medical school immediately upon completion of their

undergraduate degrees. Other students completed graduate degrees, participated in service organizations such as Teach for America or the Peace Corps, worked in various fields including social work, research, sales, and teaching. Four of the participants served in the military in a variety of capacities including the National Guard, the Air Force, Marines, and Army Special Operations. Six of the participants worked in pre-hospital patient care settings as Emergency Medical Technicians or paramedics. Only two of the group had worked in clinical settings prior to entering medical school. One of these worked as a registered nurse in an intensive care unit and one as a respiratory therapist in an in-patient setting.

The group also represented the varying experiences students have as they progress through their medical education. One student entered medical school upon completion of the College of Medicine's Post-Baccalaureate program which provided an extra year of basic science curriculum in order to prepare students with weak academic records to adjust to the academic demands of medical school. Two participants had repeated the first year of the medical school curriculum due to failure in one or more blocks. Eight students had been required to take retake examinations or to participate in summer remediation of course work due to unacceptable performance in blocks in the first two years the curriculum. Four students required two or more attempts to pass Step 1 of the USMLE and two students required two attempts to pass Step 2 of the USMLE. Seven students were in the top 10% of academic achievement in their class. Four students were enrolled in the MD/MPH program and were completing an additional year of graduate study in addition to the requirements for the MD degree.

Selecting participants who represent the varied individuals and experiences at University of Arizona College of Medicine and different points on the continuum of medical education allowed construction of what Stake (2000) calls a collective study. In a collective study, individual cases are examined in order to facilitate an understanding of a larger issue. Examination of these multiple cases that represent a cross section of experience provided insight into the developmental transformations associated with medical professionalism. By engaging in an analysis across the collective group of cases, it is possible to build general explanations of the larger phenomena. Considering processes and outcomes across the collective cases allows the researcher to understand complex configurations within cases as well as identify and explain patterns that transcend cases (Yin, 2003).

In order to ensure appropriate protection of the participants, this project was reviewed and approved by the Institutional Review Board at the University of Arizona before participants were recruited. Before starting their first interview, all participants were informed of the goals of the study, study procedures and procedures for maintaining participants' confidentiality. All participants provided informed consent. When data analysis was concluded, each participant selected a pseudonym that was then used to replace his/her name when the findings of this study were reported. Because of this qualitative nature of the study and the small population from which participants were drawn, some personal indentifying information was relevant in reporting the findings. This information was reviewed with the participant and permission to include such details was granted. A copy of the consent form is included in Appendix B.

Data Collection

The discussion of constructive-developmental theory and the development of self-authorship demonstrates the complexity of collecting data that will be provide useful information related to how students make meaning and interpret experience. The inherent complexity of this task made the use of semi-structured, responsive interviews the most appropriate method for collecting data for this study. The semi-structured nature of the interview allows participants to choose the content and context of the interview and share their insights and reflections. As a result, it is particularly useful for eliciting their substantial experience, unique forms of meaning making and their subjective experience of the world (Baxter Magolda & King, 2007). The responsive nature of the interview recognizes that interviewer and interviewee are engaged in a conversation to construct meaning. The researcher is able to respond to the participant and ask further questions about what she hears rather than relying on predetermined questions which might limit participants' engagement. In this way, the semi-structured interview allows the researcher to extend and explore participants' responses and help them to reconstruct their experiences (Seidman, 1998).

Each participant engaged in a series of two interviews that occurred over the course of one year of their medical education. Literature related to the development of self-authorship indicates the importance of "provocative" experiences in promoting the growth and transformation of forms of meaning making (Baxter Magolda, 2004b; Pizzolato, 2005). For this reason, interviews occurred at significant periods during students' medical education. These significant periods were identified based on my

experience with medical education and literature related to professional socialization of medical students. The twelve participants who began the study as first year medical students completed their first interview at the end of their first semester in medical school. When these interviews were conducted, these twelve students were nearing the end of the Nervous System Block. At this time, students not only have well formed expectations about their training and future careers but they have also begun to experience the reality of medical education. The Nervous System Block is widely recognized by students as the most difficult block of the first two years. As a result, it is viewed by students as a "make or break" experience. If students successfully complete this block, they are confident that they will be able to meet the academic demands of medical school. If they struggle or fail the block, their academic ability is called into question. The second interview with these participants took place approximately one year later at a time when they were accustomed to "being a medical student" and had completed seven of the nine blocks. The first two years, the portion of medical school that is considered to be most difficult, was almost behind them. While they were now accustomed to the challenges of the basic science years of medical school, they were also facing new challenges in the form of planning for clerkships and preparing for Step 1 of the United States Medical Licensing Exam.

For the eight students who began the study as second year medical students, the first interview took place during the fall semester of their second year. This is a period during medical education when students are accustomed to the demands of medical education but are facing new challenges in the form of planning for clerkships and

preparing for the first part of the medical licensure exam. The second interview with this group of students took place near the end of their second year as they transitioned from the basic science portion of their training into the clinical portion of their training. These students had completed Step 1 of the USMLE and begun their first clinical rotation. This is a time of great excitement for students as they move into an entirely new educational context and begin what they see as their "real" medical education. It is also a time of great stress and anxiety as they await scores on Step 1 and adjust to a new set of academic demands.

The six students who began this study as third year students completed their first interview immediately after finishing their first block of clinical rotations. Clinical rotations are widely regarded as the first "real" experience in medical school and completing a rotation is seen as an important rite of passage. The second interview with this group of students took place late in the spring semester of their third year when they had completed almost all of their required clerkships, their first elective rotation and are beginning to plan their 4^{th} year. The 4^{th} year is a time when students have greater freedom to select and schedule rotations and planning for this year and making decisions about electives and rotations is considered an important step in making choices about residency and future specialization.

The first interview with the group of student who began the study as fourth year students took place late in the fall semester at a time when they were completing their applications for residency, beginning to interview for residency positions and considering their future careers. During this time, most students are making important choices about

what specialty they want to pursue and what residency program they want to participate in. The second interview with fourth year students took place in the spring, after they had completed the residency application process and received results from the National Residency Match Program. At this point, students knew where they would be doing their residency and were beginning to consider life as a doctor.

The structure of the interviews used in this study was based on the self-authorship interview (Baxter Magolda & King, 2007). This interview is loosely divided into three segments. These segments are designed to give participants the freedom to identify relevant content while still eliciting information about the conditions which foster development and transformation. As such, each segment has a specific focus but questions are not pre-determined. Instead, they are developed in the course of the conversation in order to give participants maximum freedom to respond and share experiences they feel are relevant. The three segments loosely follow the three phases of Seidman's (1998) in-depth phenomenological interview. The first segment of the interview was designed to provide a focused life history and place the participants' experience in context. This is accomplished by encouraging the participant to describe him/herself with regard to the topic of interest (Seidman, 1998). For this study, the opening segment of the interview focused on students' entering characteristics and how these effect development and transformation related to medical professionalism. The initial segment of the interview invited participants to share their background prior to entering medical school or beginning their current phase of training. This included expectations they brought to their current year in medical school and the extent to which

these expectations matched their experience. During this segment of the interview, my role was to ask for clarification and elicit meaning making with conversational prompts such as, “Help me understand more about that.” or “How so?”

The second phase of the interview was devoted to specific elements of participants’ present experiences (Seidman, 1998). This portion of the interview explored educational experiences that students regard as key to their development toward medical professionalism and why these experiences are relevant. This segment of the interview sought to understand how students make meaning of these experiences in order to move toward self-authorship and achieve the learning outcomes associated with medical professionalism. This segment of the interview did not introduce medical professionalism or self-authorship but instead encouraged students to identify and discuss meaningful experiences during the latest phase of their medical education. I sought to engage students in a conversation asking them to describe the experience, explain how they made sense of it and discuss how the experience affected the ways they decide what to believe, their view of themselves or their relationships with others. Strategies for helping students reflect on their experiences included asking about challenges or dilemmas they have encountered, best and worst experiences, conflicts and pressures they have encountered and interactions with people different from themselves. Probes were used to help maintain the focus of this segment of the interview on how students have come to understand these experiences. This provided a way of accessing participants’ meaning making structures.

The third and final segment of the interview was devoted to helping participants reflect on the meaning of their experiences (Seidman, 1998). This part of the interview encouraged participants' synthesis of their experiences and meaning making. I provided a summary of key content of the interview and encouraged participants to explore the experiences as a collective whole in order to consider what they are taking away from the period discussed in the interview. Methods for helping students with this task included asking them to explore how their experiences have shaped what they believe, who they are or how they relate to others; insights gained from their collective experience; implications of their insights; and how experiences during this time period have helped them to consider the next phase of their education. Each subsequent interview followed largely the same structure. These interviews, however, began with a summary of the previous conversation and an invitation to participants to identify important insights or experiences they may have had since the last interview. The three segments of the interview and questions used in each of these segments are included in Appendix C.

Data Management

Although a qualitative study of this nature, framed within a constructivist paradigm, acknowledges multiple, socially constructed realities, it is still essential to use a variety of techniques to establish a level of confidence that the work accurately represents the meanings and realities of the participants (Leitz, Langer and Furman, 2006). Guba and Lincoln (1989) have conceptualized the accurate representation of participants' meanings as trustworthiness which can be achieved through defined procedures and strategies that assist the research in managing reactivity and bias. The

strategies used to enhance the trustworthiness of this study's findings included prolonged observation and member checking (Guba and Lincoln, 1989).

Prolonged engagement and observation is a process that engages the researcher in the field for an extended period of time and allows repeated observations in a variety of contexts. Such engagement allows the researcher to build trust and establish rapport with participants in order to help them feel comfortable disclosing information (Creswell and Miller, 2000). In addition repeated observations in a variety of settings over an extended period of time allowed for the comparison and contextualization of interview data and observational data. Settings for observations were identified during interviews and during the initial stages of data analysis using the principles of theoretical sampling (Charmaz, 2006). These settings were consciously selected based on their potential for building rapport with participants, expanding, elaborating and refining insights and more fully understanding participants' actions and intentions in various contexts. Observations were conducted in a variety of educational and social settings including lectures, small group sessions, clinical visits with mentors, block exams, student study groups and the student lounge.

Member checking, the other strategy used for establishing trustworthiness of the findings, consists of taking data and interpretations back to the participants in the research thus providing them with the opportunity to confirm the accuracy and credibility of the findings. Both formal and informal member checks were conducted throughout the research process. Tentative interpretations and explanations were checked with participants through brief conversations during observations, through e-mails and at the

beginning of the follow-up interview. Later, when tentative findings and conclusions had been developed, groups of participants came together and were given the opportunity to review findings and conclusions. Participants were asked whether categories made sense, whether they were developed with sufficient evidence and to challenge the accuracy of the work. Member checks further contributed to the prolonged engagement and observation as they also provided additional interaction with participants in an informal setting, provided additional suggestions for observation and assisted in the ability to reach saturation of the data.

Data Analysis

Analysis of data for this study was an inductive process guided by a constant comparative method (Glaser & Straus, 1967). The basic strategy involved on-going comparison of units of data in order to construct categories. Through the comparison of units or segments of data, it is possible to come to some understanding of what participants see as important or problematic and treat these categories analytically (Charmaz, 2006). This process began while I was transcribing interviews. During the transcription process, I tried to remain aware of not only the content of what participants were saying but also participant actions, tacit assumptions and repeated utterances. As I transcribed, I wrote brief memos to identify potential categories.

After all of the interviews had been transcribed, I read the first transcript engaging in detailed coding of interviews. This process involved reading each interview and identifying discrete units of meaning that identified a theme or concept or appeared relevant or important to research questions. Each unit was given a label that characterized

or categorized that piece of data. As I read, I kept a list of each label that had been assigned and a brief description of the data that had been included in that category. As new units of data were encountered in the interview, they were compared to existing pieces of data included as a part of each label. If the new unit fit into an existing label but added a new dimension, that addition was added to the label description. If the new unit did not fit an existing label, a new category and label were created. The second interview was then read and notes and comments were made as they were for the first interview. These notes and comments were then compared to the categories derived from the first interview. Items from the second interview that matched the existing categories were recorded. Items from the second interview that did not fit an existing category were grouped, assigned a code and recorded. The first interview was then reviewed looking to see if there were any occurrences of the new categories that should be added to the database. This process was then repeated with all interviews. When all data had been reviewed and coded in this manner, categories were grouped according to themes that emerged. These themes were then used to address the research questions. Through this constant comparative process, conceptual elements of the categories emerged that provided description of student's experiences and allowed for interpretation of the data.

CHAPTER FOUR

FINDINGS

BECOMING DOCTORS: STUDENTS' JOURNEYS TOWARD MEDICAL PROFESSIONALISM

While the journey toward medical professionalism and the construction of a professional identity varied in composition, form and pace for each of the participants in this study, three phases in this journey consistently emerged from participants' descriptions of their experiences. The first phase, *a world out of balance*, was prevalent during the first two years of students' medical education. Prior to entering medical school all of the participants had developed some form of individual identity as a result of their undergraduate experience or through experiences after college such as work, military service, or graduate school. In addition, they all recognized that they were embarking on a journey to create a new identity as a doctor and a professional. In spite of this recognition, they lacked an understanding of the integrated identity associated with medical professionalism and the ways of thinking, speaking and acting required for this identity. As a result, they relied instead on formulas and external definitions as they worked to build this identity. These formulas were acquired from their years spent as pre-medical students working to achieve the goal of admission to medical school and the medical school curriculum. While students were relieved and excited to finally begin their journey, they quickly became overwhelmed and frustrated as they tried to meet all of the externally defined goals and expectations they encountered in medical school. They expressed a need to achieve balance and maintain multiple parts of themselves but

were unable to do this in their new environment. Failure in some aspect of their lives brought them to the next phase of their journey, *identifying the goal*.

Having realized the magnitude of the task they faced and experienced the frustration of trying to achieve external goals, students in this phase of the journey began the process of identifying and setting personal, internal goals and taking control of choices related to how to learn, interact and be as a person and a professional. As they began to make these choices, they turned to a variety of sources to understand how to be a doctor including more advanced peers and more consistent interactions with physicians in clinical environments. This process of setting internal goals, taking control and making personal choices exposed them to multiple, complex ways of knowing, being and interacting but also brought to light the constraints that students experienced as a result of their educational environment. While they worked to engage appropriately in the activities and ways of being a physician, they were limited by the evaluation they faced and some of the contexts in which they were functioning. In spite of these limitations, students in this phase of their development continued to engage in sometimes random, sometimes systematic attempts to understand what was expected of them, set goals related to these expectations and develop effective strategies to achieve success in all aspects of their lives. This process of regaining control, growing time for reflection on these complex ways of being and increased opportunities for continuous, authentic participation in a variety of contexts led to the final phase of their journey during medical school, *bringing the self into focus*. For most students, this phase occurred during the later part of third year and throughout fourth year. During this phase, students had

consistent opportunities to engage fully as members of a professional community and as a result were able to see and participate in multiple, complex ways of being a professional. Using these experiences as building blocks, they were able to solidify internally constructed goals and independently determine how best to achieve them. Working from these internal perspectives provided students with additional opportunities for reflection, revision and further development as professionals.

Like other research related to the development of self-authorship and adult identity, interviews with students revealed that the dimension of knowledge, others and self play an important role in the development of medical professionalism and the construction of a professional identity. In addition, as these students moved through the three phases of their development during medical school, each of these dimensions underwent qualitative changes that contributed to the development of medical professionalism and the evolution of an integrated professional identity. This allows students to use an internally defined system for making decisions, to independently apply knowledge in an infinite number of circumstances, critically evaluate the outcomes, achieve an awareness of self and a deeper understanding of interactions with others and develop their own plans for growth and improvement as a professional. Table 1 provides an overview of these three phases of development and the dimensions of knowledge, self and others.

Table 1: *The Journey toward Medical Professionalism and an Integrated Professional Identity*

	A World Out of Balance	**Identifying the Goal**	**Bringing the Self into Focus**
Learning Environment & Driving Concerns	• Greedy Institution • Homogenization • Lack of balance • Focus on following formulas and achieving external goals	• Assuming responsibility and control • Defining goals and methods for achieving them • Awareness of constraints and limitations	• Opportunity to function as a member of the team • Exposure to multiple ways of being • Self-reflection
Epistemological Dimension: What do doctors know? How do doctors use knowledge? How do I know?	• External sources define and provide knowledge • Knowledge is vast, detailed and most be complete • Fluency • Knowing and doing are separate	• Fluency vs. familiarity • Building frameworks to identify what you don't know • Using knowledge	• What do I know? • How do I use knowledge? • Applying knowledge in context • Creating knowledge to meet a purpose • Tacit knowledge
Interpersonal Dimension: How do doctors interact? How do I interact with others?	• Us and them • Dominated by doctor's perspective	• Awareness of and interest in other perspectives • Multiple ways of achieving a goal • Working around other perspectives	• Learning about and understanding others • Respecting other realities • Staying true to self while meeting other's needs
Intrapersonal Dimension: Who am I? What does it mean to be a doctor? What kind of doctor do I want to be?	• Self is absent • Being a doctor is about following formulas and meeting external goals • Who I am = What I do • Self is defined by external elements	• Awareness of self • Setting own goals • Self constrained by environment	• Focus on multiple ways of being • Defining self • Standing apart from and reflecting on experience

The first phase of students' development – *a world out of balance* – was dominated by a focus on knowledge and questions related to what doctors know, how they know, how doctors acquire knowledge and how they use knowledge in the service of patients. Others were seen only in contrast to students and interactions were dominated by students' need to achieve their goals and advance their perspective. While students described this phase as a very self-centered time, the self and perceptions of the self in relation to others changed very little. During the second phase – *indentifying the goal* – the emphasis on knowledge lessened as students' began to question external goals and acknowledge the multiple elements that contributed to being a doctor and the multiple ways of achieving and enacting these elements. As their contact with patients and individuals outside of medical school increased, students began to acknowledge a variety of perspectives and sought opportunities to learn about others different from themselves. This growing awareness of diverse goals and world views led to an increasing focus on the self but also highlighted the constraints of the educational context in which these students were functioning. In the final phase of development seen in this study – *bringing the self into focus* – the self emerged and became the driving force behind the growing integration of knowledge, others and self and students' construction of complex, coherent, professional identities.

Throughout their journey, these students existed in powerful institutional, extra-curricular and personal contexts. Observations of students in these contexts demonstrated they ways in which institutional expectations and interactions with faculty, peers and mentors contribute to or prevent students from acquiring the discourse associated with medical professionalism and the identity of physician. During the first phase of their journey – *a world out of balance* – the classroom settings in which students spent much of their time reinforced the perception that

acquisition of knowledge was a key element of a physician's identity. As students moved into the second phase of their journey – *identifying the goal* – they had more exposure to the discourse associated with being a physician. Engagement in and acquisition of this discourse was limited by evaluation, particularly the high stakes exams which controlled students' progression through this part of their education. In the final phase of their journey – *bringing the self into focus* – students were immersed in the activities of being a physician. As they moved forward they were not only able to practice the ways of speaking, thinking and valuing associated with being a physician, they were able to stand apart from and reflect on these practices. This allowed students to consider how to incorporate these elements as a part of their identities as physicians.

These contexts also exposed students to a variety of forces including failure, opportunities for independence, exposure to multiple perspectives, interactions with diverse and complex patient problems and opportunities for full participation in a community of practicing physicians. These forces operated as important catalysts for students and served to propel them to seek out additional opportunities and moved them forward on their journey toward medical professionalism and a professional identity. Figure 1 provides an overview of these forces.

This chapter details each of the three phases in these students' journeys as they moved from the identities they had developed prior to medical school toward the construction of a professional identity. It provides a description of the institutional, personal and educational contexts shaping these students' experiences in medical school. It introduces the themes and experiences these students encountered once they had entered medical school, describes their opportunities for engaging in the practices of being a physician and the driving forces that contributed to change and the evolution of their identities during their medical education.

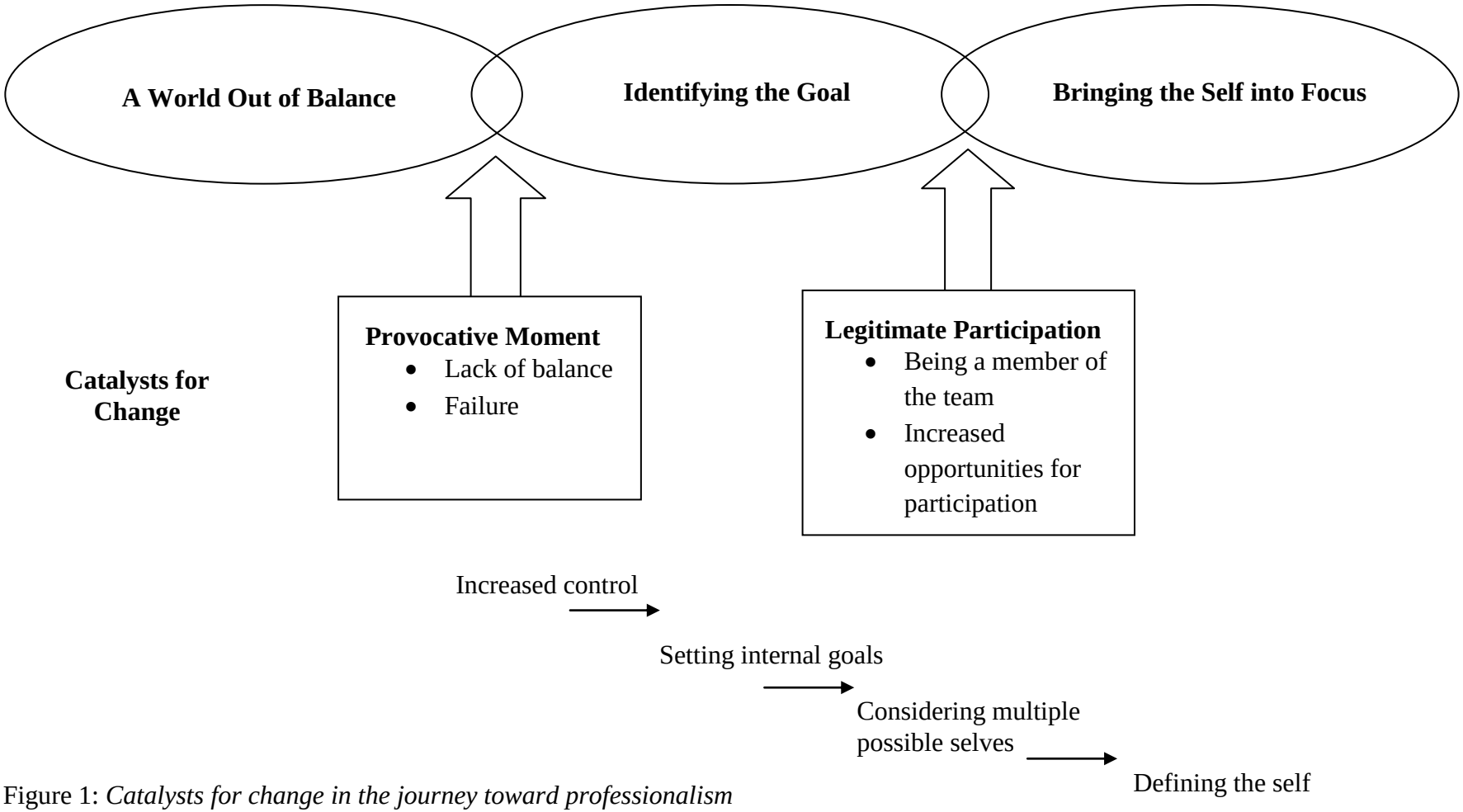

Figure 1: *Catalysts for change in the journey toward professionalism*

A World Out of Balance

The first phase of the journey toward medical professionalism and the construction of a professional identity typically occupied students during the first two years of their medical education. Analysis of interviews, observations, and participation in a variety of academic and non-academic activities revealed a number of themes that characterize the environment and illustrate the context in which these students were functioning and developing during the first phase of their journey toward medical professionalism and the construction of a professional identity.

The Greedy Institution

> In college, school was, I don't know, maybe 20, 25% of my brain and my being. I did other things. I had projects. I had friends. But now, school is like 99%. And then some. I have had to scale down on the projects. On everything. I am a dreamer, a big thinker, but I have to constantly remind myself, this is what I have right now. This is all it is. This is what I've got to do. There isn't room for anything else. Not in my brain, not in the day. (MS, interview MS1, lines 484-492)

Marc's experience of feeling like medical school is the totality of his life provides a description of the environment in which students function during the first phase of their journey. As early as the first day of medical school, students find that they are part of an institution that demands a significant portion, if not all, of their available time. While "time for independent learning and study and pursuit of personal activities" is described in the College's curricular materials, students looking at their calendars for the first time, find that they are expected to attend up to five hours of lecture a day. Up to three afternoons a week are booked with histology and anatomy labs. One afternoon a week, students spend time with their Societies mentor visiting patients, reading articles related to patient problems and completing patient notes. On days when

students have small group activities, optional labs and review sessions fill the "open time" in students' schedules. In addition, while students are told in Orientation that lectures "typically don't begin until 9 am," soon after the start of the first block, Block Directors, citing "very important topics" or faculty schedules, begin changing the calendar so that lectures frequently start at 8 am allowing additional lectures to be added in the now available times slots. By the time students are in the Cardiovascular, Pulmonary and Renal block, the fifth block of the first year, announcements about 8 am lectures are no longer made, the time slot is simply filled. In addition, while lectures are scheduled for 50 minutes in order to allow students short breaks, instructors frequently run over their allotted time citing, "one more important thing" and students are forced to choose between using the restroom and hearing the beginning of the next lecture.

In addition to the time that students are expected to spend in various educational activities, students' feel pulled to participate in a variety of extra-curricular activities including student government, College committees, special interest clubs, student run clinics, community activities and lunch talks. These activities, which occupy much of their time outside of class, quickly displace other activities students' may have had prior to entering medical school. As Christina explained during the first semester of her first year:

> I came to medical school with lots of activities that I had started during undergrad. I was involved in a million different things and it wasn't like I was doing it for the resume. I was really, really involved. I had leadership positions in the community and felt really personally invested in what I was doing. But now, if I want to be here, doing things here, I've had to make a decision and I can't continue that way. If I am going to do things here I have to step back and let go of those other things. I just have to. (KG, interview MS1, lines 236-247)

While students are expected to invest themselves fully in institutional activities, these activities provide few opportunities for students in the early part of their education to participate

meaningfully in activities associated with being a doctor. Participation in community clinics, which would seem to be an ideal context for students to begin to understand the ways of thinking, acting and being associated with being a physician, is quite limited. After completing training sessions during which they learn how to take a blood pressure, draw blood and administer injections, students in the early part of their medical education are assigned duties such as signing patients in, preparing exam rooms and advertising clinics in the community. Opportunities to work with patients or observe physicians performing procedures are limited to students who are at a more advanced stage of their training.

The greedy institution not only requires students to invest their entire intellectual and extra-curricular efforts in institutional activities while providing them with few opportunities to participate, it also requires that they commit time that would otherwise be spent with family or friends outside of medical school. As Erik explained during his first semester, "You don't really see your friends, the ones outside of med school, any more. It's a lot of factors. You have to be focused all the time and step out of your life and really focus just on this. This requires my complete attention. I can't be distracted by people and friends outside of here." (JW, interview MS1, lines 816-819) Even for students with spouses and children, the institution requires their full attention and leaves little time for participation in life outside of medical school. Garrett, a veteran of the Iraq and Afghanistan wars, likened being in medical school to an overseas deployment. "It is very demanding of my time. Fortunately, my wife…when we got married I was in the military and she stayed with me through Iraq and Afghanistan deployments. That kind of led up to, prepared her for, what this is like. You know it is taking so much of my time away.

I'm at school, studying. My time with my family is definitely limited. Not what it was before school." (CL, interview MS1, lines 151-162)

The greedy institution that students describe demands their time, focus, and effort. In doing this, the institution gradually separates students from the family, friends and activities that occupied them and contributed to their identities prior to entering medical school. In this way, the institution contributes to the next theme that describes the environment during this portion of students' experience: homogenization.

Homogenization

Having entered medical school and become a part of the institution, students in the first phase of their journey clearly describe a process of homogenization by which a group of seemingly diverse individuals gradually becomes more and more similar. Over the span of the first two years, this similarity eventually comes to encompass what they know, what educational experiences they have, how they dress and how they socialize. Students acknowledge that the admissions process that brought them into medical school values diversity of all types and that their peers arrived in medical school having traveled multiple, widely varying paths. Upon entering medical school, students are awed by the wide array of experiences their peers bring to medical education. At the beginning of his first year, Zachary described the "typical" medical student as someone who was different from everyone else in the class saying, "Oh, I don't think there is a typical medical student. Everyone is incredible in their own way…I mean, for me, I had military experience. Some have research experience. That sets them apart. From everybody else. I think everybody here has something like that, community service, leadership, family…everybody has something that they can point to that makes them really unique. Maybe

by virtue of their background or whatever it is. But everybody has something." (BV, interview MS1, lines 181-197)

Yet, even as students acknowledge the diversity that exists among their peers, they recognize that they are now with a group of people who share the same goals, skills and dedication. After observing her classmates for a year, Christina described their shared mentality in this way, "We all want to be in the top 5%. We have always been in the top 5% of all our classes. And so it has really been kind of a shock to go from undergrad where you don't really have to work that hard to be in the top to really being with people who care the same amount, who have the same goals, the same work ethic and who have the same competitive spirit that you do. You don't have the slacker anymore…everybody wants to be here, everybody is here for the same reasons and everybody loves being here." (KG, interview MS2, lines 115-120) As Christina indicates, this shared mentality extends beyond academic achievement and encompasses reasons for being in medical school and wanting to pursue a career as a physician. According to these students, with few exceptions, everyone in medical school is here for the same reasons including a love a science, a desire to learn and a passion for helping people. Jeanne described her class as a single "we" with common interests and goals "You know, I didn't imagine us all being so much the same. But it is really nice, we all seem to have the same qualities. We are all hard working, definitely all leaders. I think everyone here has a real love of helping people who are vulnerable or in disadvantaged positions. We all love the opportunity for continual learning, we love school and science. We have all of those things in common." (AT, interview MS1, lines 85-92)

In addition to acknowledging the commonalities they have with all of their peers, students described the important role that their experiences as pre-medical students played in this process. Reflecting upon their efforts to gain admission to medical school, students explain that this homogenizing process actually began as soon as they declared their intention to go to medical school and identified themselves as "a pre-med." In order to achieve their goal of being accepted to medical school, these students felt they had to follow a pre-determined set of guidelines that dictated what activities they participated in, what courses they took, and what grades they earned. As Charles explained,

> I mean, as pre-meds, you get told at various times, often, that …you have to follow this very, very narrow spectrum of choices. And you have to be a biology major or you're not going to get in. And then even when some of us don't major in biology, oh, dear! Well, you have to take lots of biology courses. You should do lots of lab science research. You should do hospital volunteering. Oh, hospice. Everyone needs to do hospice. You should get a 35 on your MCAT and do all of this and if you don't do that, you have no chance of getting in. If you have an interest outside of that, there is not room for that. And that is the message that they try to shove down pre-meds throats. And the stakes are pretty high. If you don't do, you don't get in. (RP, interview MS2, lines 421-430)

This experience of becoming identical to one's peers is particularly pronounced for students who see themselves as different whether because of their race and ethnicity or their educational experience. Students like Adela, a Mexican American student who attended high school in rural Arizona and was the first in her family to graduate from college saw the need to erase difference and become identical to her peers in order to achieve her goal of going to medical school.

> Working downstairs and seeing a lot of these people had the exact same application and they do the exact same things and it made me realize, I have the same grades, I just need to do the same things. So, through my job, I figured out how to volunteer at the VA. And then I had that experience. And then, over time I just got to see that they all want the same thing, they all do the same thing and so

> that was what I did. I just said, you are no different from anybody else. Even if you didn't come from the same background. And I made myself like them. (CC, interview MS1, lines 150-155)

As students move through medical school, their experiences continue to remove differences and make them even more like their peers. The homogenizing processes that began before medical school continue through the educational experiences that students have once in medical school. The required portions of the academic program become a kind of machinery designed to stamp out differences and make students very similar to one another by the time they reach their fourth year. As Alex explained at the end of his third year:

> …the outcome is that if you had two rather disparate personalities, say, coming in to first day, first year medical school…by the time you hit year 4? I think they will be much less disparate at the end of those four years. They will be more shaped and molded by the machinery into this is what you need. The disadvantage is that they have lost a bit of their personality in the process. So, it is. It's a homogenizing process. So, we all come in, we all do the same content, we're exposed to the same material, we have the same requirements. It's you know, just this big…sort of into the chute! (AS, interview MS3, lines 273-280)

The "machinery" that Alex describes shaping and molding students and providing similar experiences can be seen throughout the curriculum in a variety of ways. During Prologue, the first block of the first year, students participate in several sessions that focus on how to dress and act now that they are members of a professional community. During a session entitled "What Not to Wear," students are told how they are expected to dress and reminded that following these standards of professional dress is an important aspect of their development as physicians even if it requires them to "curtail some aspects of their individual expression." (What Not to Wear, Prologue, 2010)

Throughout all of the blocks in years 1 and 2 a great deal of faculty effort is spent working to ensure that all students have relatively similar educational experiences. This effort is

particularly evident with regard to teaching modalities such as Case Based Instruction (CBI) and Team Learning (TL) which utilize small group instruction led by a number of facilitators. Because each small group is working with a different facilitator, there is much concern that different groups will be exposed to different perspectives, approaches and information. While literature related to small group problem solving and methodologies like CBI supports the notion that each small group will have a slightly different experience and may, in fact, take very different approaches to analyzing and solving any given case (Mamede, Schmidt & Norman, 2006), Block Directors work tirelessly to ensure that small group sessions provide students with equivalent, if not identical, experiences. Prior to each CBI session, faculty facilitators are required to attend a training session during which the case author reviews the learning objectives for the case, tells facilitators how and when to provide additional case information and explains how students should approach the problem. In addition, citing concerns that some facilitators provided more or different information related to the case, most Block Directors schedule "case wrap-ups" during which the case author and a faculty member who specializes in content of the case provide students with a summary of the important details and findings from the case in order to ensure that all students have access to the same information. Similar concerns about differences in TL sessions have led Block Directors to schedule consecutive rather than concurrent sessions so that a single faculty member can lead all sessions thus providing students with a single perspective and comparable learning experiences.

External Goals and Formulas for Success

More than half of the students interviewed for this study had participated in post-college experiences including employment, military service and graduate school. Other research (Baxter

Magolda, 2004b) related to students' development of integrated, adult identities has identified that participation in these contexts plays a key role in helping young adults move away from reliance on prescribed plans for success toward internal definitions that could be used to guide future learning and development. In spite of this fact, students in the first phase of their journey toward medical professionalism described their reliance on external authority to set goals and their attempts to achieve success by following formulas provided by these external others.

During this phase, students' reliance on external goals and formulas for success comes from their feelings that as novices, they do not know what they need in order to achieve success and, as a result, are dependent on others to tell them what they need to know, how they need to act and what constitutes success. In his second year, Erik explained his reliance on goals and expectations set by others in this way:

> When we came in, it was very clear that we were all kind of confused as far as what was really important and what wasn't. We didn't know where Foundations or Nervous System fit. So, then the clinicians and the basic science guys, the professors, they start citing, you know physiology or pathology or histo or something like that. Then you start to feel like well, these people really know this stuff. Obviously, it's important. Yeah, this stuff is going to come into play again in the future. So, that is what you learn. (JW, interview MS2, lines 665-671)

For Christina the constantly changing landscape of different blocks and different instructors caused her to look to upper class students to identify the goal and methods to achieve success.

> Every block is different. Every instructor is different. And so figuring out what works for me has been really hard. It is something that I am still playing with. It is really helpful to have the second years in front of us. They tell us oh, learn this or so and so loves that. So, we know what we need to focus on. There is so much. And then there is figuring out the study techniques that work best. It is good to hear that podcasting vs. going to class works here and you don't need to do that because it never comes up again. Doing what they've done makes it so much more manageable. (KG, interview MS1, lines 19-26)

As novices, uncertain of what they need to know in order to function as doctors and uncertain of how best to obtain this knowledge, the most important goal and marker of success that students identified during this phase was grades. A passing grade was an indication that they had achieved enough knowledge to be able to function at the next level. Elyse described her reliance on grades in this way, "I want to make sure I know it. But I don't know what is important. So, if the measure of me knowing what is important is passing a test? Then that is fine. If I pass, I know that I know as much as you want me to know. I know what you think I need to know." (RH, interview, MS1, lines 755-766)

Having achieved the first goal of "knowing what you think I need to know" students set their sights on another external goal, getting higher grades. While passing grades were an indication of basic competence, higher grades were an indication of their potential to be a better doctor. According to Marc, "Each lecture is, you know, something that is going to make me a better doctor. And somebody's safety might depend on me learning that information. So, that in and of itself is a good enough reason to pay attention. But, the grade tells me whether I have learned and how well I have learned it. The difference between a 65% and an 85% is how good am I going to be." (MS, interview MS1, lines 101-110)

The curriculum provides opportunities for students to engage in activities other than knowledge acquisition. However, students are continuously focused on the need to master knowledge in a variety of ways. In CBI and TL, two modalities designed to provide students opportunities to discuss, apply knowledge and engage in problem solving, the only part of students' engagement that is evaluated is knowledge acquisition. While CBI facilitators fill out qualitative surveys that address students' preparation, communication and problem solving, the

only part of their performance which is officially recognized is their acquisition of medical knowledge. This is tested through a number of multiple choice questions included on block exams. TL also provides opportunities for discussion but the only part of the sessions that "counts" toward students' grade is a short quiz at the beginning of the session that assesses content knowledge. In other settings such as Societies, students' focus is also directed toward grades and acquisition of content. As one mentor told a first year students who asked how best to prepare for success, "Right now? Focus on learning all this stuff. Doing well on Step 1 so that you can get to third year and do the clinical stuff."

Students' reliance on external goals and formulas for success was also revealed through their classification of blocks in the first two years as "good" or "bad." Students identified good blocks as those that provided clear objectives, delineated what students would need to know and told them how best to acquire this knowledge. "Bad" blocks were those that had unclear expectations, told students that they were expected to master the content, offered students a variety of resources and encouraged them to "use what worked best." Describing the Digestion, Metabolism and Hormones (DMH) block, a block consistently identified for its high quality and exceptional teaching, Ajit said, "DMH was hard. We were just getting back into school after a break. There were lots of detailed biochemical pathways, lots of diseases, lots of information. But, it was still very do-able. It was good because, well, you know [the faculty]. He laid everything out. The objectives were there. Learn this and this. He told us, it will be tested in this way. This is what you need to do to pass. It was hard but he gave us so much direction we really knew what to do." (GQ, interview MS2, lines 43-50)

In contrast, when discussing the Immunity and Infection (I & I) block, a block consistently identified as "bad," students described the absence of clear objectives and the lack of guidance.

> Having to go from that [DMH] into the next block [I & I] right away and basically get no, I don't want to say no help but you know the notes are just not the quality we are used to. There is very little direction. You know, for a couple of the lectures, the reading assignment was chapters 2 and 3 in Parham or something like that. And it's like, wow. That's 80 pages. Everyone feels like they taught themselves immunology….they just expected us to know a lot of material and they gave us no guidance. It would have been nice if it had been a little more focused. I mean, it was ridiculous. We need that rigid structure. We need that consistency. We need to know what is expected. I & I starts adding all this random shit without identifying what is really, really important and, I mean, we would seriously ask questions over and over, what we needed to know. What do we need to know for the test? Well, it's all fair game. Well, I mean, come on man. We have sixteen textbooks. Really? I just think we are much, much happier when there is consistency and when the notes are good and I think the structure and the direction are the most important things. (CP, interview MS2, lines 277-291)

Without the guidance and structure provided by high quality notes, clear direction from the Block Director and faculty, students were unable to define their own goal and remained uncertain of how to achieve success.

Balance

Within this environment, students consistently expressed a need and a desire to find balance among all of the various elements of their lives. They wanted to do well in school but they also wanted to maintain old friendships, build relationships with new friends, stay in contact with family members and participate in all of the aspects of their lives which they felt made them sane, healthy and whole. During her first year in medical school Christina described her need for balance in terms of having more time to spend with others. She said:

> I have a lot of goals in my head right now but the main one is to find a better balance. You do need to study a little every day. But I also need to be more social.

> I don't mean go out partying every weekend, just take the initiative to maintain friendships and build relationships. Because that is important to keeping a healthy balance. And see my family more. I like to be able to share my experiences with them. Build a better relationship with my brother. And maybe now is not the best time to do it but I think it is important to build that kind of balance into my life. (KG, interview MS1, lines 851-857)

For other students, the need to find balance centered on finding activities outside of the curriculum to participate in. In order to keep herself from being one dimensional, Jeanne felt that it was important to be involved in a variety of activities, "I made a goal at the beginning that I was going to try to incorporate things that I really enjoyed before coming into med school into my life in med school. For me, that is dancing and writing, being with friends and family and doing things in the community that are outside of the regular curriculum. I have to make sure that there is a good balance. That school is balanced with those other things. Because I feel like that is what will keep me happy and doing well here." (AT, interview MS1, 227-232)

Having completed her undergraduate degree in just three years, Marin felt that balance in medical school was essential in order to stay healthy and keep from getting burned out. "In undergrad, I just worked all that time. That was all I did. So, when I got in to med school I told my mom it can't be like that. I can't always be thinking I have to study and do well on X, Y and Z. I can't keep on not paying attention to myself and not eating right and not, just not being healthy. So, once I got here it was a huge priority of mine to be more balanced. To study, yes. But to eat right, to exercise, to keep my priorities. So that I would be able to finish this." (SM, interview MS2, lines 273-279)

Some students, like Elyse, who were not married and did not have a significant other when they entered medical school, sought a balance that would allow them to meet people, date and perhaps eventually enter into a long-term relationship. "I feel like, eventually, this part of my

life is going to be over. That is why a balance is so important now. I want to meet new people, I want to eventually find a relationship. And I can't do that if all I do is school. If I have no time for relationships and that kind of thing, the rest of my life will never fall into place. So I have to try to keep myself open to that. To have room for those relationships." (RH, interview MS1, lines 771-776)

While all of the students in this phase of their development expressed a need and a desire to find balance between medical school and all of the other aspects of their lives, they recognized that because of the demands of school, they were unable to achieve or maintain the balance they described. As Nancy explained, "You know, you try. You try to keep a good balance. But no matter what you do, school takes up so much time. Unlike, I think, anything else I have ever done where you just have to commit so much of yourself, you know? Physically you have to be here a lot. You know, mentally, it's tiring. Even emotionally, it can be, you know, really stressful. And so I think it takes a lot out of you. And there is nothing left to integrate the parts. To keep that balance. No matter how hard you try, you can't keep all the parts of who you are." (CN, interview MS2, lines 98-103)

For other students like Marc and Marin, the attempts to find and maintain balance were pushed aside because of the time and energy required to study and do well on exams. Marin explained, "And then the blocks keep going and you realize, it is hard to have balance when you have to keep looking at that book. All of a sudden it's like yep, you still have to know all this to be a doctor. This is the time you have to do it and all of those flowery thoughts of well, I can still do yoga and go climbing and be a person and still be a doctor go flying out the window. It's like

nope. You still have to pass this test. And that is when it is just a big slap in the face." (SM, interview MS2, lines 600-604)

Like Marin, Marc realized that while he had hoped to achieve balance in medical school, the academic demands made this impossible.

> Yesterday, I was really sitting down with the lectures and the podcasts and working through every single line in an effort to learn it and I was feeling really good. And then my girlfriend calls me for dinner at 6 and I've been reading and it takes me like 45 second of that phone call just to come up with a sentence. And I realize, I am a mess. This has kind of taken over my life and my personality. I am an ass to everyone around me. I just can't keep this from getting in the way of everything else. (MS, interview MS1, lines 538-543)

During this time, the demands of medical school including the investment of time and intellectual and emotional energy appear to make finding and maintaining balance among the elements of their lives impossible, regardless of their commitment to achieving some form of balance.

The environment in which students function during this first phase of their journey is characterized by an institution that requires students' full investment and participation. In spite of requiring this investment, the institution provides few opportunities for meaningful participation in the activities associated with being a doctor. As a result of this investment, students continue to become more like their peers as differences in experience or approach that may have existed prior to medical school are gradually erased as a result of participating in educational and social experiences that leave very little room for individuality or difference. Within this context, students remain uncertain of what it means to be a doctor and what they need to know or do in order to achieve this goal. As a result, they are dependent on goals and formulas set by faculty members, physicians or peers. These goals, however, tend to focus on acquisition of content or

ways to be more successful acquiring content. As students attempt to achieve these external goals, they find it is impossible to maintain any sort of balance between school and other aspects of their lives. Within this environment of homogeneity, external formulas and no balance, clear patterns related to the three domains of knowledge, others and self emerged.

Knowledge and Knowing

Concerns with knowledge, what physicians need to know and questions of how best to acquire that knowledge were at the forefront of students' minds as they navigated the first phase of their journey, *a world out of balance*. During this phase of their development, students' describe knowledge as the "content knowledge" or factual information that doctors possess. This "knowledge" is vast and disconnected from the practices and activities associated with medicine and being a physician. Students use the concept of "fluency" to describe the knowledge necessary to be physicians. Talking about a physician he had shadowed, Thomas described the concept of fluency in this way:

> You know, I've done rounds with this guy a couple of times and it just made me appreciate the fact that there is so much stuff you need to know. He just knows everything. Everything. I mean he knows about the labs and the different medications and I mean we go do rounds with him and it's two hours of rounds and it's really technical and it's, every situation is different and he just has so much knowledge he is able to be very, very thorough and he knows everything. And that is what we need to do. It reinforces the idea that you need to know. You need to know everything, just like that. Even if you think, I am going to do X specialty, there is just, you need to know where to cut and how to cut and how to fix things but you know, after the operation, those people are still under your care and you have to be able to know what is happening. You have to be able to know it all. You have to be fluent in everything. 100%. (SK, interview MS2, lines 571-581)

Without this type of fluency, students in this phase of their development fear that they will not be able to effectively address a patient's problem or might contribute to a negative

outcome for a patient. Ajit described the need for fluency in order to effectively handle any patient scenario he was presented with. “You have to be ready for anything. When we see a patient we will have no idea what is behind that door waiting for us. You have to be on top of everything because you can’t have any reference material. You just need to know the things off the top of your head…right now, it is all relevant. The neuro, the stuff from Foundations, we will need to know it all, remember it all, to take care of patients.” (GQ, interview MS1, lines 240-244)

As Thomas and Ajit’s descriptions of fluency indicate, the knowledge that must be acquired to achieve this sort of fluency consists of vast amounts of detail, all of which is essential to their future as practicing physicians. After completing one of several exams during the Nervous System block, Marc described the knowledge he was acquiring in this way, “Coming into medical school, I thought it would be more conceptual. The level of detail has definitely been a surprise. Which is fine because I need to know it all. But that was a surprise. I knew we would be learning about a million different things. I didn’t know that we needed to know everything about a million different things.” (MS, interview MS1, lines 261-264) Another student described knowledge in this way, “In undergrad, in college, I learned that I could write off a lot of the little details. I’d do great with the big picture but the little stuff didn’t matter. And so…now I am realizing how everything, every sentence matters. I can’t filter things anymore. I don’t know what a doctor will need to know so I will need to know it all. I learned that I need to know the details. I need to know it not necessarily because of most of my patients, potential patients, but because there is going to be one. And it is not fair to that one that I didn’t feel like learning something.” (CR, interview MS1, lines 371-376)

In order to master the vast, detailed expanse of medical knowledge and develop this sort of fluency, students feel they must replicate knowledge provided by external authorities. For these students, the process of coming to know involves being told what they need to know, acquiring that knowledge from an expert and then working to reproduce that knowledge in exactly the form it was provided to them. At the beginning of his second year, Adam described the process in this way:

> Well, first you figure out what you need to know. Hopefully the objectives will help you with that. For the good blocks they do. They tell you, that is what you need to know. And then you just do every objective for every lecture. I read the notes to myself. I voice recorded them and then I would listen to them when I go running. So I could learn them just like they were in the notes. And then the same thing for DMH. I would draw those pathways, Krebs, glycolysis, glycogen. A million times until I had them cold. In micro, I & I, I had note cards. They had everything that was important, everything we needed to know. And then I added what was in the notes just to make sure that I didn't miss anything that I needed to know. And then I just worked through those over and over until I could repeat them, everything on the cards. (KH, interview MS 2, lines 36-45)

Ethan echoed the need for memorization and repetition when he described his experience gaining knowledge in the attempt to become fluent. "It was just pound, pound, pound. Pound knowledge down. Don't take a minute. Don't take even a moment to think about it. Just pound, pound, pound. Move on to the next thing. Keep going. Keep going. Just take us at our word. Remember this. Move on. Memorize this and move on." (JF, interview MS2, 438-444)

While students are consumed with replicating enough knowledge to be fluent, the knowledge that they are gaining remains largely disconnected from acting, doing and participating in the practice of medicine. Jeanne described the separation of knowing and doing in relation to conducting a physical exam. "Right now, the two have to be separate. We are learning the parts of the physical exam but we really don't know what we are supposed to be

looking for or that sort of thing so much yet. Right now, we have to just get through the exam. Go through the motions. Later, when we know more, we will know what we are looking for. We will know if we are doing it wrong. But the two really can't come together until we have a knowledge base." (AT, interview MS1, lines 430-435)

Students describe this time in their development as a time in which to build the foundation of knowledge that will allow them to participate in a variety of tasks later on in their professional development. Garrett explained, "Right now, we just need to get the knowledge. We can't do anything until we know what we need to know. I mean, we can, but it isn't real medicine. It is just us pretending. Because until we know something we can't do anything. Down the road, after we have the foundation, we can start doing real stuff." (CL, interview MS1, lines 437-440)

This separation between knowing and doing can also be seen in the way students described their frustration with tasks that required them to participate, use knowledge or "act like doctors." Michael described an experience during a CBI discussion in which a substitute facilitator had asked students to think about what information they would like to gather from the patient history and physical exam before he provided that information. "We don't know that. That is not what we were supposed to be doing. We were supposed to be learning about the heart. Maybe once we know what we need to know about the heart then we can worry about what questions to ask but for now, we just need to learn the information. We can do something with it later." (MR, interview MS2, lines 168-172)

Gordon found Societies activities where students were required to take patient histories, conduct physical exams and then present the patients to their peers particularly frustrating. "So,

we are out there, trying to treat patients and do stuff and basically what we realize is that we can't. We don't know shit and we are basically doing them more harm than good by even being there. That is my beef with the curriculum. That we even bother to see patients in the first two years. It is totally useless because we don't know anything and so we definitely can't do anything. Everything is just so contrived because we don't know enough so we can't do anything. Third year, that is when you can start doing something." (SS, interview MS3, lines 133-138)

It is important to note that the goal of mastering vast, detailed information and the largely decontextualized nature of this knowledge appears to be shared by all students during this phase of their development, regardless of how they had viewed knowledge prior to entering medical school. Arthur, who completed a PhD in chemistry prior to entering medical school viewed himself as a "thinker" who was intellectually curious and driven to ask complex questions, engage in research and "build answers." In spite of this, he found that his views of knowledge and knowing were incompatible with success in the early days of medical school.

> I'm pretty stubborn and very focused but it didn't take me long to realize that I had to give up the training that I had and that way of thinking. If I was going to be successful that just wasn't going to work. Once I said, okay, just memorize and realized that to do well, the only way to do it was just repetitive memorization, then I started to do well. That first exam was kind of a rude awakening. But after I figured out that this is just repetitive. Go to the library, study X number of hours. Read, re-read your notes. That is the recipe. I realized I would be reading the notes and I would be thinking, but it could be this. What about this element? How does this fit? And then nope, I'm wasting time. I realized, there is no creativity. There is no understanding. Just do it. (OV, interview MS4, lines 253-262)

There are a variety of elements within the curriculum that contribute to and reinforce students' perceptions that they must master all of the knowledge presented in order to be competent physicians. Faculty, each an expert in a specific discipline or topic, consistently

remind students of the importance of the particular material being taught. The introductory materials for the gross anatomy lab emphasize the importance of the gross anatomy content with the following statement, "During your first two years you will encounter content from a variety of disciplines including Gross Anatomy. The relative importance of the information you will gain while in the anatomy lab to your future as a physician can be summarized as follows:

GROSS ANATOMY, everything else (Introduction to Gross Anatomy Lab, Musculoskeletal Block, 2010)." Other disciplines are introduced with similar emphasis. When disciplines such as pathology or pharmacology are presented for the first time in a block, they are often introduced with statement that failure to learn some element of the information will result in poor performance on USMLE Step 1 or the inability to function in 3rd year and beyond. During lectures, students frequently hear faculty members make statements like, "Now, this pathology isn't very common but it will certainly be tested on the boards and you really have to know about it for your third year clerkships."

Opportunities for doing anything other than acquiring content knowledge are limited during lecture. While "Interactive Lecture" is described in curricular materials as a modality designed to "create an intellectually stimulating environment of inquiry, emphasize cooperative learning and active participation of students and engage students in active forms of learning, opportunities for this type of engagement are seldom seen in lectures. Lectures generally do not include opportunities for students to check their understanding or apply material being presented and instructors frequently indicate that there is too much content and not enough time to include these types of activities. In some instances, instructors indicate that students do not know enough to successfully engage in interaction or problem solving. As a result, the most common form of

interaction in lectures during the first two years consists of individual students asking clarifying questions related to content. When lecturers do present a problem or case for students' consideration, the discussion typically focuses on the right answer or diagnosis rather than how students approached the problem, resources they called upon when considering the problem or alternative approaches.

In addition, students' preoccupation with knowledge and mastering knowledge provided by experts shifts the goal of most educational activities toward the acquisition of knowledge. Case Based Instruction which is presented to students during Prologue as "an opportunity to ask questions and develop clinical reasoning skills" soon becomes about acquiring and mastering content knowledge. Instead of engaging in active problem solving, students spend a significant portion of these small group sessions giving mini-lectures, complete with detailed PowerPoint presentations during which they re-elaborate on content presented in lectures.

Observation of one CBI session revealed the way in which students shifted attempts to focus on thinking back toward knowledge acquisition. Students in this group had reached the end of their discussion and correctly diagnosed the patient in the case as having acute renal failure due to tubular necrosis. The following exchange occurred:

> **Facilitator:** Okay. So, you know what is causing this. Are there other things you need to consider? Things you might have left out?
>
> **Student 1:** No. We have the diagnosis.
>
> **Student 2:** We're right aren't we?
>
> **Facilitator:** Yes. That is what he has. Are there other things to be considered?
>
> **Student 2:** Well, just how it happens. But we covered that.

This facilitator's attempts to focus students' attention on other elements of the case or other possible explanations is typical of exchanges observed between students and residents or attending physicians in their clinical rotations during third and fourth years. In this environment, however, such an attempt is unsuccessful and students return to the primary goal of learning content.

After CBI sessions conclude, students take turns preparing detailed explanations of the epidemiology, physiology, and pathology of the diseases presented in the cases which are then e-mailed to their group members. The groups spend little or no time reflecting on how these details relate to the patient presentation or contributed to the process of arriving at a diagnosis or answering a clinical question. When asked why they felt it was so important to prepare handouts and PowerPoint presentations when CBI was designed to help students focus on problem solving students responded that because content was tested on exams and because they "might not learn it" they needed to prepare these materials in order to ensure that they mastered the content.

During this phase of their development, acquiring and mastering the knowledge necessary to become a physician was students' primary focus. The knowledge they were working to master was vast and detailed. In addition, in order to function as a physician, they felt that they must be able to recall and use this knowledge effortlessly in any situation. In order to accomplish this, students felt they had few options other than to memorize and reproduce information exactly as it was provided to them by experts. In spite of feeling that this knowledge was essential to functioning as a physician, for students in this earliest phase of their development, knowledge remained largely disconnected from the actions and activities associated with being a physician.

Interpersonal Relations and Others

While knowledge and the acquisition of knowledge necessary to become a physician are students' primary focus during this phase of their development, interviews revealed consistent patterns related to students views of others, their relationships and ways of interacting. In this period of their development, students' relationships are based on the categorization of individuals as "us" or "them." Interactions during this time are dominated by the students' needs and perspectives and the goal of interactions is to bring others to share in these views. Interpersonal skills are not the focus of students' learning because these skills are viewed as fixed rather than characteristics that can be acquired, developed or changed. In addition, the most important skills to have when relating to others are those that students' use to help others see and adopt their ways of thinking.

Us and Them. Given the greedy institution that students' describe during this phase of their development and their near total immersion in the institution, it is not surprising that students have few complex, dynamic relationships with individuals outside of the environment of medical school. Students rarely see friends who are not in medical school and interactions with family are limited. Interactions with others are limited to peers in medical school, medical school faculty, non-physician healthcare professionals and patients that students encounter or imagine themselves encountering in the future.

Relationships during this period are based on a dichotomous classification of individuals as "us" or "them." The category of "us" includes people who share a common experience, perspectives, knowledge, goals and responsibilities and includes other medical students and physicians. The category of "them" stands in opposition to "us" and includes those individuals

like patients and non-physician healthcare professionals who have different experiences, perspectives, knowledge, goals and responsibilities. Charles defined the "us" group broadly as those who had a common outlook saying, "I guess I perceive us as the people who are of the same disposition as I am. In terms of they want to help patients. We share common knowledge, common goals. We want to be in a room with the patient, using what we know to figure out what is going on with the patient. We are not concerned with all of those other, outside things. We want to make a diagnosis, help them feel better. We are going to try to get things done for them." (RP, interview MS2, lines 157-161)

Alex identified motivation as one of the defining features of "us" saying, "When it actually gets down to it, what defines us is how we care and think about individuals versus how somebody in another field or another job or who is just different thinks about those individuals. When you see someone who is sick or keeps showing up in the emergency room when they shouldn't, we really care. Our cynicism will be delayed because our motivation is really to help people. Versus somebody who has other goals, they just won't be able to deal with that." (AS, interview MS2, lines 287-292)

In describing the "us" category, Thomas focused on the knowledge base and responsibilities this group shares and contrasted it with the knowledge and responsibilities of "them."

> When I was applying I was thinking about physician versus nurse prac[titioner] versus physician's assistant. And I really had to think, who do I want to be? So, I looked at the knowledge base these guys have. And I realized, the knowledge base that they have just isn't the same. It just doesn't align with where I wanted to go. They work in the ED and stuff like that but they just don't utilize what they know to do the same things. I am not discounting their knowledge base, I just realized that I want to be able to use my knowledge differently. I have different goals. I want to deal with everything, all of the body. They work…what they do is

> more streamlined. They don't have autonomy. We do. Even as students we are totally different. We use our knowledge for a specific purpose, to do specific things and that is what I want. I just can't get behind having all of this information and not being able to apply it in a specific way. (SK, interview MS2, 194-206)

Other students focused on behaviors and actions as the defining features of the us category. Erik explained

> You know, we have a lot a stress and we have to be in charge. Everyone else is looking to us to tell them what to do and how to act. You know, you might be a surgeon in an OR and some kid is going to try to die on you. So, we can't get all panicky. We have to be the ones to take charge and handle the situation. We are the ones who provide advice and guidance. We are the ones who make sure that everything is just flowing and we have to conduct ourselves that way because we have that label attached to us. (JW, interview MS1, 601-606)

While students clearly define us in terms of motivation, goals, knowledge and behaviors, the category of "them" is simply seen as everything that is not us. The category of them has no distinct features other than they do not share the same motivation, knowledge, goals and behaviors. The process of identifying "them" is likened to identifying a member of another tribe, "In this world, this small little microcosm of a world…it is a tribal environment. You only have to look at someone. It really comes down to behaviors and expressed attitudes. You see those and you know, they are like me or they are not." (RP, interview MS2, lines 225-229)

Interactions. This dichotomous view of interpersonal relations in terms of us and them shapes the interactions that students' have with others. Interactions with people who are "us" and share the same skills, knowledge and goals are easy, mutually beneficial and productive. Greg described how working with people who share a similar world view made him more effective as a learner.

> Let me tell you, the relationships that I have been able to form with people who have the same philosophy that I do? That has helped me immensely. If it wasn't for the people that I work with, I wouldn't be half as successful as I am now.

> Working with my study partner, and with other people who are similar, who have the same philosophy, we share thoughts. We get together. That has really helped me in my education. Working with them makes me learn more and be more effective. We don't have to explain ourselves to each other. We come from the same world. I can just sit down and say, I don't know what this means. And they help me out. This is how it plays a role in such and such. There is no explaining, no I don't get you. We can just get it done. (CP, interview MS2, lines 427-437)

Like Greg, Alex described how productive and enjoyable it was to interact with people who share the same goals and motivations. "I am not so good at people who don't get where I am coming from. It is so nice to be here because we are all trying to do the same thing. So if I need something, someone says oh, here, I can help you with that and then when they need something, oh, here let me fix that for you. It is just a personality thing. I know what I need and when people understand me and can help me, when they know where I am coming from, things just work so well." (AS, interview MS2, lines 525-530) Because he shares a common knowledge and experience with people like him, these interactions do not require negotiating multiple points of view. Consequently, they are effortless and allow these students to focus on the more important task of learning and acquiring more knowledge.

While interactions with people who are "us" are productive, enjoyable and mutually beneficial, interactions with people who are "them" are much more challenging. For these students, interactions with individuals who do not share the same knowledge and perspectives are focused on achieving one of two goals: leading others in order to complete a task in the "right" way or providing enough information so that others are persuaded to adopt the students' perspective and take the appropriate action. When interacting with others such as nurses or social workers who are members of the healthcare team but have a different knowledge and responsibilities, these students assume a leadership position and their interactions focus on

coordinating actions in order to accomplish a task in spite of differences. When describing how he approached an assignment during an interprofessional exercise in which medical, nursing, pharmacy, social work and law students were to use their knowledge to develop a care plan for a patient, Garrett explained his role in the interaction saying,

> My experiences overseas really helped me deal with situations like that where a bunch of people with a bunch of different skills and different levels of technical knowledge, different comfort zones had to respond to something. And you have to step up, and respond and give everyone the direction so you can get things done. It is similar here, in the [interprofessional exercises]. You just have to get everyone moving in the same direction so you can get the job done. There is no what do you feel? What do you think? Just everybody follow me and do it. (CL, interview MS2, lines260-266)

While interacting with individuals who are members of "the team" and have their own knowledge base consists of leading in order to coordinate potentially disparate approaches, interactions with individuals such as patients are somewhat different. For students in this phase of their development, patients do not play an active role in their own healthcare. As a result, interactions with patients are described as a process of making others see what is "right" and then convincing them to act accordingly. For Adam, his time working as an EMT was essential for learning how to work with people who were not like him. "My experience on the ambulance was crucial. I saw people from every walk of life possible. From infant to elderly, destitute and homeless to well-to-do. At the very least I got a lot of experience getting people to do what I needed them to do so that I could get my job done. And that's hard. You have to explain to them what needs to happen and that sort of thing. You don't have time to hash out differences in opinion. You have to just get them to agree. This is what we need to do. It is not easy but it is crucial. Having those skills is essential for working with people in this business." (KH, interview MS1, lines 160-166)

Like Adam, Garrett viewed interactions as a matter of figuring out how to make people do what you need them to in order to accomplish your goals.

> You know, as an officer, I had a mission that I was responsible for. I had to figure out how to get these guys to do what I needed in order to accomplish the mission. I have to groom these guys, train them in what I thought was the right way. At the end of the day, I was responsible for if they did it the right way. It might take a different way for each soldier, but I had to figure that out so that I could do what I needed to get done. It is the same with patients. You can't just…not everybody responds to everything the same. You have to tailor your approach. And I think that is tremendously applied to medicine because how are you going to get your patient to do what you need? How are you going to get your patient to stop smoking? You can't just yell at them. You can't just throw a pamphlet at them. You need to tailor your approach to make them do what you need. (CL, interview MS2, lines 507-517)

For Zachary, interacting with others who do not share his perspective and goals was like being in sales. It was his responsibility to "sell" his perspective, whether the other person agreed with it or not.

> What I have learned dealing with patients is that, I mean, every person is different and dealing with them is a lot like sales. You've got to sell people on their health. It sounds like such a strange thing but you need to convince people that what you know is right is what they want to be doing. You know, you want to stop smoking. I worked as a physical therapist in the army and so it was, you want to do these exercises. Because even though it hurts now and it seems silly, you are going to be better in the long run. Knowing how to do that is very valuable because you will be dealing with that every single day. People that oh, I know the right thing for me. But you have to convince people that what you want is what they really wanted all along. The art is getting them to understand that it is what they really wanted. You have to use tactics, overcome the barriers. Then they will be more inclined to take what you are saying to heart. (BV, interview MS1, lines 439-450)

For these students, interacting with individuals who did not share their perspectives was often difficult, time consuming and frustrating. Michael described his frustration with adult patients who didn't share his perspective. "That is what is hard about working with adults. Kids, they didn't do it to themselves. I am good at counseling patients but I get so frustrated after a

while. It is so upsetting when people don't listen to you. When you tell them this is the problem. Here is the solution and they just don't see what you are talking about. That is the most difficult thing." (MR, interview MS3, lines 686-689)

The skills that these students identified as essential to interpersonal interaction were those that allowed them to communicate their perspectives to others who did not share their views and to learn enough about others that they would be able to do this in the most effective manner possible. For these students, the most important interpersonal skills were talking, communicating, and being nice. Talking consisted of asking the appropriate questions so that patients would open up and reveal information about themselves. This information could then be used to bring patients to share the students' perspectives. As Marc explained, "The most important thing is being able to talk to them. To relate to them. If you can ask the right question, they will be able to give you everything you need. Just from that talking, that conversation, them telling you about themselves you will find out what you need to move forward." (MS, interview MS2, lines 149-151)

Communicating, for these students, consisted of providing others with enough information that they understood what you were going to ask them to do and, consequently, were not surprised or resistant to your plans. Describing the role of communication, Esther who had worked as a nurse prior to entering medical school said, "You have to really communicate with people. From the beginning. I watched two doctors who did this so well. Right from the beginning, they just laid everything out. Your mom is 90, has acute pancreatitis, this is what we are going to do. So, everytime they dealt with the family, everyone was already in the mindset that this is what is going on, this is what we are going to do. So, when you do it, or when

something happens, you don't have that shock. Everyone has been on the same page all along because they have been communicating." (PD, interview MS1, lines 445-450)

In addition to talking and communicating, being nice was an essential skill when dealing with others. As Zachary explained, "The most important thing we bring to our interactions is to, I think first and foremost, to be pleasant with people. To be able to talk to them. To just be able to communicate with them in a way that lets them know this is what is going on. This is what we need to do." (BV, interview MS1, lines 663-666) Without such kindness, others would shut down, become angry and be unwilling to listen to and adopt the students' perspective.

In spite of the fact that interactions with others different from themselves could be difficult and frustrating, these students view the interpersonal skills required for these interactions as easy to acquire and implement. Christina described interpersonal skills simply as the skills required to have a conversation. "Conversations are no problem. It is just a matter of being able to sit down and talk with people and have them open up their lives to me. That part is not so hard." (KG, interview MS1, lines 398-400) For these students, the skills required to have a conversation were acquired prior to entering medical school. Michael explained, "The talking, the interacting, we all learned that a long time ago. From being in school. From working. From volunteering. Even from getting ready to apply to medical school. We have those skills. We don't really need to develop them any more." (MR, interview MS3, 102-106)

Students in this phase of their journey had few, if any, opportunities to interact with patients in authentic settings. As a result, their views on interacting with others were formed in contexts outside the practice of medicine. Students learned about interactions from their work as nurses, EMTs, paramedics, respiratory therapists or officers in the military. For students who

came to medical school straight from undergraduate environments, their interactions with patients were limited to the paper cases they encountered during CBI or the patients on whom they conducted exams as a part of their Societies experience. These exams typically followed a fairly limited script in which a mentor walked with students to a patient's room and told the students what they were going to see and do. Students, armed with knowledge of the patient's condition and the appropriate exam then entered the room, introduced themselves and told the patient what they were going to do. Discussion between students and mentor after this encounter focused primarily on students' comfort interacting with the patient and the thoroughness of the student's exam. Because patients were carefully matched with whatever content students were learning – for example, during the Nervous System block, students conduct exams on patients with identified neurologic problems – it was not always possible for students to conduct an exam on a patient. In these situations, students completed a similar process with a standardized patient who then assumed the role of evaluating the thoroughness of the exam at the end of the encounter.

During this period of their development, students' see and define others in stark contrast to themselves. The goal of interacting with others different from themselves is to help others come to share a common perspective and achieve common goals. This goal is reinforced in paper cases and clinical interactions which prepare students for what they will see and provide students with a single, fairly limited goal. As a result, interactions have little or no impact on students and students do not change or incorporate new ways of viewing the world as a result of these interactions.

The Self

Interviews also reveal clear patterns related to students' perceptions of themselves and their development as individuals and future professionals. Students during this time were focused almost exclusively on themselves and their needs. Students defined themselves by what they were doing or what they would be doing in the future. In spite of this intensely inward focus, students did not feel that they experienced meaningful personal growth or change during this time.

These students referred to this time of their development as a "very selfish" time and a time that was dedicated to consideration and pursuit of the "I." During this portion of their education, they could focus entirely on their own needs and accomplishing what they needed to in order to move closer to their goal of becoming a physician. Erik described his first two years as a time when he could be completely consumed with himself and did not need to consider others. "You know, these first years? It is all about personal stress. It is I have to learn this. I have to do this. But there is no one else. There is no one else that you are responsible for. There is not someone dying. There are no other lives that you have to worry about. It is just you and what you need to do for yourself. Right now." (JW, interview MS2, 955-958) For Garrett, the first two years of medical school were similarly self-centered. This focus on the self to the exclusion of everything and everyone else was necessary in order for students to gain the knowledge they needed in order to move to the next portion of their training. As he explained, "What is really important getting us to that next phase is that we spend this time just focused on us. And the first two years you are focused on I need to do well on this test. I need to study this in this way. I need to do well on the boards. You don't have to be open minded. You don't have

to adapt to anyone else. It is all about you and what you need to do well." (CL, interview MS2, lines 138-142)

Elyse recognized that this self-centered way of being could happen in any environment but was particularly pronounced given the demands of medical school. "Anytime you are in a situation of intense academia, I think there is a natural tendency to become very self-centered…Whatever you have to do is the most important and you stop thinking about anything else and anyone else…you stop thinking about others as much. You are trying to find out who you are and what you want to do with your life, what your future holds. You become very self centered." (RH, interview MS1, lines 675-680)

What I do. For these students, the intense inward focus of this time is not devoted to questions of who they want to be, values or identities they wish to adopt, how physicians use knowledge, or how they want to interact with the world. Instead this focus helps them to meet the external goals and demands required to move forward in their training. During this time notions of the self, their identities and how they defined themselves were based on what they were doing or what they wanted be doing in the future. Alex answered a question about how he perceived himself this way, "Who am I? On a daily basis? I am the guy drowning in the information he has to learn. Trying to do everything else in the process. I mean, that is kind of who we all are, I think. The coursework, the content, the material, that is the defining feature of who I am right now. The portion of me, of my life, that is not involved in trying to do the coursework is very small. So, I really am not a whole lot different from what I am doing." (AS, interview MS2, lines 270-275)

For Marin, questions of identity did not address the question "Who am I?" but rather the question, "What am I going to be?" For her, the process of defining who she is was a process of deciding what kind of doctor she wanted to be.

> Who I am is partly what I need to do today but also everything I do today has an impact on what I can be and where I can go, where I will end up as a doctor. I think that gets into my definition of myself. I need to decide now. Am I am emergency doc? Am I a family doc? Am I a this kind of doctor? And once I know that, then I will know what is important to me and what I can do with everything else. If I can do rural health or if being in a big city will be more important. If I want to be the doctor that does everything or if I want to be very specialized. It is crazy but it goes back to having to pick your specialty because once you do, you know what is important and what you need to do and how you need to be. (SM, interview MS2, lines 821-828)

For Marin, her indecision related to what to do limited her ability to engage in the types of behaviors, ways of thinking and practicing associated with being a doctor.

Adam, who entered medical school with a clear idea of what specialty he wanted to pursue, felt that understanding what kind of doctor he wanted to be was key in knowing who he was as a person. "I think, and this may be biased, but I think that for some of these kids the problem is they don't know what they want to be. So they are doing everything they can to be everything at once. Because they don't know what they need to do…me, on the other hand, I have a better idea of who I am because of my experience and because I know what I want to be. I know what I want to do. Because of that, no matter the situation, I have a firm grasp on who I am and I know how I need act and what I need to do." (KH, interview MS2, lines 417-422)

During this time, these students were very narrowly focused on their needs. They were grappling with questions of what they wanted to be in order to determine what knowledge they needed to acquire and how they needed to act. Throughout this time they were working intensely to accomplish a variety of tasks and meet the necessary standards to move forward toward

becoming a doctor. Yet, during this time, these students do not feel that they are growing, changing or developing. Charles explained, "We are not changing. Nothing is changing or growing. We are just moving. We are like the Red Queen in *Alice and Wonderland*. She has to run faster and then everything else is moving faster and so you just keep moving so that things don't get further away. Moving. Not changing." (RP, interview MS3, lines 651-654) At the end of his second year of medical school, Erik acknowledged this lack of personal change saying, "I don't think I have had time to change. I am a lot more advanced as far as my knowledge. I've learned a ton of stuff but I just haven't had time to change." (JW, interview MS2, lines 889-893)

Summary and Discussion

Modern definitions of medical professionalism and the associated professional identity articulate the need for students to use and apply knowledge when making decisions about patient care, to exercise independent judgment, negotiate multiple perspectives and operate from internally defined systems of belief. Literature related to medical professionalism acknowledges that in order to help students achieve these goals and develop integrated professional identities, educators and educational programs must address the interplay and balance between the cognitive, interpersonal and intrapersonal aspects of medical professionalism (Holtman, 2008). During the first phase of their development, however, students describe a context that conflicts with and in some cases prevents achievement of these goals.

During this phase of their development, these medical students found themselves functioning in a classic example of Coser's (1974) greedy institution. The educational environment in which these students are operating makes tremendous demands in terms of emotional and intellectual commitment, loyalty, time and energy. Greedy institutions such as this

one encourage the compliance of students by offering selective or elite status to those who successfully meet the demands of the educational program (Coser, 1974). Some of these students' experiences were typical of all greedy institutions. Like members of other greedy institutions, these students demonstrated their commitment to the institution as they gradually relinquished elements of their former selves including friends, family and hobbies. This happens in spite of students' expressed intention to maintain balance between school and all of the other elements of their lives.

Typically, greedy institutions such as law school or graduate programs demand students' investment but also introduce or expose students to the contexts in which they are able to participate in a variety of behaviors and activities associated with the role they are trying to assume. For law students, this includes learning the language and procedures associated with the practice of law as a part of learning the content of the law (Phillips, 1982). For graduate students, this includes learning behaviors such as scholarly presentations of academic work (Goodman, 1989). This institution, on the other hand, requires immense investment on the part of students but, early on, presents few opportunities for engaging in the contexts and practices associated with being a physician. Most of students' time in the curriculum is spent in lecture where they learn content but have few opportunities to apply or evaluate what they are learning. Language use in this setting follows a pattern that can be considered authoritative (Scott, Mortimer, & Aguiar, 2006). This pattern consists of information being transmitted from teacher to student with little opportunity for meaningful student contribution. While this type of communication meets some goals, including providing students with content knowledge, it does not align well with other goals related to medical professionalism and the acquisition of a professional identity.

Authoritative speech of the type students experience during lecture limits opportunities for students to understand other perspectives and engage in the types of reasoning typical of scientific discourse (Wells & Mejia-Arauz, 2006). The limited clinical encounters that students do have are highly structured and scripted. Extra-curricular activities place first and second year students in auxiliary positions rather than in situations where they can observe the work of doctoring. As a result, students learn the knowledge associated with being a physician but have few opportunities to engage in the procedures or behaviors associated with this identity.

Lacking opportunities for active participation in the contexts of medical practice, students were unsure of the elements or characteristic practices that doctors use. As a result, these students had to rely on goals and formulas for success that emphasized knowledge acquisition. In this environment, students are presented with a paradox. Medical professionalism requires them to develop an internal system of belief and use this system to function independently. In addition, as professionals they are expected to recognize and negotiate multiple perspectives. Yet, during this phase of their journey, students find themselves in an institution that assumes responsibility for setting goals and standards for achieving these goals. The standards that are visible to students are often in conflict with elements of medical professionalism and the identity students are seeking to develop.

During this time, students' experience was dominated by the development of their cognitive knowledge. Their primary goal is to master the knowledge that will allow them to be physicians. In this context, social interactions are reduced to dichotomous variables and dominated by a single, non-negotiable perspective. Intrapersonal development consists of achieving externally defined goals related to becoming a physician and is more a matter of

keeping up rather than growing or changing. Some of students' perceptions of knowledge, interactions with others and development of self share features of the structures other researchers have identified as central to early phases of adult development. Other elements appear to be unique to the environment of medical school and these students' developing identities as physicians.

The ways in which students during this phase of their development describe knowledge and how they come to know shares many features of epistemological structures used in early phases of development that have been described by other researchers (Baxter Magolda, 1992; Belenkey, Clinchy, Goldberger & Tarule, 1986; King & Kirtchner, 1994; Perry, 1970). Like the students in these earlier studies, these students view knowledge as absolute, provided by experts or authorities and something that cannot be questioned. The learning environment of medical school appears to add additional elements to the epistemological structures used by students in the first phase of their development. This environment emphasizes not only the absolute, fixed nature of knowledge but also the requirement that students "know everything about everything" and have the ability to recall this information effortlessly and in any context if they are going to be successful. In addition, this environment appears to promote this view of knowledge and knowing regardless of how students viewed knowledge prior to entering medical school.

Unlike students in other studies related to young adults' development (Baxter Magolda, 2000; King & Baxter Magolda, 2005) relationships do not play a central role in this phase of students' journey. Rather than being consumed by relationships and having to work to find their own voice in their relationships, these students do not engage in mutual interactions with others different from themselves. They work cooperatively with those who share the same perspectives

and goals. When interacting with others who do not share their view, these students work to convince others to adopt their perspectives. As a result, acknowledging and negotiating multiple points of view is not necessary during this phase of their development.

While researchers have identified questions of "Who am I?" to be the defining question in the evolution of self, these students are consumed by questions of what they want or need to do. Their focus on the cognitive domain and acquisition of knowledge in order to meet externally defined goals leads them to answer questions related to identity by addressing what they do rather than who they are.

The students in this study represented the diversity of the medical school student body. In spite of this diversity, no unique patterns were identified in the development of women and minorities. Belenky, Clinchy, Goldberger and Tarule (1986), Baxter Magolda (1992) and Pizzolato (2007) all described unique elements contributing to identity development of women and minorities. Belenky et al. described the received and connected nature of women's development. Baxter Magolda identified gender related patterns associated with development that focused on listening, interacting and cooperating. Pizzalato described the ways in which minority students' experience of diversity, support and threat contributed to their identity development. These types of differences were not evident in these medical students' experiences. This may be due to the effect of the greedy institution and the homogenizing processes through which difference and diversity were lessened.

In his discussion of discourse and the acquisition of discourse, Gee (1996), indicates that mastery of a discourse and the associated ways of thinking, acting, valuing, interacting and using tools is achieved, for most people, through exposure to and participation in the discourse in

meaningful settings. This participation must be scaffolded in such a way that students gradually increase their ability to function with the discourse. According to Gee, overt teaching about a discourse and its associated procedures is unlikely to result in acquisition. During this phase of their development, students have few opportunities to engage in contexts that will support acquisition. Instead, most instruction is focused on teaching students how to engage in certain activities such as conducting a physical exam rather than engaging them in authentic contexts where they decided how to focus a physical exam, what questions might be relevant in a patient history and how best to elicit the information. In this way, students learn skills but do not connect the skills to the process of enacting an identity.

Lack of balance between elements, emphasis of knowledge to the exclusion of self and others and reliance on a single perspective indicate that during this phase of their journey, students are making sense of their experiences through a lens that resembles Kegan's (1994) third order of consciousness. All of the elements of these students' identities are subject. Students are embedded in them and unable to stand apart from them, reflect on them or operate on them in meaningful ways. For these students, the continued pressure to learn more, the absence of dynamic relationships and the lack of balance led, inevitably, to failure in some aspect of their lives. As a result, they were able to bring different elements of themselves into focus and begin to consider these elements apart from themselves. This failure and subsequent consideration led students to the next phase of their development – *identifying the goal*.

Identifying the Goal

The second phase of students' journey toward medical professionalism and the construction of a professional identity typically occupied students late in their second year and

throughout the early portion of their third year of medical school. The lack of balance and pressure to learn more that characterized the first phase of these students' development caused students to experience failure in some aspect of their lives. This experience with failure served as a catalyst propelling students into the second phase of their journey – *identifying the goal*. During this time, students began to take control of their experiences, identifying their own goals and methods for achieving success. In addition, there were qualitative changes in students' conceptions of knowledge, others and self. These students began to use to concept of familiarity and the unknown when they considered what a physician knows. They acknowledged ways in which others were different from themselves and sought out unique perspectives as opportunities to learn. They began to consider their own identities and separate themselves from the institution. In addition to these changing conceptions of knowledge, others and self, students in this phase of their journey were acutely aware of the constraints placed on their developing selves by a variety of factors including the type of evaluation they experienced, limited opportunities for participation and limited independence and responsibility. The themes that characterize this phase of students' development are described in this section.

Failure

> You know, until that first, first year, that giant disaster of a year, I don't think I had ever really messed anything up. I just went along, doing everything the way everyone told me to. I had to mess up to realize, maybe there are other ways out there. Other ways of doing things. Other ways of reaching the goal. And I know, my case is kind of different. I really cracked the egg on the cement. I had to start from the bottom to put everything back together. And when I did, I started to realize, I can do this. I have to be in charge. There is help but it's up to me. I have to take control. I have to figure this out. What I need to do, what is going to work best for me, what is going to get left behind. I need to get to that point where I am in control. (CC, interview MS2, lines 837-846)

While the academic failure that resulted in Adela repeating her first year of medical school presents an extreme example of the failure students faced, it clearly illustrates the role that failure plays in moving students into the next phase of their journey toward medical professionalism and the construction of an integrated professional identity. For these students, a significant failure in some aspect of their lives brought them to the point where they began to question the external goals and formulas that had guided them during the first phase of their journey. For students like Adela, academic failure brought the self into focus as they had to redefine success and identify new strategies and methods for achieving success. As Hope explained, "We have kind of always defined ourselves in terms of what we have accomplished. For better or for worse. We are proud of those accomplishments, of what we know. And so suddenly, when we reach a point where we are not getting the grade, not being successful…failing a test? It challenges you. It makes you think. You have to figure out, what am I going to do? If this isn't working, it starts this internal conflict where you have to realize, maybe I need to do something different. Maybe this way isn't the way for me. Maybe I need to find my own way." (CR, interview MS2, lines 241-246)

Struggling with the potential of failure Shannon realized that she could no longer rely on the goals and formulas laid out by others. "I was totally, totally scared. Convinced that I was going to fail out. I couldn't handle it. I was studying all the time and barely passing. Passing sometimes, failing most of the time. But, when I was doing poorly in school, I learned the most about myself. There weren't any role models. There weren't any patterns to follow. I had to go into my little cave and figure out, what do I need to do? I didn't spend time with anybody because they couldn't tell me. I had to figure it out." (LL, interview MS3, lines 394-399) When

external formulas and strategies for success were removed, Shannon was able to turn her focus to her own definitions of success and begin to chart her own course. Because failure was not something that was discussed, Hope, like Shannon realized that it offered her the opportunity to set her own goals and follow her own path. She explained, "When I failed, I had no idea what to do. There was no set, well you messed up. You should now do X, Y and Z. They never talk about failure. They never mention it in the curriculum as a whole. I mean yeah, they tell you if you fail you can remediate but what does that mean? I had to figure that out. I had to take the initiative to figure out how this was going to work out." (CR, interview MS2, lines 247-251)

For Heather, failure on USMLE Step 1 brought everything in her life into question. "At this point, right now? Yeah. Everything is open. I mean, failing that test made me go, I don't know who the hell I am. I don't know what I am doing. I don't know. I just don't know anything. I just have to start back at square one and figure this whole thing out. Everything is on the table I guess." (HS, interview MS3, lines 247-250) Failure on this exam provided Heather with the opportunity to reexamine all aspects of her experience as she worked to move forward and find success.

For some students, failure in personal relationships raised questions about knowledge and what they needed to know in order to be successful. Zachary described the failure of his long-term relationship and the questions it raised about how much he really needed to know.

> At the end of last year, I just experienced so much personal upheaval. I broke up with a longtime girlfriend. We were living together and so at the end of last year, it just seemed like everything was up in the air. And I was still interested in school. I liked CPR because of all of the physiology and pharmacology. I liked DMH because of my background in biochemistry. But all of the personal stuff made me really think. Do I need to take this on? Do I need to learn everything,

> 100%? Are the problems in my personal life because I am trying to learn too much, do too much? What is the difference between knowing 95% and knowing 100%? Maybe I have sacrificed my personal life and I need to find a way to not give 100%. To be content that I might not be able to know everything. So that has been my experiment this year. I love the feeling of knowing all the answers. But if that is going to cause such problems in my personal life, I have to find a different way to do things. (BV, interview MS2, lines 89-100)

Other students experienced failure that was completely outside of their control. For Ethan, failure came in the form of a new medical diagnosis and the realization that he was now living with a chronic disease.

> I think honestly, getting sick does a lot to you. It really does. Facing, almost…in a way facing mortality…not immediately because I certainly wasn't that ill but when somebody says to you, you have a disease that could kill you…okay, interesting. My body is failing me. What does that even mean? That does something to you. I can imagine anyone who has ever had a big diagnosis like that would probably say the same thing. You see things differently. Everything is up for grabs. Maybe it is a good thing because you have to reconsider everything. Yourself, your knowledge, what you are doing, how you are acting. Nothing is as important. You can start to see everything for what it really is. (JF, interview MS3, lines 674-681)

The nature of the failure these students experienced varied widely. For some, it was complete academic failure that resulted in having to repeat a year of medical school. For others it was more minor academic failure such as failing an exam or receiving a low grade in block. Some encountered failures in personal relationships. Regardless of the type of failure these students encountered, the experience of failure allowed them to begin to see other ways of being and interacting and begin to take control of their experience as developing professionals. As Charles explained, "Suddenly, I realized, I wasn't dead just because I had failed at something. I had the flexibility to define myself. To figure out, I can go and do it this way The way they had been telling me to be just wasn't working so what did I have to lose by trying it my own way?" (RP, interview MS3, lines 440-443)

Control

Having experienced some kind of failure, these students began to realize that they could assume some responsibility for their own experience. As a result, a major theme characterizing this portion of their journey was control. Students began to make choices related to when and how to participate in the institution. They realized that they could determine when and what they learned and what strategies they used while learning. Finally, they realized that they could tailor the available resources to better meet their needs and goals.

For some students, control meant making choices and determining when and how much they would learn. Thomas described a choice he made to stop studying and instead spend time with his wife. "You know, at some point, I guess the question came do I need to do this? Do I want to get 100% on every test? Is that my goal? And the answer is no. It's not. Because I like spending time with my wife. Like, we're going out to dinner tonight instead of me staying in the library and studying. And I'm okay with that. It will probably cost me a couple of questions on the next test. So be it. It's not a big deal. And that has been the one big, overarching theme recently. I can choose not to learn everything." (SK, interview MS2, lines 485-490)

Some students like Marin and Elyse took control by making a series of small decisions, each of which allowed them to choose whether or not to participate in institutional activities. Marin explained, "I am really happy now that I am not doing everything. First year, there was so much I felt like I had to do. Clubs and X, Y, Z groups and get involved in things here and do this over there. But now, I am more doing what I need to do to learn and be happy and healthy. I have just organized myself so that I can do things I want. I have just said, I am going to do this and not this. I have realized, the effort to do those other things would be more than what I would get out

of it." (SM, interview MS3, lines 307-311) Like Marin, Elyse gained control one choice at a time. "These days, I look at everything as kind of an individual decision. Do I want to go to a movie tonight or do I want to study? And when I make those individual decisions to do something besides school, it is not excessive. It is not going to make me a bad doctor. But it is enough to keep me sane." (RH, interview MS2, lines 276-280)

Other students found control as they begin to select their own strategies and approaches for learning and studying. After struggling through two blocks trying to study in exactly the same way her classmates were, Shannon realized that she could use her strengths and develop her own strategies. "You know, it was a slow process but somewhere…oh, it was Musculoskeletal. Musculoskeletal was after Neuro. And I realized, wait. I was an athlete. I understand mechanics and muscles and bones. I don't need to do it the way they are. I can learn it my way. And I got it. And that was the first time I was like, wait, I don't think it's that hard. And that was the turning point for me. When I realized I could do it my way." (LL, interview MS3, lines 211-215)

Adela gained control when she finally asked for help. By talking with the various individuals and resources available to support her, she came to the realization that the "rules" she had been following related to what resources to use, attending lecture, and studying were really not rules at all but rather "guidelines." As she explained,

> I spent a lot of time trying to do everything by the rules, the way I thought you should. And I've come to realize that it's not that you break the rule. It is just that they are a guideline. You have to make it as flexible as you need to be successful. I felt like oh, I have to go to lecture. Oh, I have to use that book. I didn't realize until I asked for help that there are lots of different ways to do things. Now, it's more about my learning. What do I need? I've heard that guy lecture. Maybe I will be better off staying at home and working with the book. That textbook doesn't have good diagrams. I want to find a diagram to use. Understanding that it is all here but you need to tailor it to yourself. There is no one way to do it. (CC, interview MS2, lines 746-753)

Many of these students experienced control for the first time when they began studying for USMLE Step1. While these students acknowledged that the experience of preparing for USMLE Step 1 was daunting, unpleasant and reinforced the perception that they needed to know everything about everything, this exam represented the first opportunity for them to study outside the watchful eye of peers and faculty. As a result, they were able to determine when they would study, what resources they would use, and what approach was going to be most productive. Greg described the control he found during Step 1 study in this way, "It is nice to have…you know…even though the process is horrible, it feels freer and more comfortable now that I am finally out of the blocks and studying for [Step 1]. I am just kind of doing it my way. I have control over what I do with my day. For the first time in two years, I don't have to think about what everyone else is doing and doing it at the same time. I can make choices. I can do it the way I want." (CP, interview MS3, lines 377-381)

Identifying the Goal

As students began to assert themselves and take control of their experience in various ways, their reliance on external goals and formulas for success began to decrease and they started to identify their own goals and methods for achieving success. For most students, the process of identifying their own goals and strategies to achieve those goals began outside of the classroom during various clinical experiences that exposed students to a wide variety of physicians, residents and peers. In these situations, students found that in order to learn they had to play a central role in defining what needed to be learned and how that learning would take place.

For some the process of identifying their own goal happened as they encountered expanded opportunities to work in clinical environments such as the community clinics run as a

part of the College's Commitment to Underserved Populations (CUP) program. As students moved further in to their training, they were allowed to take on more significant responsibilities. They now had the opportunity to engage in a variety of activities including conducting basic history and physical exams, performing basic procedures such as drawing blood and observing more complicated procedures. In this environment, students have opportunities to see ways in which their skills and interests differ from those around them and as a result begin to make choices about what they need to learn and how best to develop new skills. Cheryl described her experience in the CUP clinic in this way:

> It is different in a lecture setting vs. a clinical setting. Because, a lecture setting and the first two years and even now with the didactics, you all have the same end point. You all have the same test that you need to take and so you all have to learn the same thing and do it the same way. As opposed to in a clinic it is sort of like, everyone has their different skills and their different qualities that you sort of have to hone, into you know, a doctor. And in that environment, you have to put yourself out there, you have to pick. No one tells you what you are going to learn when you go to Women's Clinic. Because everyone else might already know how to do that. You have to put yourself out there and say, this is what matters most to me right now. As opposed to when you have to do a multiple choice test. You have to decide what you are going to accomplish and how you are going to do it. There are people who will help you but only if you put yourself out there and say, this is what I need. (CD, interviewMS3, lines 452-463)

Opportunities to work side by side with a physician for an extended period of such as those offered by the Rural Health Professions Program (RHPP) helped other students to begin the process of identifying their own goals. During these summer experiences in which students spent a month or more working with a physician in his or her practice, students found themselves being asked to make plans and decisions about patient's conditions. Ethan explained

> In that four weeks in Sierra Vista, there was so much more drawing knowledge out. Nobody told me what I needed to learn. There was just lots of questioning and him asking me, well, what would you do? Why would you want to do that? You know, maybe a little prompt, let's say your patient had this going on to make

> it a little bit more clear, then what would you want to do? And that is when I see the connections and that those connections were made by me, real time. As opposed to being spelled out for me or someone telling me in this artificial context, this is what you do, this is what you have, this is what it means. I get to start identifying what I need to know, where I need to go. That is powerful. (JF, interview MS3, lines 185-192)

Other students found themselves spending summers working abroad in clinics. In this environment where everything familiar had been removed, students realized that there were no external goals on which to depend. As a result, they began the process of identifying their own goals. Nancy described her experience in Kenya saying, "I got to Kenya and I thought, I will be working in a clinic. How different can that be? I know this works like this. And all of the sudden, it doesn't work like that. You go in thinking you know how to do something and then you don't know how to do it. And you don't have anything around that makes you comfortable. And so you figure out pretty quickly, I am going to have to adapt. I am going to have to figure this out. I am on my own and I need to figure out what I need to do to make this work." (CN, interview MS3, lines 347-352)

For some students simply nearing the end of second year and preparing to leave the relative familiarity and predictability of the basic science years and enter the clinical environment caused them to begin to consider their own goals and how these might be achieved. Marin described the upcoming transition saying:

> You know, as third year gets closer and we start having to turn in all these forms and start planning and everything we are going to have to do, it makes you start to think. Sometimes I wonder…I think in the classroom and stuff, they…I sometimes feel like what I am tested on and what I am supposed to know… I guess, I feel like that might not be the same priorities that I will have in clinic. And there are some places where I can start to see that. You know? I mean it is hard to describe but it's like, it seems that regurgitation is not what helps anyone. It's understanding. It is patient interaction and not like, you can recount the first five pages of Robbin's sort of thing. You have to know it but I keep thinking that can't be that important in and of itself. When I get to clinic I

> think I am going to have to be open to the idea that I might need to change my vision. I might need to do things differently. (SM, interview MS2, lines 271-280)

Having experienced some sort of failure, students moving into this phase of their journey toward medical professionalism and an integrated professional identity begin to assert themselves and take control of their educational environment in a variety of ways including selecting what to learn, how to learn and what types of activities they want to participate in. As they begin to take control of their experience, they also work to identify their own goals and move away from their previous dependence on external goals and formulas for success. These changes in students' environment and the ways in which they interact with this environment led to qualitative changes in the ways students described knowledge, relationships and interactions with others and themselves.

Knowledge and Knowing

In the first phase of their development as physicians, concerns related to knowledge including what physicians needed to know and how best to acquire that knowledge were students' primary focus. As students' navigated the second phase of their journey toward medical professionalism, questions related to knowledge were on a more equal footing with consideration of others and self. In addition, students' focus on knowledge began to shift. Students in this phase of their development described knowledge not simply as the body of factual "content knowledge" necessary to be a physician but as the connection between the facts a physician knows and the ways the physician uses to facts to provide care for patients. For these students, "knowledge" consisted of both the facts a physician knows and what physicians' do with these facts. While they continued to consider what physicians need to know and how to acquire this

knowledge, they now also began to focus on the role of the unknown and the ways in which knowing was related to doing in the practice of medicine.

While students in the first phase of their journey used the concept of fluency to describe the knowledge necessary to be a physician, students in the second phase of their journey began to grapple with the idea of familiarity to describe what physicians know and how they use knowledge. Thomas described the idea of familiarity in this way:

> During the first two years, we spend so much time in the classroom learning all of this stuff. Learning the biochemical pathways of glycolysis and we outline the steps a thousand times and we know the intermediaries and this tiny little enzyme and that by-product. And then, at some point, we wander down into the hospital we are attached to and we start talking to a bunch of different clinicians. And we realize that very few of them can do that. Yeah, they know the big steps. They can outline the process. They can tell you what glycolysis is and why it is important. They know enough to say well, if this big step didn't happen here is why it would be bad. But they don't have it memorized. Not like we do. And you start to think, maybe it is not important for me to memorize it. Maybe it is important for me to be familiar with it. (SK, interview MS3, lines 164-173)

During his second year, Erik also had interactions with physicians that brought him to use the concept of familiarity, rather than fluency, to describe the knowledge necessary to be a physician.

> The other day, I was with this physician and he said, 'We're giving this patient furosemide. So, what do I need to worry about?' And I thought oh, cool. I can nail this. I just did renal. So, I'm like well, it's a loop diuretic. And you have all of these different channels, you have sodium and potassium channels and then you have increased flow through the tubule and off I went through the whole detailed physiologic mechanism of how you waste potassium. And he just stood there. Looking at me. And then said, "Well, yeah. But what we need to do because of all of that is monitor his potassium. We may need to give him potassium." That was it. Monitor potassium. And that makes you think. Maybe I need to know less but be able to connect it to what I am doing. (JW, interview MS2, lines 448-456)

As students begin to grapple with the concept of familiarity instead of fluency, they begin to differentiate concepts that are fundamental and must be learned at the level of fluency and

concepts that they need to be familiar with but do not need to know in the depth or detail required for fluency. Marin described how she began to identify those central concepts she needed to be fluent in from those with which she needed to be familiar.

> Looking back on the first two years, I felt like I was training to become an encyclopedia. You were trying to learn everything about everything. Then you get into third year and you start to realize, wait. There are certain things that come up every single day. They impact every patient. So you focus on those. You learn those in depth. Then there are other things that you see once in a while. And you need to remember enough and be aware enough that can you listen to that little voice and think where does that fit? So that you can go figure it out. You don't have to know everything perfectly. You have to know enough about a lot of things that you can recognize when something is important. It is the difference between an encyclopedia and a doctor. (SM, interview MS3, lines 761-769)

There are a variety of factors that appear to contribute to students' growing comfort with the concept of familiarity including increased interactions with patients, recognition of the complexity of patient conditions, an understanding of how practicing physicians acquire the knowledge that they use and interactions that provided an opportunity to build and develop knowledge in the context of patient care. In the first phase of their development as professionals, students felt that developing fluency was essential to interact effectively with patients and to prevent negative outcomes. During this phase of their development students have increased interactions with patients and begin to realize that these encounters can still be productive and beneficial even if they are not fluent in the knowledge related to the patients' problem. John described his first interaction where he realized that fluency was not necessary.

> I was doing RHPP and that was the first time I saw myself applying a lot of the knowledge I had learned. I had this 12 year old kid with GERD. And we had learned about this in a Team Learning. So, I was all over it. And I was explaining stuff to him and his parents. And then the physician comes in and we are asking the kid questions and I realize, hey, we are trying to establish a timeline of when this kid feels pain. And then I start to think, I bet I know why we are doing that.

> We are trying to differentiate these two causes. And she is like, yeah. That's exactly what we're doing. Even though none of what I learned had focused on that. And then we started talking about *h. pylori* and I was like, I don't know anything. I haven't had that block yet. But I was still able to participate in this kid's care. I came to the table with some of the knowledge and I was able to apply it and work with this kid even though it was far from complete. I just pulled from what I did know. I didn't know everything but it didn't keep me from getting started. (NH, interview MS4, lines 378-390)

Another factor that contributed to students' growing comfort with familiarity was their realization that patient's conditions were not simply a presentation of pathologic or physiologic mechanisms but a complex interaction of a multitude of factors. As a result, they become less concerned with knowing everything in order to be sure that they make the right decision. Ajit described his recognition of the complexity of patient's conditions and the role this played in his need to know everything saying:

> I have really come to have a different view on that. I used to think if I knew everything I would be able to save a patient's life. Or if I didn't know enough I would kill them. What I am realizing is there is such a huge gradation. I might know enough to save their life but give them really, really terrible side effects. Or vice versa. You may know everything and they still die. I am coming to see it is not about right or wrong. Knowing or not knowing. It has pulled me toward the middle where I see some concepts and I can see, this is going to be important all the time. And I see other things and I think well, I might need to know this for the test but it will probably only apply in these limited circumstances (GQ, interview MS2, lines 135-142).

Coming to a realization of how doctors developed knowledge was also important in helping students grow comfortable with the concept of familiarity in place of fluency. Working with a physician for six weeks during RHPP, Elyse saw situations in which the doctor was fluent but also realized how this fluency was developed.

> I remember in the first week being so awed at his knowledge of diabetes drugs. He knew all of the drugs. Not just the first couple. All of the drugs. Even the obscure ones. And knew what they did. And then, somewhere in the second week, I realized, we are seeing three, four, five patients a day with diabetes. He didn't

> just learn those randomly. He knows those drugs like that because this is the United States and he sees that every single day. I could ask him about a drug for some parasite found in Africa and he probably wouldn't be able to do that. That knowledge that seems just like, something he can just recall, off the tip of his hat, it's not that. He does it every day. (RH, interview MS2, lines 338-345)

Because of long term, on-going working relationships with physicians, students like Elyse began to see that the physician's knowledge which seemed so detailed and effortless was actually the result of needing that information each day in practice. As a result, they began to reconsider the idea that physicians had vast, exhaustive and detailed knowledge of everything. This new conception of knowledge evolved in contexts where students had on-going, consistent exposure to a physician engaging in the practice of medicine.

As students began to develop comfort with the idea of familiarity, they also began to see greater connections between knowing and doing. Activities such as problem solving became an important part of how they developed knowledge. In addition, the knowledge they were learning in lab and lecture was now connected to the clinical activities they participated in both in and out of the curriculum. Zachary explained:

> Once you start to construct a differential diagnosis, you realize, I don't have to know everything. I have the experience of being sick. Knowing someone who is sick. That is a starting place. So, you use that to make a list of what might be going on. And then as you think about how you might narrow that list, solving the problem becomes a way of learning. In the exercise of constructing a differential and then narrowing it down, you are forced to look at your knowledge and figure out what you need to know. You are using knowledge at the same time you are acquiring it. And that feels pretty worthwhile. (BV, interview MS2, lines 246-252)

Heather recalled looking back at patient history and physicals (H & Ps) that she had written during her first year and realizing that she was now able to connect her knowledge with the clinical activities in which she engaged.

> I looked at my old H&Ps that we wrote the other day. They were horrible. It was so obvious that I didn't know why I was doing anything. I didn't even know what the purpose of my writing that stuff was. And now, even if I am not totally sure of what I am doing, like, they say, you palpate the liver this way. I can start to think okay. I've seen the liver on my cadaver. I have some understanding of what goes wrong with them, with livers. Let me think why am I doing this? Why am I asking these questions? And it makes a lot more sense. Before, all this stuff. I could rattle off all the anatomy stuff, whatever. I could go through the motions of the physical exam. But now I am starting to put the two together. (HS, interview MS3, lines 553-560)

Students' increased comfort with and reliance on familiarity rather than fluency and the growing connection between what physicians know and what they do shifts students' emphasis from mastering a vast body of disconnected knowledge to an emphasis on knowing what you don't know and filling in the gaps. Ethan described the shift from needing to know everything to knowing what you don't know in this way:

> I wish it were as simple as you go to the first two years of medical school and you just amass this body of knowledge and then that is everything you need to deal with a patient. Doing my clinical work over at Alvernon and Kino makes me wish it were like that. Where it is like a library in your head and you just pull a volume off the shelf, okay, ummm…scleroderma. Take that one off, here it is. My patient with scleroderma…and you just do it like a computer. But it's not. You are seeing your patient and you scratch your head a little bit, like, yeah, parts of this come together. I know this. But then even though a lot of knowledge is in there and you have an idea of what is going on, you start to see things that don't fit. And you have to deal with those. You have to be aware of what you don't know so that you can go research, pull a few things up and really figure out what is going on. Not just name a disease. (JF, interview MS3, lines 126-135)

For Jeanne, the shift between knowing everything and knowing what she didn't know was not always comfortable but contributed to her growing sense of confidence and control. "Definitely in first year I felt like I can't miss anything. I want to learn everything. I need to know everything. But as I get more time in clinic I realize that my responsibility, even though it is nerve wracking and scary, is to know how to approach the patient. I don't have to know

everything if I know how to approach it. Because that approach let's me see where I don't know and then I can go get the resources and figure it out. It is scary but it also gives you some confidence. You don't actually have to know everything if you know how to see the gaps." (AT, interview MS2, lines 187- 192)

Interpersonal Relations and Others

During this phase of development students' perceptions of others and relationships with others also changed. Students had begun to take control of their experience, identify their own goals and reconceptualize the role of knowledge in their development as physicians. Arriving at this point caused students to begin to acknowledge ways others were different from themselves. Students' previously dichotomous views of self and others begin to break down as they realized that others, like themselves were setting their own goals and finding ways to achieve them. This growing awareness of multiple possible goals brought increasing consideration of other potential differences. Students now expressed a desire to seek out and understand these differences.

Students' experience of failure and the recognition that they needed to take control and identify their own internal goals caused them to recognize that their seemingly homogenous group of peers was really a group of individuals, each setting their own goals and working toward success. As a result of her failure, Adela realized that she was walking a different path than her classmates. "For me, after that failure, I realized, we are not all the same. Some of them still have that goal, of being the best. With the super high grades. And that is their reality. My reality is I have to pass. They are trying to do one thing and I am trying to another. And we might need to do things differently along the way. That first year showed me that we are not all

the same. I don't have to live off of anyone else's expectations. I am figuring out my way and they are figuring out theirs." (CC, interview MS2, lines 415-419)

Students' growing awareness of the diverse goals within the class led to an increased recognition of the various ways in which students were working to achieve these goals. As Christina explained, "I am gradually beginning to see how a lot of people are different. It is starting to be clear to me that different people want to do different things, have different goals. And so they look at things in multiple different ways. Some people really like to talk and explain and ask questions. And that works for them. Some feel like spending hours and hours in lab is the right thing for them. Some just like to be off on their own. So, depending on what they need to do, you can look around and see them doing it." (KG, interview MS2, lines 510-515) For Ruby, this recognition of multiple goals and multiple strategies helped her realize that she did not always have the only answer. "As I have seen people doing things differently, I know I do this and I see my peers doing this, it is just like, being receptive and knowing that I don't necessarily have the right answer. And that you can get help from a lot of people is the difference that it really makes." (JZ, interview MS3, 482-484)

For students in this phase of their development, their growing understanding that their peers in fact had multiple, diverse goals caused them to consider other ways in which their peers, physicians, other health care professionals and patients, might differ from themselves. They became more open to the multiple stories and perspectives around them. Describing her peers, Marin explained this growing recognition of differences in this way:

> Everyone here, we all make up this sort of body and this sort of like, we all have, everyone has certain aspects that make us like everyone else or we wouldn't have made it to this point. And at first, that is what you see. But then, I don't know, you realize that everyone fits the mold and breaks the mold at the same time. So,

> we do all have things that are very the same but you start looking for the little things that make people different. Oh, you do this. You're different that way. And you start to see the differences not the sameness. (SM, interview MS3, lines 237-242)

Like Marin, other students in this phase begin to seek out opportunities to identify different perspectives and learn about them. For some students, this meant talking to other students in order to hear about their experiences. For others, it meant attending sessions that they felt would present views most different from their own. Regardless of where the encountered these new perspectives, students agreed that the most important element was an openness to hearing and learning from and about others. As Hope explained, "What I have seen, when I have learned the most, people that have really gained new perspectives is they are always open to, you know something I don't. I can learn something from you. Just that mentality that you have something to offer me. You can keep adding little pieces. Seeing more things. That advances you. Just asking people if you are wondering what did you do for your clerkship? What do you do on the weekend? What do you do, you know. Just finding that person where you haven't had that perspective before. It is very refreshing."(CR, interview MS2, lines 493-499)

Students' growing awareness of multiple experiences, goals and perspectives made them aware of the potential complexity of interactions with others, particularly others who were different from themselves. Zachary explained, "As I am dealing with more people, I think that, I just think that you are dealing with so many untangible elements. And those are often what I am trying to focus on. I don't always understand them. Trying to understand where that person is coming from is not, it's not like when you are reading a textbook and dealing with hard facts." (BV, interview MS2, lines 406-409)

As students became increasingly aware of other perspectives and approaches the nature of peer to peer discussions related to various concepts changed. Early in their first year, students used conversations with peers to confirm what they knew. At this point in their development, such discussions became a way of expanding knowledge by identifying other explanations and actively working to expose and resolve discrepancies. During one study group in Advanced Topics, the last block of the second year, a small group of students worked to understand the regulation of glucagon and insulin.

Student 1: So…as blood glucose goes up, insulin increases. Which pushes glucose into the tissue. So, glucagon goes down.

Student 2: So, you are saying they are opposite? Insulin and glucagon will be opposite.

Student 1: Yes. Because if insulin is high…

Student 2: So with this [an insulinoma] insulin will be high so glucagon will be low.

Student 1: No. Glucagon will be high.

Student 2: That's not what we just said.

Student 1: Right. But it doesn't always go the same way. Think of the pathology.

Student 3: And think of fasting. You reach a point where glucagon goes up in the absence of insulin.

During this discussion, students in this group used their different perspectives and misconceptions as an opportunity to clarify their thinking and build a more sophisticated understanding of a physiologic mechanism.

While students were becoming aware of multiple perspectives and felt that it was their responsibility to interact with others different from themselves, students still felt that in clinical interactions it was their responsibility to help patients understand and adopt their way of

thinking. Interactions with patients were simply a way to discover the patient's point of view and then work around it. "For the most part, everyone has good solid reasons for the way they view the world. And I mean just talking to some people really helps me understand what their point of view is. And I think that is important. Because when people get so wrapped up in their political ideology or whatever, they just butt heads and you can never come to a solution. I think that learning about the way that particular patients handle or view things helps me figure out ways to circumvent that. So that I can prevent the butting of heads and get my job done." (SK, interview MS2, lines 310-315)

During this phase of their journey, students' were becoming increasingly aware of others and the ways in which others differed from themselves. They believed that it was important to seek out other perspectives and ways of being in the world and enjoyed finding out about the experiences of others. Learning about these new and different perspectives however, did not fundamentally alter the way that students viewed themselves or others. Relationships and interactions were based on the co-existence of two often opposing points of view and did not promote significant reflection about differences. Aside from seeking out patient's points of view, interactions with patients changed very little and were still devoted to convincing the patient to adopt the student's point of view.

The Self

In the first phase of the students' journey toward medical professionalism and the construction of an integrated professional identity, meaningful consideration of the self was absent. Instead students' were focused on meeting external demands and achieving external goals related to becoming a physician. Experiencing failures, working to assert control over their

environment and beginning to identify their own goals made this part of students' journey a time when they could begin to consider their own identities and separate themselves from the institution and those around them. As they worked to identify their own goals, students begin to recognize ways in which they were different from those around them. Similarly, as they begin to acknowledge and seek out multiple perspectives, they became increasingly aware of their own unique voices, views and values.

During the first phase of their journey, students were generally too concerned with what they needed to know and what they need to do in order to become physicians to be able to focus on any other aspects of their experience. As their lives became increasingly out of balance and they began to experience failure in some aspect of their lives, they began to consider themselves. Garrett, who felt like his narrow focus had caused him to misjudge people to the detriment of personal relationships, realized that prior to medical school he had relied on a set of core values that had helped him to make better judgments about people. "I feel like, in the last year, I have really misjudged some people. I feel like I have become I really bad judge of character. Because people that I thought were one way and that I though possessed those qualities that people should have…well, they don't have those qualities. And so I just had to think, as a result of everything falling apart, I had to think what are those ideas, those solidifying ideas that I had before, from the way I was raised, from the military, whatever. What were those things that I had that let me judge people? I needed to find those qualities in myself again." (CL, interview MS2, 196-201)

Adela's academic failure brought her to the realization that she had lost herself in the institution. When asked what she took away from her experiences with failure she responded, "I guess it just goes to show that education is big. You can get lost in it. You can lose yourself in it.

And people can forget that you are there. If you don't have a voice for yourself, no one else might speak up for you. You need to find your voice and figure out okay, what are you going to do? You need to figure out what could possibly happen. And I started to find out a lot about myself. I found out that I am persistant. I am resourceful. I can't just be pushed around. I need to figure things out for me." (CC, interview MS2, lines 275-281)

Heather's growing awareness of multiple perspectives and the differences among her peers caused her to turn her focus inward and work to determine who she was.

> You know, this whole process, from pre-med through admissions, the fact that it is hard to get in and they keep it selective and only let in so many students per year and stuff? It sort of manufactures this identity and you start to think oh I'm this and I'm this and then it gets to be oh, I have to be this and be this. And at some point you realize, it is not this crazy, mystical thing. People are doing other things. People are doing things their own way. People are different. And that makes you start to think, well, maybe I am different too. I have experiences that have shaped me too. How do I want to be? (HS, interview MS3, lines 203-209)

For Thomas, beginning to set his own goals and make choices about how to spend his time provided him with the space necessary to consider himself and his needs. "You know, at first it was a struggle. All of my classmates would do something and I would think oh, I must need to do that too. And then at some point they all did something and were talking about this cool thing and I thought well, I did this instead. And I'm like huh. It's okay. And the struggle has happened less and less as I have made my own decisions and gained a stronger sense of self and what I need to do to be here and be comfortable and happy. If you don't know who you are, or don't think about who you are, it is really easy to get pulled along." (SK, interview MS3, lines 665-673)

Constraints and Limitations

During the second phase of their journey – *identifying the goal* – students experience many important changes in the ways in which they view knowledge, others and themselves. They have begun to use the concept of familiarity when considering what physicians know and how they use knowledge. Knowledge is now connected with meaningful actions such as problem solving and various activities related to doctoring including patient interviews and physical exams. Students now acknowledge the existence of multiple perspectives and seek out opportunities to learn about these perspectives. In addition, students are now beginning to consider themselves and their own identities. These changes to the structures students use to make meaning of their experience also make students acutely aware of the constraints and limitations placed on them by their educational environment. For these students, the constraints they experienced took on three forms: the type and frequency of evaluation, limited opportunities for authentic participation and limited responsibility and independence.

Evaluation

As students began to include the concept of familiarity when considering knowledge, what they needed to know in order to be physicians and how they needed to use this knowledge they became aware of the ways in which the methods used to evaluate them were at odds with their growing acceptance of familiarity and the need to use rather than reproduce knowledge. As Marin explained, "I guess an on-going struggle is the tests. The exams. You are going to have to take tests for your entire life. I am coming to terms with that. But Societies, being in clinic and even CBI sometimes, you start to think okay, if I have a framework I can really use this. What is the way I can organize my thinking so that I will have a better skeleton to help me think what is

important? What does it mean? But then studying for the exams, any exams but especially in the blocks and then Step 1 is just a million little factoids that you need to memorize. I am trying to organize them and I don't have any place to put them. It is so frustrating. Instead of being able to say, I've seen that, I can apply this knowledge it is just what are the 700 hundred little tiny things I need to memorize about this silly disease." (SM, interview MS3, lines 225-233)

Like Marin, Thomas was frustrated by the multiple choice exams students had to take. His frustration arose from the fact that these exams, which emphasized only one element of their learning and developing knowledge were the primary tool for making decisions about whether or not students would progress to the next portion of their training.

> I think that Societies and CBI are important because it is sort of a way of presenting the thinking and the problem solving and that is really an important component. Societies especially allows us to interact with patients and do physical exams and stuff.…I think that they are important components of what we do. But that is not what the emphasis is put on. Because at the end of the day, we take an exam. And that tells us, do we go on to the next block? And at the end of year two, we take Step 1and that tells us do we go to third year? If you want somebody to be successful, you don't need all these standardized patients and the mentors taking us to clinic. You just tell them what books to read and what things to study and you throw a test at them every once in a while and they will be successful on Step 1. But a good score on Step 1 does not a clinician make. (SK, interview MS3, lines 468-477)

Nancy found clinical evaluations, which she had hoped would focus multiple elements of knowledge and interaction similarly at odds with her developing notions of knowledge, what physicians know and how they use knowledge. Rather than helping her to transfer and expand her knowledge so that she could use it in this new environment, she felt that these evaluations "punished her" for not using her knowledge in the way that clinicians do.

> Every time I get evaluated I think, there were things that I didn't know about that somehow I was supposed to learn. You know. Things that you would just have no idea about if you hadn't been doing this for ever. You present a patient and you

> have done all of this thinking about what is going on and why do they have those symptoms and what do you do and the attending goes, oh. What is the blah, blah score? I have never heard of that. I will be happy to calculate it. To tell you want it means. To tell you how it is important. I will use it to think about every patient in the future. But it's not oh, you know everything you have been discussing related to pancreatitis can be summarized with the Ransom score. Why don't you go look that up, figure out how it connects and when we present you can tell me what this patient's score is and we can talk about it. It's you don't have the Ransom score? You should have it. Why don't you have it? Your medical knowledge is incomplete. I just think it's not very…there is a better way to do things. (CN, interview MS3, lines 413-424)

Other students found the frequency of evaluations, both multiple choice exams and clinical evaluations, conflicted with their attempts to develop familiarity and use knowledge effectively. As John explained, "Just knowing that you are being evaluated all the time is hard. You are always being critiqued which doesn't leave any time to change. You do something, they say, you did this wrong. And then five minutes later you do it again and they say, you did this wrong. Well, of course you did it wrong. You haven't had time to figure out how to do it differently because you are being critiqued at all times. You are always up on that pedestal. Exposed. You are being evaluated all the time." (NH, interview, MS4, lines 405-409)

During her clinical rotations, Cheryl struggled with the fact that she was evaluated by many different people rather than being able to work with the same evaluator for an extended period of time. Because of the number of different people performing evaluations, she felt that her effort focused on remembering what each different evaluator wanted rather than developing an understanding of what she was doing. "Working with so many physicians and different house staff and they are all evaluating you is hard. This person, well, that's too much of this and that's not enough of that. So, you don't even have a chance to think about what you are doing or why you are doing it that way. It just turns into so, okay, with I work with this person I do it like this

and when I work with this person like this and this with this person do this. You don't have any chance to figure out what you doing or how you are doing it. You are just trying to remember how it is that so and so wants you to do something." (CD, interview MS3, lines 483-489)

In situations within the curriculum where students were being evaluated, exchanges tended to follow the pattern of triadic dialogue which begins with a question asked by the instructor followed by a student response and finally an evaluation provided by the instructor (Cazden, 2001). In such exchanges, students did not have the opportunity to explore their knowledge, elaborate on concepts or extend their thinking. In situations where students were not being formally evaluated, interactions followed a pattern that was more interactive and dialogic (Scott, Mortimer & Aguiar, 2008). In these settings, physicians used exchanges to explore students' views and existing knowledge and then continued to use questions and open ended prompts to guide the student in a specific activity such as making a diagnosis or identifying an appropriate treatment.

Limited Opportunities for Authentic Participation

During this phase of their development, students also identified the limited opportunities to participate in the "real" activities of doctoring as something that placed significant constraints on their developing conceptions of knowledge and interpersonal relations. Some students felt that the structure of the learning activities caused them to think of isolated bits of information rather than encouraging them to develop a broad understanding of a patient presentation. For Nancy, the constraint was particularly evident in CBI where cases were designed to provide students the opportunity to apply content presented in the week's lectures. Nancy explained:

> It is so important to have a broad background and be able to pull it all together so that when you have a patient and you are trying to like, what? You know, it could

> be this, but I have to consider this…and to try and be able to problem solve. But we don't get to do that. I guess kind of CBI tried to but the case was always from that week's lectures. So, you didn't have to work very hard to figure it out. Just flip through and find the thing that looks like the case presentation. It was pretty silly. Versus a patient coming on to the wards. You aren't like oh, well, I am in the cardiology block. So, I guess I should listen to their heart. You know? You have to start from scratch and think what do I know? How can I pull this whole picture together, thinking of multiple organ systems. (CN, interview MS3, lines 538-546)

Christopher also felt that the CBI cases kept him from using knowledge in the way required of physicians. He described the way his experience as student in CBI differed from "real world" medical practice saying:

> You know what we would do in CBI? We would just order all the tests. Whatever tests you want. CT, yeah. Sed[imentation] rate? Here ya go! Electron microscopy. Sure! Until eventually we got a test result that fit with something we knew or something that sounded familiar. That is totally unrealistic. There is a lot more to medicine. You can't do that. Everybody would go crazy. Your patient would hate you. You have to think okay, what do I know? What will help me the most? If I do this test and get this result what does it tell me? How does that help me? But CBI doesn't make you think that way. Your sub-I's do. When you are the one writing that order it's for real. (BD, interview MS4, lines 597-604)

While students all enjoyed the opportunity to interact with patients that was afforded to them by the Societies Program, they felt that Societies, like CBI placed some constraints on their developing conception of knowledge, interpersonal relations and self. Some found the fact that patients, like CBI cases, were matched to the content they were learning in blocks discouraged thinking and using knowledge like physicians do. Patrick described his experience in Societies saying, "At the end of the day, if you were in the Musculoskeletal block, you knew you were going to be doing a musculoskeletal exam. Sure, maybe it is a shoulder and not a knee. But you knew it would be muscles and bones. You didn't have to go into the room and find out what was going on with the patient and then build this broad framework and think, okay, it's unlikely but I

should probably think about a septic joint. Because you weren't in I & I. So it wasn't like it was real. It was just practice going through the motions." (MH, interview MS3, lines 253-258)

Other students felt that the fact that their mentors were always with them during patient interactions prevented them from interacting with the patient in a meaningful way. Jeanne explained her experience saying, "Just the fact that our mentor is there, evaluating us. It makes you…you don't have any freedom to approach the patient the way you would do it. You might see something in the room or hear the patient say something and you really want to find out about that. You really feel that is important. But you have to go down the check list and make sure that you get these things done and that you ask about this not that." (AT, interview MS2, lines 296-300)

Limited Responsibility and Independence

Students also described the ways in which their limited responsibility and independence with regard to various learning activities, particularly those involving patients, worked against their developing conceptions of knowledge and how physicians use knowledge. Marin described her best learning which required her to take on significant responsibility. "In Polacca I was seeing my own patients and coming up with my own care plan and everything. I have to say, the people there were just so supportive of me going in and doing my thing. Which was great. So few students get to do that so soon. And in that context, where I had to figure it out myself, I was developing the framework. You know? I had to work through it myself. And those were the things that I really understood. I had the big picture. And it didn't have to be a patient. It could be a really good lecture or CBI. But most of the time, how we learn is just sitting there. And they

tell us what to memorize and when to regurgitate it. We don't ever have a chance to get the context." (SM, interview MS3, lines 246-253)

Heather described how having an evaluator with her at all times on her early rotations made her feel that she did not have the freedom to make and potentially learn from her mistakes. "On psych, I had the freedom to try things. They were there and I was glad they were there if I needed help but they also sometimes just threw us in. Go interview this person. And then I would present back to them and it was totally a conversation. As opposed to the first rotations I had and small group stuff where it's like they are right there totally micromanaging you and directing too much. I don't like having someone looking over my shoulder…if someone is looking over your shoulder like that they are going to jump on every mistake you make. Not even let you think about well, wait. Why did I do that? I totally want feedback. I want input. I just want to be able to think first. To put things together. So that I can start to say, oh I get it before they say do this and this." (HS, interview MS3, lines 164-172)

For Nancy, independence was what allowed her to set her own goals and direct her own learning. Working as the lowest member of a team during some of her clerkships prevented her from having this type of independence and control.

> The best is when it is entirely on you. You figure out what you need to do. You set the expectation. You push yourself. The problem is that with a lot of rotations, you are not in control at all. Your attending thinks this is important or the team is focused on this. You just lose control of the situation and you aren't able to say well, here is the piece that I am going to look at because I have noticed that I am really bad at this or I need to learn about this. I mean, I understand that you have to get things done but you don't get to pick and choose. Maybe you have already worked up a patient like that and really need to learn from that guy over there. But if that is not the direction the team wants you to go, then, you know? So, you really feel very, like not in control, not able to make your own experience. (CN, interview MS3, lines 61-69)

Ethan felt that the lack of "real" responsibility offered by cases and the type of support students received created barriers to developing and using knowledge in the way physicians do. He explained:

> When you get too much support you just get bored and disengage. There is too much directing and you think they are not going to let me go wrong. You kind of lose that sense of I'm responsible. Same thing with a paper case. I feel like that part of your mind is just very hard to fool. You can sit down with a piece of paper and pretend like it's a real case but your mind knows, this is not someone I am responsible for. You are not fooling your own mind. But, when you have that contact. Face to face. Talking to somebody. You are in the emergency room, you are in the clinic. This is somebody who is really presenting something that is really happening to them I think it engages part of your…just your psyche. So, that sort of independence and sort of affording people independence to try. That is when you really invest and think what's going on here? What do I know? That is what it has to do with. Am I actually treating a patient or is this a role play? (JF, interview MS3, 228-239)

Summary and Discussion

During this phase of their journey – *identifying the goal* – these students took many important steps toward the development of medical professionalism and the construction of a professional identity. These changes were brought about by students' experiences with failure in some aspect of their lives and their subsequent attempts to assert control over their experience and identify their own goals related to knowing, interacting and being rather than relying on the external goals and formulas for success. While questions related to knowledge and the acquisition of the knowledge required to be a physician dominated the first phase of their development, students' focus during this phase varied. Participants' particular circumstances and the nature of the failure they experienced mediated which of the domains – knowledge, self or others – emerged as the most salient during this period. Students who encountered academic difficulty or failure and were struggling to master the requisite knowledge tended to address

questions related to the self as they worked to find increased success. In doing so, they began to identify multiple ways of achieving success and defining themselves. Students who experienced difficulty in personal relationships turned their focus to questions of what they wanted to be and the nature of the knowledge they needed to acquire in order to achieve these goals. These students were considering questions of how to achieve everything they needed to in order to become a physician while maintaining aspects of themselves and their relationships. In spite of the variation in the questions that were at the center of students' attention, consideration of these issues led to identifiable changes in each of the domains of development.

During this phase of their development, students begin exploring the concept of familiarity, the connection between knowing and doing and the importance of identifying what is unknown instead of replicating a vast, detailed database of everything known. These changes are similar to those documented by other research related to young adults' development and construction of integrated identity (Baxter Magolda, 2004b). These students, like other young adults, were beginning to shift their focus from replicating knowledge provided by experts and instead considering their own knowledge and ways they could reflect on, expand and use that knowledge. For students in medical school, working to develop medical professionalism and professional identities, there were two unique elements to students changing views of knowledge and knowing. The first was students' focus on the specific ways that physicians use knowledge in the context of patient care. For these students, the activities in which they were participating including constructing differential diagnoses, taking patient histories and conducting physical exams became powerful tools that helped them to engage in the process of constructing their own knowledge base that could be applied flexibly in a variety of contexts rather than relying on

replication of disconnected facts provided by experts. The second unique element of these students' changing conceptions of knowledge was their focus on identifying what was unknown. Other research has shown that as individuals develop their views of knowledge shift from the assumption that knowledge is absolute to assumptions that all knowledge is uncertain to a final stance in which knowledge is contextual and must be judged in light of relevant evidence (Baxter Magolda, 1992; Belenky, Clinchy, Goldberger & Tarule, 1986; King & Kirtchner, 1994; Perry, 1970). These students, in addition to acknowledging that knowledge must be constructed rather than replicated focused on the importance of developing knowledge structures and processes that would help them identify what was unknow. This difference may be due to the vast and rapidly changing nature of the knowledge these students were constructing and their realization that this made it extremely difficult to keep up with all of the knowledge required to function as a physician.

The contexts which seem to have the most influence on students changing conception of knowledge were those, like RHPP, in which students were able to engage with a single mentor for an extended period of time and participate in a wide variety of activities related to the practice of medicine. The environments and interactions exhibited many of the features of connected teaching which Belenky, Clinchy, Goldberger and Tarule (1986) found were essential for helping women to develop their own authentic voices and identities as learners. While lecturers typically adopted a stance that assumed students had no knowledge, interactions in contexts such as RHPP used students' experience and knowledge as the starting point for learning. By allowing students the first opportunity to take a patient history, conduct a physical exam or state their plan, mentors in these settings confirmed that students could be trusted to

know and learn without depending on the voice of an authority. Mentors valued what students knew and helped them to develop and expand this knowledge. Unlike the formal curriculum which exposed students to the finished product of physician's thinking and problem solving, these settings engaged students in a public dialogue in which mentors and students were both participants. Through this type of interaction, students come to see thinking and learning as activities in which they can participate. In addition, because these conversations allowed students to see the process of thinking rather than simply the finished product, students had genuine opportunities to engage in the construction and critique of knowledge instead of having access to instructors' privately constructed and perfected solutions. While Belenky et al. (1986) demonstrated that these elements of connected knowing and teaching were important for supporting women's development, these students' experiences demonstrate that these feminine ways of knowing are essential for supporting the development of all learners in this environment.

In these environments, students were also given regular opportunities to articulate their existing knowledge and then work with their mentor to elaborate these concepts through talk, activity and interaction centered on a variety of problems. These interactions employed a variety of tools and artifacts including patient charts, student notes and exam findings. These contexts highlight four principles identified by Vygotsky (1978) for moving students' beyond imitation and toward complex integration of concepts that allows for abstract thought and conscious manipulation. These principles focus on the need for learning to occur through social interaction, be mediated by the physical and psychological tools that allow for elaboration and reflection, be in advance of development and build on an awareness of everyday concepts.

Students' experience being evaluated, whether through multiple choice exams or by residents and attending physicians highlight important ways that discourse in clinical settings differs from the discourse of school and evaluation. In conversations that took place in settings such as RHPP clinics, students and physicians engaged in lengthy exchanges that allowed them to consider a range of ideas and explore different points of view. If students lacked a crucial piece of information, the physician would use a series of questions and answers to establish a common understanding. In situations in which students were being evaluated, exchanges tended to be shorter and begin with the instructor asking a closed question such as, "What do those values mean?" Students then provided an answer and received some sort of acknowledgement or evaluation from the physician. As a result, contexts such as RHPP provided students with the opportunity to acquire the discourse of medicine by participating in activities that were meaningful to that discourse while other contexts focused students on learning content.

Students' views of others and their interactions with others also changed during this phase of their development. In the first phase of their development, these students viewed others only in contrast to themselves. As they became more aware of themselves, their own goals and the ways they were, in fact, different from their peers, these students began to see the multiple perspectives that existed within their peer group, among practicing physicians and among the patients they encountered. While students recognized and sought out multiple perspectives, they still did not work to negotiate these perspectives. Instead, they continued to focus on achieving a single set of goals rather than working toward mutually fulfilling interactions. When interacting with patients, these students were willing to hear the patients' stories but ultimately had to "work around" this perspective in order to get their work done. When interacting with physicians in

clinical settings, students' needs and perspectives were generally pushed aside or ignored in order to meet the needs of the team or the physician with whom they were working.

At this point in their development, students' interactions with others differed significantly from patterns identified in other research related to young adults' identity development (Baxter Magolda, 2000). This research has demonstrated that in most contexts, as young adults develop a growing sense of self and personal needs, they focus on negotiating multiple competing demands in order to remain true to their emerging self while still meeting the needs of others. These students, on the other hand, seem to operate at one of two extremes in their interactions with others. When working with patients, they were aware of others' needs and perspectives and the ways in which these needs and perspectives are different from their own. The goal of the interaction however, is for the student to "work around" the patient and eventually achieve whatever it is that the student feels is most appropriate. In interactions with physicians, residents and more experienced peers, these students, while aware of their own needs and goals do not voice these needs and instead do whatever it is that the team or supervisor dictates.

In this phase of their development, students were becoming more aware of themselves, working to identify and give voice to their needs and to assert control over their own experiences. While these students were becoming increasingly aware of their individual needs and goals, they encountered a variety of constraints and limitations that prevented them from acting in accord with this developing sense of self. The type of evaluation they faced and limited opportunities to participate meaningfully in the activities associated with the practice of medicine prevented them from consistently using knowledge and interacting in ways that fit with their

developing sense of self. As a result, solidifying and operating from an internally defined system of belief remained difficult.

During this time, these students experienced important changes in each of the domains of development. As a result of these changes, students were now beginning to integrate elements of medical professionalism into their ways of knowing, interacting and being. Their changing views of knowledge helped them to participate in the various activities related to doctoring and medicine and to begin to apply knowledge to decisions about patient care. While these students were not negotiating multiple perspectives, they were now acknowledging the existence of perspectives other than their own and taking advantage of opportunities to seek out these perspectives. Students were exploring the possibility of an internally defined system of belief from which to operate but had not yet solidified such a system.

These changes mark important progress toward medical professionalism and the construction of integrated, professional identities. During this time, however, these students' growth and change was driven primarily by events and activities outside of the formal curriculum. Changes in the ways in which students were using and acquiring knowledge and their growing recognition of different perspectives came about primarily as a result of experiences in volunteer clinics or summer programs.

Other changes related to knowledge or multiple ways of being and achieving in medical school took place as a result of students' independent efforts to change how they were learning and achieve increased academic success. These environments, like the volunteer and summer activities, were not a part of the official medical school curriculum. The official curriculum, including lectures, CBIs, TLs, Societies and some clinical rotations, particularly those early in

the third year, did not consistently support these changes. As students considered familiarity, the need to build useful frameworks and the connection between knowing and doing, exams and evaluation continued to focus primarily on knowledge and reward fluency and replication of detailed, disconnected knowledge. As students worked to identify their own needs and methods for thinking and acting like a doctor, evaluation and limited opportunities to participate and assume responsibility prevented them from following through on their own goals.

The constraints that students experience during this phase of their development highlight the fact that medical education, particularly early in students' educational experiences, relies on a process of socialization to transmit the elements of medical professionalism (Hilton & Slotnick, 2005). Through induction rather than participation, students are expected to gradually take on the roles, responsibilities, attitudes and beliefs of the profession. These students' experiences demonstrate the decontextualized nature of this type of learning and the potential negative consequences such decontextualization can have on students' developing identities, social identification and learning.

According to Wortham (2006), many academic environments strive to provide students with opportunities for "pure academic learning" that separates knowledge from the social contexts, processes and interactions in which such knowledge is used and developed. As a result, these learning environments prevent students from accessing the heterogeneous resources that facilitate both learning and the construction of cognitive models. For these students, the highly structured and supported nature of the problems they encounter early in their medical education, limited opportunities to participate in the activities of medicine and frequent evaluation appear to

limit their access to the complex contexts and interactions in which knowledge is developed and applied.

These students' experiences and the constraints and limitations they describe also illustrate the importance of legitimate peripheral participation in development of medical professionalism and the construction of an integrated professional identity. According to Lave and Wenger (2008), legitimate peripheral participation provides newcomers a way to join a community of practice. This is accomplished by engaging learners in the full range of relevant activities and social practices embedded in the relevant settings. Learning and the construction of an identity takes place as a result of a learning curriculum which consists of situated opportunities for the spontaneous rehearsal and development of practice (Lave & Wenger, 2008). What these students describe and experience during the first two phases of their development is not a learning curriculum but a teaching curriculum (Lave & Wenger, 2008) which controls access to the resources and practices essential for learning and membership in a professional community. By consistently providing highly structured cases, limiting students' access to independent learning and limiting responsibility for engaging in authentic situations, the medical school curriculum controls the access that students have to the full range of participation in the community they are working to join. In this way, the formal curriculum limits the opportunities for students to engage in and subsequently develop the ways of knowing, interacting and being that will eventually allow them full membership in the community of physicians and help them to enact their professional identites.

As students advance in their clinical training and move through their third and fourth years, they are given or assume increasing levels of independence and responsibility. As this

happens they find themselves functioning, in various ways, as members of the team. In addition to increased levels of participation, students begin to move through rotations in different specialties. This provides systematic exposure to a variety of perspectives and ways of being a physician. Through this participation and exposure, students begin to engage in systematic reflection related to how they want to be as physicians and people. The opportunity to work as a member of the team, engage in new experiences and exposure to multiple ways of being propel students to the next phase of their journey – *bringing the self into focus*.

Bringing the Self into Focus

The third phase of students' journey toward medical professionalism and the construction of a professional identity typically occupied students in the later part of their third year and throughout the fourth year of their medical education. As students advanced in their training and were given or assumed increasing levels of independence and responsibility, they found themselves functioning as members of the team. Moving through the required clerkships of the third year and electives of the fourth year, provided these students with exposure to multiple perspectives and ways of being and acting as a physician. These experiences moved students into the third phase of their journey – *bringing the self into focus*. During this time, there were again qualitative changes in students' conceptions of knowledge, self and others. For the first time in these students' experience, the self emerged as the driving force in their development. As students became more comfortable defining themselves and acting in ways that were consistent with these emerging identities they considered knowledge not in terms of what physicians needed to know but in terms of what they needed to know to engage in the work of doctoring in specific contexts. For the first time, students acknowledged patients' perspectives and included

patients as active players in interactions. While these students worked to honor other perspectives, they continued to acknowledge their own developing identities and worked to remain true to their own values. The themes that characterize this phase of students' development are described in this section.

Being a Member of the Team

> The biggest event I can remember was my first rotation as a third year medical student. I was just thrown in the deep end and working my butt off but I also felt the most alive as a medical student. I had just spent two years sitting in a classroom and here I am actually helping deliver a baby on my first night of the rotation. The hours were brutal. I was scared. But when I get asked what was your best experience, that is what I go back to. Even though I am not going into the field. I always refer back to that rotation because that was the first time I felt like I was really contributing to the medical field. It was the first time I really got to practice what we had been learning. It made me realize, you know, you start Foundations, and you go through a whole slew of lecture based stuff for the first two years and you can't make the connection. You are just pretending. You know, we had Societies and all that good stuff but it was always, I'm not responsible. And I was finally there. Here's your patient. Let's deliver the baby. That was extremely meaningful. (OV, interview MS4, lines 373-384)

As Arthur's description of his first night on his Obstetrics and Gynecology rotation demonstrates, third year provides students with the opportunity to regularly participate in the practice of medicine and assume some of the responsibility and independence they found lacking in their previous experiences. These experiences were not always as significant as participating in the birth of a child and seldom occurred during students' first rotation in third year but they provided students with the opportunity to use, consider and reflect on all of the elements that contributed to a physician's identity.

Patrick's rotation in Internal Medicine allowed him to work with patients and consider how all of the information that had been presented in the last two years related to patient care.

> There were so many things that we just did in the first two years. Like pharmacology, and we would get 9 or 10 lectures on diuretics and I never made the connection. There were 10 lectures, so I figured it would be important. But then on Medicine, we had this one guy and they started him on a beta-blocker. And then as the med student, I go back up later to re-evaluate him and for the first time, I am heading up the stairs and I have to think, why am I giving him that? Because how else are you going to know what you are looking for? So I'm thinking about what is going on with the guy and as I'm walking I think oh. Decrease preload. Those sorts of things. Increase inotropy. That is what I needed so I could put it together. But in the first two years we get here's the drug. Here's the molecule. We don't get to work with the guy getting the drug. (MH, interview MS4, lines 450-458)

Working with a team and being asked to take on some of the responsibilities of a physician, provided Patrick with the opportunity to begin to connect and apply knowledge that he had previously memorized.

Working as a part of the team helped Christopher to reflect on his skills, interests and what he wanted and needed in his future career. In this environment where he was seeing radiologic images as a part of patient care, he realized for the first time that radiology encompassed unique aspects and was a specialty that held his interest.

> I worked on Peds radiology for a month and I realized for the first time that doctors could be a resource. A consultant. Not necessarily the one right out front with the patient. We were the resource for all of the pediatricians in the entire hospital. The community, the NICU, the PICU, they would come down and ask us for our advice on stuff and look at the films and I started to realize, you get exposed to this stuff throughout the first two years. In the neuro block, you see MRIs and CTs. In different blocks you get nuclear medicine studies, the VR exams and stuff. But I never knew really where they fit. They were just information. But on that rotation, I was looking at films with the team and it suddenly let me tie it all together. This is radiology, the diagnostic elements, the consulting elements and I realized, this stuff interests me but until I was there, on that rotation, doing it, it didn't fit anywhere. (BD, interview MS4, lines 237-245)

Not every rotation afforded the same opportunities for students to function as members of the team. While some rotations allowed students to help deliver babies, evaluate patients on their

own and engage in consultations, others, particularly those that students had early in their third year, limited students' participation to making patient rounds with the team. For some students, these situations, with their seemingly minimal role still provided the opportunity to reflect on how they would approach the task of caring for a patient. As Cheryl explained, "I didn't have a ton of responsibility on Medicine. But, my best moments were rounding with the team. I was taking on the role as a minor member of the team. And that was such an opportunity. Because you would see a resident present something and you could think, is that what I think? Is that what I would have done? Or you see them taking a history and some of them are so good that you start to try to figure out, how do they do that? Then there is the flip side where it is just so awful that you think, never. Never will I do that. Never." (CD, interview MSIV, lines 341-347)

Functioning as a part of the team also meant that the ways in which students were evaluated and the meaning associated with these evaluations changed. For Arturo, evaluations no longer made him feel like he was being watched but instead were an opportunity for him to reflect on his actions and decisions. Early in his fourth year he explained, "I guess one thing that has really changed a lot is how we get evaluated. Early on, in the beginning of third year, it was constant. You couldn't look up without someone filling out an evaluation. Now, we still get evaluated but it's different. It is not just what do you know or did you do the parts of the exam in the right order. We are responsible for stuff so we take a first crack at a patient and then it's a conversation. Why do you think that? Have you thought about this? What I noticed is…so, you really get a chance to think about what you are doing. Why you did it that way." (TA, interview MS4, lines 254-260)

The experiences that allowed students to function as a part of them team varied widely depending on how advanced the student was, the service, the residents and attending and the location of the rotation. Some students were given significant responsibility and asked to take on tasks such as managing an in-patient service. Others were asked to do things like look up lab values and review patient charts. Regardless of the level of responsibility, all of these students described acting, for the first time, as a member of the team and participating regularly, consistently and meaningfully in the work of doctoring. This provided students with the opportunity to engage in the practice of being a physician, see the different forms these practices assumed and begin to systematically reflect and gain perspective on their own identities as physicians.

Considering Multiple Possible Selves

As these students encountered increased opportunities to participate as a member of the team, they begin to see that there were, in fact, many ways of being a physician. These identities, ways of using knowledge and ways of acting and interacting varied depending on a number of factors including the specialty, the location in which physicians worked and the types of training the physicians had received. Participating in a variety of rotations and being expected to, at least temporarily, engage in these varied practices allowed students to begin to consider their own identities, what being a physician meant to them and how they wanted to incorporate these various elements into themselves.

As students moved through their third year, they quickly found that each specialty had a slightly different focus and unique ways of acting and interacting with patients. In order to be successful on each rotation, students learned that to some extent, they needed to adopt the

identity and discourse of the specialty and physicians with whom they were working. This process of being a different type of doctor every five weeks brought students' own identities into focus and helped them think about who they were and who they wanted to be. As Anna explained, "You know, every five weeks during third year you sort of join a different family. And you are rounding with them and doing in-takes with them and talking to patients with them. And pretty quickly you have to start doing things their way. No matter what you want to be, or what you think you want to be. Right now, I am an OB/GYN. Right now I am a pediatrician. And it is good because when you start to see the world through their eyes, from their perspective, and when you have all those different perspectives you can start to say, is this how I want to do things?" (NY, interview MS4, lines 487-493)

Oliver's experience on his neurology rotation brought him to the realization that different specialties approached patients in very different ways. As he became aware of these differences, he also became aware of his own beliefs about patients and medicine. He explained,

> Sometimes it is very subtle, but on my neurology rotation I realized, there is focus here that other doctors, other specialties don't have. They're just very focused. And I can appreciate that. But there were times when I felt that patients had bigger issues than just the chief complaint…we would write up these big notes about this little problem and then the rest got summed up as, follow up with PCP. That became like this catch phrase that I would hear in neurology. Follow up with PCP. Follow up with PCP. And I start thinking, okay. Did we even ask if they have a PCP? I don't know, it was like they pushed off bigger issues that some net is going to catch but never made sure that the net was even there. So, as we kicked these people out the door, I felt a little worried and that made me think. I can't do it this way. I need to find a different way of doing things. Maybe if I hadn't felt that little worry I would have been able to function like that but it showed me, maybe this isn't how I want to do things. (OR, interview MS IV, lines 105-115)

For Gordon, completing a rotation with a rural, family medicine physician brought him to the realization that there were different ways of "being a good person." He described coming to that realization in this way:

> You know, all of this has made me kind of reevaluate like, myself as a person. You know? Which is going to sound hokey. But working in Safford and working with those guys and watching how they worked with the same people day in and day out. It made me think. You know I came into this thinking oh, being a doctor means doing all of this long-term primary care and long term patient contact and on and on. And on that rotation, I found out, I don't like this. This is not me. So, I had to re-evaluate. Like oh, maybe you are not the good person your mother has always told you you are. Doing that day after day definitely makes you reevaluate like what's wrong with me? Why do I not enjoy this? What do I enjoy if it's not this? And then you finally get out of that rotation and onto something else, something more specialized or more technical and you realize, wait, there are different ways to be a doctor. Quit trying to put the square peg in the round hole and find where it is that you like to be. (SS, interview MS4, lines 511-521)

For Arturo, it was his year away from medicine completing his internship for his Master's in Public Health degree that provided him with a different perspective and allowed him to reflect on different ways of being a physician. He explained:

> That was an interesting year. It was interesting to see what other people saw. From their perspective. Same way I would on rotations, like right now I am a surgeon, right now I am a pediatrician, I thought alright. Right now I am public health and I am going to look at my career from someone else's perspective as best I could. And a lot of times I thought, well, no wonder people don't like us. This is making a lot of sense. No wonder people hate us. We don't talk about all this prevention. But then the physician would creep back in and I would think, because there is no time. And we would be dogging on the physicians for not taking time to talk about tobacco and you have to wear sunscreen. And you have to wear your seatbelt. And do you have the right child protective seat? And what did you paint your house with? And I almost wanted to say, fools! Have you ever done a patient interview? Do you know how much time…but at the same time that is what made me think. How can I do this? What is important to me? How can I incorporate what matters to me? (TA, interview MS4, 489-500)

As they moved further and further into their third and fourth years of training, students' opportunities for participating as members of the team increased. This participation was not

always significant but it provided regular access to the contexts and interactions in which doing medicine and being a physician occurred. In these contexts, students were able to observe, and to some extent, enact different ways of being a physician. As they watched other physicians and students they thought about how they would act in similar situations. Moving from clerkship to clerkship helped them to think about different perspectives and approaches and consequently led them to consider how they wanted to build and enact an identity as a physician. These opportunities led to another qualitative change in the way students described knowledge, relationships and interactions with others, and themselves.

The Self

For the first time in the journey toward medical professionalism, the concept of self and questions of "who am I?" came to the forefront of students' experiences. As these students began to consider residency, the type of residency they wanted to pursue and the prospect of graduating and having a career, they began to realize that in order to be happy and content, they had to identify and act on their own needs rather than always striving to meet external standards. In addition, on-going opportunities to participate as members of the team provided students with exposure to what they saw as the best and worst of what it meant to be a physician. This exposure allowed them to reflect on different ways of being physicians and begin to more clearly articulate who they were. Students then used these experiences to make choices about how they wanted to act, interact and use knowledge in their professional lives.

For students late in their third year and entering their fourth and final year of training, the process of deciding what specialty they wanted to pursue and applying for residency made them reflect on the difference between being a student and being a physician. As they determined what

was going to make them feel happiest and most fulfilled, these students begin to describe the importance of having long-term goals that extended beyond passing the next rotation or doing well on an exam. Anna explained:

> At some point, you realize, this is not a means to an end anymore. This is now. There is no end anymore. I mean you are still going to have exams and rotations in residency and you still have to graduate from residency and you still have to take Step 3 and you still have to do specialty training and you still have to take specialty boards but you have to start thinking of this as one long staircase to forever instead of a staircase to a door and another staircase to another door and another door. As pre-meds and medical students, I think we do that a lot. Oh, I have to get this GPA to get to the MCAT. This MCAT to get to med school. This doesn't matter, I just need this Step score. It is a continuum now. You can't just be living to get through the next door. This is for the rest of my life and I have to start figuring out what I need to do to learn and be happy and be the kind of doctor that I want to be. (NY, interview MS4, lines 294-302)

Toward the end of his fourth year, Arthur also felt that his driving need was to define who he was and find ways to stay true to that vision.

> You know, I guess that has been the biggest lesson from medical school. It is not all about the hoops you need to jump and impressing people. It is about being in tune with who you are, finding out what drives you, what motivates you and then finding ways to stay true to that. Because you realize, as you move on in this field, that is the question you are going to have to come back to 1,000 times just in different ways. What do you want to go into? Do you like surgery or medicine? What sacrifices are you willing to make, can you make and still say, yeah, this is me. I'm happy with what I'm doing and the choices I am making. I am always going to be training, so how do I keep myself intact because I have to keep on with this forever?(OV, interview MS4, lines 934-942)

For Ruby, the need to define herself and stay true to that definition became clear when she completed a sub-internship in OB/GYN, the specialty she had assumed she would pursue a residency in, and realized she was not content in spite of meeting every expectation and excelling in the rotation.

> I went into that rotation knowing I was going to do OB and so I knew I needed to really make a fantastic impression. This was what I wanted. So, I put a lot of pressure on myself to do exceedingly well and go way beyond their every expectation. And as I was doing all of that, I realized, the nature of the work is so stressful. You don't really ever have a relaxing day in that field. It is very go, go, go. And it is such an emotional roller coaster. You have the high of delivering babies but then you have the hours and the exhaustion and the moms that you have to take care of and I just kind of hit this rock bottom and thought, I don't know if I can do this. I don't know if I can do this until I am 60 or whatever. And it kind of makes you panic to realize, I never thought about what I want. What if I am at the end of medical school and I haven't left time to find the thing that makes me tick. That is really scary. (JZ, interview MS4, lines 587-596)

As these students nearing the end of their medical education began to see the need to define themselves and work to achieve internal goals, on-going and consistent opportunities to function as a part of a team of physicians became key in helping them to define themselves, identify their own needs and goals and revise their visions of themselves in response to new experiences. Late in her third year, Shannon participated in two elective rotations in highly competitive specialties. As a result of this experience, she was able to define her priorities.

> You know, for most of third year I had been thinking ENT. And then at Mayo I had the chance to do an ENT elective and a radiology elective back to back and I kind of experienced both worlds at once. In that environment I really got to see ENT for what it was. And I didn't really like it that much. I liked it but I didn't love it. I thought being in the OR would be great but I realized I didn't like not having control over my schedule. If one thing goes wrong, if you clip an artery, you have to call vascular and then they have to come help you. I didn't like that. I want people to help me but I want to be in control. So, those surgeries left me a lot of time just standing there and I kind of took stock and decided, there are elements I like but this is something I can live without. (LL, interview MS4, lines 178-184)

For some students opportunities to see the negative aspects of medicine and doctoring such as making mistakes or behavior that was unethical or violated all standards of professional behavior, offered the most powerful opportunities for defining who they were and who they

wanted to be. For Gordon, these opportunities came when he saw other physicians making mistakes or getting things wrong.

> You know, third and fourth year are such humbling experiences. You start out so afraid to make a mistake that you don't say anything. You don't even open your mouth. But then you see other members of the team getting stuff wrong, you see interns getting stuff wrong, you see chief residents getting stuff wrong and then you see attendings getting things wrong. And it makes you kind of realize, you know they always say, lifelong learning, but it makes you think about how you will do that. So, you start thinking about how you can put yourself out there. You start to think not just, I can't be wrong but, how can I learn? And you start to put some of the knowledge into practice but it's not I have to be right. It's what did I learn from this? Whether you are right or wrong. What do I need to take away from this to be better at this stuff?"(SS, interview MS4, lines 538-547)

Other students found the most powerful opportunities for defining themselves came from observing the negative behaviors of others and then reflecting on their own choices in these situations. On a third year rotation, Oliver witnessed a physician, frustrated at his inability to perform a lumbar puncture throw bloody gloves across the break room, leave them for others to pick up and then deny his actions.

> You know, watching that, and then thinking about it later, it made me think. This is who I am going to be. And that was such a mixture of disappointment and relief and…I was disappointed because I knew it wasn't right. And I knew I should have said something. But at the same time I was relieved. Relieved because it made me see, these guys are human. There is room to make mistakes. It doesn't make right, what he did, but it made me think, I can make mistakes. I don't have to live up to some outside standard. I need to figure out who I am and live up to that. And act in ways that I'm okay with. That fit with who I want to be. That is why it was a relief. (OR, interview MS4, lines 223-230)

As students' became increasingly comfortable with the notion of defining themselves and acting in ways that were true to these internally defined identities, their sense of self was no longer an element that operated independently of considerations of knowledge and others. In

this phase of their development, the self became the driving consideration and structure used when considering knowledge and others.

Knowledge and Knowing

During the first two phases of their development as physicians, students' assumptions related to knowledge focused on what physicians needed to know and how best to acquire that knowledge. In the first phase of their development, students' assumptions about knowledge caused them to focus on replicating a vast, detailed store of knowledge in the belief that they would need to be able to use this knowledge effortlessly in any context if they were going to function as physicians. During the second phase of their development, students' still focused on what physicians needed to know but began to consider the relationship between knowing and using knowledge in the practice of medicine. In addition, students' began to consider constructing frameworks and processes that would allow them to identify what was unknown rather than attempting to replicate a complete database of everything they needed to know. During this phase of their development, when the self was emerging as a central focus, the driving question in students' consideration of knowledge was no longer what physicians know. Instead, students' were focused on questions of What do *I* need to know? How do *I* know? and How do *I* use knowledge? In addition, students in this phase of their development describe the need to synthesize knowledge and consider its application to specific contexts. For students in this phase of their development, knowledge was no longer a discrete body of factual information. Instead, knowledge was the integration of beliefs, practices and experiences that allowed physicians to function flexibly in dynamic circumstances. Knowledge was no longer a body of content but rather an integrated way of being and acting in the world.

As he completed his fourth year of medical school, Christopher described the difference between "knowing things cold" and being able to use his knowledge to guide how he thought about a patient.

> Everything that we learn matters, to some extent. I mean you see it over and over and over again when we are on the wards. Internal Medicine, Surgery, Neurology, I mean, you name it. The stuff that we learned came up. You know? And it's like, what was that biochemical pathway? What's the anatomy here? What's the pathology? How does the pharmacology work with this? The thing is, you don't know any of it cold…I mean, I might have at one time. But I sure don't anymore. You have to have that base so that you know what is out there. Once you start practicing, you don't need to know all of it. You have to have familiarity, you don't have to be an expert. You will not be able to regurgitate signs and symptoms of Churg-Strauss and the exact pathophysiology behind it. You say, okay, I know that is a vasculidity so that is going to affect renal function so I need to look at this and this and should probably look up what it means in terms of this drug. (BD, interview MS4, lines 370-380)

At the end of his fourth year, Oliver described knowledge not simply as what he knew but as the process of connecting what he knew with what he was doing. "I guess on those clerkships I think the things that I learned are way intangible. The things that I learned, that I value, were more intangible than the facts or just what you can recite or what you can just spout off from the top of your head. What I know about things is how well I can put them together. Ideas. Concepts. And then kind of translate them into I guess…medical knowledge. The medical knowledge is what you are seeing but then what you do. Real world, how you put it all together to make a plan or take care of a patient. That is the knowledge that you take away from clerkships." (OR, interview MS4, lines 292-298)

During this phase of their development, Patrick and Gordon described knowledge as something that they could construct to address a specific need or purpose. Gordon explained the change from his first two years saying:

> But, you know, in the past, I was never the kind of guy who would go home and read a journal. I didn't need to. I just read the notes, memorized what they told me, and I did well. If I wanted a higher score, I just learned more stuff. But you know, now, at home, I'll sit down with a journal and you know I will read it just because, because I want to learn. I have a reason to learn. I have a patient and what do I need to know to care for that patient? So, you start to build your knowledge and connect what you know to the problems you are dealing with or whatever you are seeing that you don't understand. The incentive to learn is not to know more facts but to actually be able to use them to figure out how to do whatever it is your patient needs. (SS, interview MS4, lines 560-567)

For Patrick, participating in research during his third and fourth years helped him to begin to ask questions and construct knowledge in order to answer them.

> You know, for me, the research has been really exciting. I have to sit in a broom closet to do it but it is fascinating. Like, right now I am working on a patient outcome study and going through patient charts, I have just learned so much. It has made me realize that when you have a patient, you have questions. What is best? What should I do? Why doesn't this work? And you don't have to just rely on what somebody told you or on what the other guy thinks. You can go do something like review patient charts to see, well, does this really work? What is really going on here? You can look in the literature and see what do the RCTs say about the "gold standard?" Knowing what to do is so much more than just saying oh, that's whatever and this is the procedure we use. Well, why do we use it? Should we do something different for this guy? That is what doing the research has taught me. (MH, interview MS4, lines 199-209)

During this phase of their development, as the self began to emerge and students' began to consider how they come to know and how they used knowledge as physicians, they also began to express an awareness of the tacit elements of knowing and the role this type of knowledge played in their work as physicians. Oliver explained his growing understanding of his tacit knowledge saying:

> So much of the first couple of years seems to focus on the buzzwords. Trying to know exactly what everything looks like. How it is going to present. Worst headache of my life. Berry aneurysm. Double-bubble on x-ray. Duodenal atresia. Starry sky. Burkitt's lymphoma. And somewhere along the road you realize it's not so perfect or straight forward. You don't always get that buzzword. So, I guess you…I've learned that maybe you just have to be more perceptive in

> picking up on something. It might just even be a glimpse of something or a where does this fit? Why is this poking me? But you have to be aware of that and sometimes kind of go with it." (OR, interview MS4, lines 300-306)

Patrick described his growing awareness of the role of tacit knowledge in his thinking in this way:

> In the first two years, if I didn't understand where something fit, I would just go over it and over it and over it. Until I had all of the symptoms or all of the mechanisms memorized. Even if I didn't know why something was that way. I would just memorize it. Everything is different for me now. I'll spend a good amount of time reading over something or looking at a patient chart and a lot of things will just click. But if it's not clicking, then I don't try to force it. Then I will just be like, okay. Hold on to that. Come back to it. See if you can figure out why it is bugging you later. And I will keep moving ahead but keep it there, just don't obsess about it. And then keep getting more information. Keep building what you know about this situation. See if that piece falls into place. And sometimes it does. It's like oh, wait. That piece that didn't fit could be because of this or that. Sometimes you just need to trust yourself and know that you will eventually connect it. Sometimes you realize you needed a little more information before you could link it back. But you are letting things fall into place instead of just forcing them and not knowing why. (MH, interview MS4, lines 467-478)

Interpersonal Relations and Others

During the first two phases of their development, students' views of others, interactions and relationships were dominated by the students' perspectives. In the first phase, students saw others only in contrast to themselves and interactions focused on convincing others to adopt and act in accordance with students' views. As students worked to identify and achieve their own goals and gain control over their experience, they became increasingly aware of the ways in which others were different from themselves. In this phase, students worked to learn about others perspectives. In spite of this, interactions with others still focused on finding ways for students' to convince others to adopt their perspectives and ways of thinking. In the third phase of their development – *bringing the self into focus* – increased opportunities to participate as a member

of the team allowed students to interact with a wide spectrum of patients. Through these experiences, students came to realize the complex and dynamic nature of interactions with patients. As they recognized this complexity, students began to consider their role in interactions and the ways in which understanding and acknowledging patients' perspectives could contribute to their work as physicians. For the first time, students acknowledged patients' perspectives and included patients as active players in interactions. While this phase of development brought a desire to gain understanding of and honor others' perspectives, students continued to acknowledge their developing selves and worked to remain true to their own values even as they recognized those of others.

Late in her third year after working with many patients in a variety of different settings, Shannon realized that as a result of these interactions, she was beginning to see how complex interactions with patients could be. In addition, working with a wide variety of patients showed her the importance of understanding and valuing others' perspectives. She described this realization saying:

> Seeing so many people and working with so many people, I think that I understand people a lot more now. It's harder for me to pass judgment. It is very easy, back in first and second year when you are blissfully ignorant to say, you know, oh, how did they not know that? Or how did you get to be this way? Or how did you, you know just kind of chest puffed up, crossing your arms, sitting back, well, you know, you are wrong because. Holy cow. That is totally out of the water now. Just seeing patients. Like, for instance, two years ago, if I saw someone with lung cancer? You shouldn't have smoked. Very black and white. And I think I see so much more grey in people. And that is a good thing. Where they are coming from is real. And you have to understand that in order to understand why they are acting like they are or why they are sad or why they don't change their behavior. It is just so easy when it is a paper case or a standardized patient to just go through the motions. Do this, do this, stop doing this. Pregnant teen? Shouldn't have had sex. Now it's like okay, let's hear where you are coming from. Let's understand you. And then let's figure out what we can do. (LL, interview MS4, lines 648-660)

For Anna, increased opportunities to interact with patients in a variety of settings not only demonstrated the complexity of interactions with others but also ways in which she could make those interactions more productive.

> Yeah, I've learned that history doesn't come from an H & P or from a recording. It comes from a patient' mouth and how I elicit questions can change someone's care. And how I make someone feel comfortable or uncomfortable will change what they tell me or change their care. And could change your complete diagnosis based on how you asked the question. Particularly in family and peds and settings like that where you are dealing with people's whole lives. You know, how you ask someone well, what do you do for exercise. It's like oh, well, I exercises this much or the classic one is how much do you drink? Well, I drink one glass a day. Well, how big is the glass? Things like that. And I realized that sometimes they would tell the attending something totally different than they told me. And it isn't even that one is the truth and one is a lie. It's how did they ask a different question? What do those different answers mean? How does it affect the plan? (NY, interview MS4, lines 536-546)

As students' became increasingly aware of the complexity of interactions with others, they also acknowledged the need to understand the patient's perspective and work to ensure that it was included as a part of their interaction. Ruby came to acknowledge the importance of the patients' experience and perspective when she completed a series of sub-internships in psychiatry during her fourth year.

> When you walk into a psychiatric ward and when you look at all of the patients and you see what they are doing and some of them are talking to themselves, some of them are hallucinating, some of them are, you know pacing. And it can be very overstimulating but you realize, you have to figure out where they are coming from. You have to sit down with them and take the time and find out why they are there and what happened to them. It is just all of these little pieces but they have to give you the pieces. And you have to work toward, little by little, every day trying to understand them. Because until you understand them you can't really do anything for them. You can't see a positive outcome until you can really see, what is it that made them this way. They have to tell you that. If they don't want to tell you, you can't get inside their world. (JZ, interview MS4, lines 643-651)

During her fourth year, Shannon explained how eliciting, understanding and including the patients' perspective and experience not only made interactions productive and effective but was also her responsibility.

> When you see so many people coming in from every different walk of life you can possibly imagine, and with every problem you can possibly imagine, and you know being on that intimate side of the conversations? It is your responsibility to find out where they are coming from, to learn about that and to incorporate that. They come in trusting that you will do that. That you will learn about them. Like, there was this girl in pediatrics and she was overweight. She was 13 or 14…so her mom had stepped out, you do that in pediatrics to give the patient a chance to be totally honest with you, and she was telling me that she was really trying to eat well but how chaotic her family environment was. But I know that, we had to talk about, are there things that you can do? I had to really listen to her, not just tell her what to do, listen to hear what she needed and what was possible. And you know, you can't just assume, oh, she doesn't care or doesn't exercise. When you listen, it kind of forces you to look inside and think about what they need, not just about what you need. (LL, interview, MS4, lines 556-567)

Students in this phase of their development acknowledged the importance of learning about patients' perspectives and experiences and recognized that these perspectives had to be incorporated in providing effective care. While this understanding and consideration of patients' perspectives was now an important part of interactions, students recognized that both perspectives – theirs and the patients – had to be considered as a part of the interaction. Students looked for ways to understand and value the perspectives of others while still holding on to the internal system of values and beliefs they were working to construct. In addition, students took interactions with patients as an opportunity to reflect on themselves and consider ways in which they wanted to refine or change the internal system of belief they were developing. Ruby described this process saying:

> Sometimes, in the physician mentality, you kind of put a wall up and say, I am different than you because of this. Because I am not ill. Because I know this. Because I whatever. But when you really look at patients, and start to learn about

> them, start to really see they have a whole experience that is more than this hospitalization. And trying to learn about that and take it as an opportunity not only to think about how to provide the best care but also to think, what does this tell me about me? How I am interacting with this person? How what they are telling me makes me feel. It is a chance to learn about yourself too. (JZ, interview MS4, lines 695-701)

For Oliver, patient interactions were an opportunity to think about what was truly important to him.

> You know, there are times, when you are working with a patient and you have to work with what they put on the table. But at the same time, you know there are things that are important. That they might not be thinking of. So, I just try as best as I can. There are times when I don't speak up because my thing just isn't the most important right then. But, sometimes there is an opportunity where I saw, someone might be open, or this might be the right time. I don't try to sneak my whole agenda in but I would think alright, I have an opening for one thing…what is the most, what is the one thing I want to get on the table? And picking your battles like that really makes you think about what is important to me? Sometimes, they don't even notice. Maybe they just ignore me. A couple of times? They were like oh. Yeah. Okay, good point. So, you just kind of plant a seed. But you have to really think about what is most important. (OR, interview MS4, lines 518-527)

Summary and Discussion

During the third phase of their journey, students once again made important strides toward medical professionalism and the construction of a professional identity. The clinical training of the third and fourth years provided expanded and consistent opportunities for students to participate as members of the team and engage in the contexts and practices associated with being a physician. These opportunities served as catalysts and allowed students to reflect on ways of being a physician and their own developing professional identities.

For the first time in these students' experience in medical school, the self and their own identities became the focus of their attention and the primary structure coordinating other elements of their identity. Rather than working to follow formulas and achieve external goals,

students undertook consistent efforts to define themselves. They reflected on experiences and specialties and used this reflection to determine who they wanted to be and how they were going to enact this identity. Questions related to knowledge no longer focused on what physicians needed to know but on what they needed to know in order do their work as physicians. Students began to set their own purposes and goals for learning and knowing and engage in constructing knowledge to meet these goals. In addition, for the first time, students described the tacit elements of their knowledge and how these elements connected to the work of doctoring.

Evaluation, which in early phases of their journey was a way of demonstrating that they had met external standards related to what physicians needed to know, now provided students with an opportunity and method for reflecting on themselves as developing professionals. For the first time in their journey toward medical professionalism, students were not only aware of but actively considering and negotiating multiple perspectives. They were no longer content to simply learn about others' experiences. They now wanted to understand these experiences and used them to improve patient care and to continue to refine their own developing system of belief. While students were now actively negotiating other perspectives as a part of their interactions, they were not consumed by these other views. The self was always present in their interactions but was no longer the dominant force.

The changes to the domains of knowledge, self and others that students experienced during this phase of their journey helped them to begin to more fully incorporate all of the elements of medical professionalism into their identities. The new focus on self helped students to begin the process of building an internal foundation from which to make decisions and work toward definitions of themselves as physicians. Students were beginning to use this system as the

foundation from which to make choices and engage in the daily activities of being a physician. This internally defined system was the basis from which these students decided how they wanted to act, interact and use knowledge.

The environment of the third and fourth year allowed these students access to contexts and opportunities that contributed meaningfully to this development. Functioning as a member of the team and moving among a variety of different specialties allowed students to reflect on knowledge and how they wanted to enact their identity as a physician. These contexts and students' increasing ability to engage in critical reflection illustrate the role of both acquisition and learning in mastering a discourse and enacting a desired identity. According to Gee (1996), discourses are mastered through acquisition. Acquisition is a process of gaining desired knowledge, skills and practices through exposure in settings that are meaningful and in which the skills being acquired are necessary in order to function in the desired manner. By immersing students' in clinical settings on a daily basis, third and fourth year provide consistent opportunities for acquisition of the discourse of medicine.

The type of reflection that students' engage in during this phase of their development results not from acquisition but from learning. Learning is a process that involves conscious knowledge gained through teaching or experiences that make individuals consciously aware of what they are trying to do or being asked to do and, as a result, trigger critical reflection (Gee, 1996). The third year provides students with their first opportunity to engage regularly in activities that support acquisition of the discourse that will allow them to assume a professional identity. As students move from clerkship to clerkship different discourses are juxtaposed allowing them to compare and contrast elements within these discourses. In this way, these

students' experiences in the third and fourth year provide them with the opportunity to both acquire a discourse and develop meta-knowledge about that discourse. It is this meta-knowledge that allows and supports their conscious reflection on how the discourse they are acquiring relates to self and others.

In addition to supporting the acquisition of the discourse of medicine, the environment of the third and fourth year supports students' development and use of tacit knowledge. According to Polanyi (1964), tacit knowing is the way in which our awareness of what we are doing and the tools we are using provides feedback which helps us to act more skillfully even though articulating how such feedback guides our actions is almost impossible. This type of knowledge, which individuals can use in their practice but not necessarily express has three characteristics (Sternberg & Horvath, 1995). First, it is acquired from the experience of operating in a context without a significant degree of input from others. Second, this knowledge is procedural in nature and the procedures cannot be separated from the context in which they are being used. Finally, tacit knowledge is intricately linked to an individual's goals. During the third and fourth years of medical school, students are operating in specific contexts and are gradually assuming responsibility for setting their own goals and determining how best to achieve these objectives. Students are often asked to report what they did and to reflect on these procedures rather than being told what to do. As a result, they are able to engage in the type of thought and reflection that supports both the development and use of tacit knowledge

It is important to note that third year is not the first opportunity for students to engage in environments that support acquisition of the discourse and the development of tacit knowledge. Contexts such as summer experiences and RHPP that helped to shift students' conceptions of

knowledge in the second phase of their development provided similar opportunities. However, in the first and second year, these types of opportunities are limited and overt teaching related to knowledge, procedures, practices and skills predominates.

While this environment provided experiences that contributed positively to students' development, it also exposed them to the powerful negative influences of the hidden curriculum (Hafferty, 1994). As documented in the literature related to medical education, students in this phase of their journey witnessed a variety of unprofessional and unethical behaviors including cheating, lying about actions and talking negatively about patients. In spite of this, these students did not internalize these behaviors. Instead, they used them as opportunities for reflection and further defining who they were and wanted to be as physicians. This indicates that the power of the hidden curriculum may in fact be lessened if students are in a context that allows them to participate, provides them access to the range of behaviors and if opportunities for learning about the discourse, which support standing apart from and reflecting on practices, proceed such experiences.

In this phase of their journey students are developing an internally defined system of belief from which to operate, applying knowledge to patient care, using tacit knowledge and negotiating multiple perspectives. Building an internal identity helped these students gain control of their experience and consider these experiences as they continue to refine who they want to be and how to enact their identities as physicians. In spite of this new found sense of ownership and control, these students all recognized that their identities were works in progress and that their developing sense of self would continue to evolve and be challenged as they moved into the new environment of residency and their futures as professionals.

CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS AND DIRECTIONS FOR FUTURE RESEARCH: TEACHING PROFESSIONALISM AND THE IDENTITY OF DOCTOR

In an effort to help medical students develop professionalism and assume a professional identity, medical educators have focused on defining the elements of medical professionalism, providing opportunities for students to learn about and engage in behaviors associated with professionalism and evaluating aspects of students' professionalism. This study sought to explore the developmental nature of medical professionalism and the foundations on which medical professionalism and the acquisition of a professional identity are based. The questions addressed by this study were:

1. How does the development of medical professionalism unfold over time?
2. What are the developmental tasks associated with medical professionalism?
3. What factors mediate growth toward medical professionalism?
4. What educational or personal experiences promote the development of medical professionalism?

Methodology

This study employed a case study design to address the research questions. This design allowed consideration of a complex phenomenon within its real life, bounded context. The study relied on multiple sources of evidence and data that converged to provide triangulation and address the research questions (Yin, 2003). The participants in this study were thirty two students enrolled at the Tucson campus of the University of Arizona College of Medicine. Because the goal of this study was to gain insight into and understand the developmental transformations

associated with medical professionalism, it was essential to select participants from which the most could be learned. For this reason, the study employed purposeful sampling. This type of sampling provides the researcher with opportunities to select information rich cases that will provide deep insight into the issues central to the purpose of the study (Patton, 1990). In addition, participants were selected to represent widely varying instances of the experience of medical education. The resulting sample consisted of thirty two participants. Twelve of the participants entered the study during their first year in medical school. Eight students enrolled in the study as second year medical students. Six students enrolled in the study during their third year of medical school and six students enrolled during their fourth year of medical school. This group represented the diversity of the larger study body and the varied personal and educational experiences of students at the University of Arizona College of Medicine.

These thirty two participants represented different points on the continuum of medical education and the varied experiences of students at the University of Arizona College of Medicine. Taken as a whole, these students' experiences allowed the construction of a collective study (Stake, 2000). Examination of these multiple cases representing a cross section of the larger experience of medical education provided insight into the developmental transformations associated with medical professionalism. By engaging in an analysis across the collective group of cases, it was possible to build an explanation of the larger phenomena. In addition, consideration of processes and outcomes across the collective cases allowed me to understand complex configurations within cases and identify and explain patterns that transcend cases (Yin, 2003).

Each participant engaged in a series of two interviews that occurred over one year of their medical education. Interviews occurred at periods during students' education that, based on my experience with medical education and literature related to the professional socialization of medical students, were identified as significant. The structure of each interview was based on the self-authorship interview (Baxter Magolda & King, 2007). The interview was loosely divided into three segments that followed Seidman's (1998) in-depth phenomenological interview. Each segment was designed to give participants maximum freedom to identify relevant content while still eliciting information about the conditions which foster development and transformation. In addition to interviews, engagement and observation in a variety of contexts was used to build trust and establish rapport with participants. Repeated observation in a variety of contexts allowed for the comparison and contextualization of interview data and observational data. Once collected, the data were analyzed using the constant comparative method (Glaser & Straus, 1967).

Findings

The findings of this study indicated that for these students, medical professionalism and the construction of the associated professional identity proceeded through three distinct phases: *a world out of balance, identifying the goal* and *bringing the self into focus*. During these phases students' conceptions of knowledge, self and others underwent qualitative changes that contributed to the development of medical professionalism and the evolution of an integrated professional identity. The institutional and extra-curricular contexts in which these students were functioning played an important role in this development. Early in students' training these contexts functioned as primarily negative influences serving to limit access to the practices

associated with medical professionalism and reinforce misperceptions related to medical professionalism and a professional identity. Later in students' educational experience, these contexts played a more positive role as they provided students on-going opportunities to engage in the behaviors and practices associated with medical professionalism and reflect on these activities. In this way, these contexts supported the development and acquisition of an integrated professional identity.

The findings of this study identified many elements of these students' development and acquisition of identity that were similar to those of other studies related to identity development and the acquisition of discourses necessary to enact and sustain identities in a variety of circumstances. However, some unique elements related to development and acquisition of a professional identity in the context of medical education were noted. Implications for medical education, students' development of medical professionalism and directions for future research are made through a discussion of these elements.

Development of Medical Professionalism

Medical educators have defined medical professionalism as the on-going, self-reflective process that encompasses the habits of thinking, acting and feeling that characterize physicians and the practice of medicine (Wear & Castellani, 2000). In addition to the knowledge and skills physicians must possess, medical professionalism encompasses the ability to apply knowledge in a variety of situations, to use an internally defined system of belief for making decisions about practice and to use knowledge to manage uncertainty and ambiguity. In addition, medical professionalism requires the ability to negotiate multiple perspectives and be open to learning from the narratives of others. Finally, medical professionalism requires members of this

community to engage in independent learning and critical reflection on self and peers. Medical professionalism then is not simply a set of skills but an acquired state of being that allows individuals to successfully enact a professional identity. Findings of this study demonstrate that for these students, the cognitive, interpersonal and intrapersonal growth necessary to acquire this state of being proceeded through three distinct phases each of which were characterized by unique features related to the achievement of medical professionalism.

The first phase in the development of medical professionalism and the acquisition of a professional identity was *a world out of balance*. The learning environment and driving concerns of this phase as well as the characteristic features of the dimensions of knowledge, others and self are summarized in Table 2.

Table 2: Characteristic Features of A World Out of Balance

Learning Environment & Driving Concerns	• Greedy institution • Homogenization • Lack of balance • Following formulas and achieving external goals
Epistemological Dimension: *What is knowledge? What do doctors know? How do doctors use knowledge? How do I know?*	• Knowledge = factual content necessary to be a doctor • External sources define and provide knowledge • Knowledge is vast, detailed, and must be complete • Fluency • Knowing and doing are separate
Interpersonal Dimension: *How do doctors interact with others? How do I interact with others?*	• Us and Them • Dominated by doctor's perspective
Intrapersonal Dimension: *Who am I? What does it mean to be a doctor? What kind of doctor do I want to be?*	• Self is absent • Being a doctor is about following formulas and meeting external goals • Who I am = What I do • Self is defined by external elements

During this phase of their development, students' primary focus was on acquiring the knowledge necessary to be a physician. For these students this knowledge encompassed not only factual information related to human health and disease but also the skills associated with being a doctor including taking a patient history and performing a physical exam. The knowledge that students were working to master during this phase of their development was vast and detailed. In addition, students felt that in order to be a physician they needed to replicate this body of knowledge and be able to recall it effortlessly in any circumstance. This knowledge was not connected to the activities associated with being a physician. Students focused on memorizing and recalling the questions in a patient history and the steps in a physical exam but these activities did not help them to think about a patient's condition or have any connection or meaning related to the work of doctoring.

Students' conceptions of knowledge as something that is provided by authorities and must be replicated are similar to those described by other research (Baxter Magolda, 1992; Belenkey, Clinchy, Goldberger & Tarule, 1986; King & Kirtchner, 1994; Perry, 1970). Early phases in the development of adult identities, regardless of context, seem to be characterized by perceptions that knowledge must be received and replicated. For these students, this perception was reinforced in a variety of ways. Much of their time was spent in a lecture setting where they focused on memorizing detailed information while faculty told them what was important. In settings such as CBI and TL, cases were typically structured so that students always reached "the answer." Except for stating what they knew or demonstrating mastery of learning objectives on

multiple choice exams, the student voice was largely absent from learning activities thus reinforcing students' perception that knowledge comes from authorities and must be replicated.

During this period of their development these students viewed others only in contrast to themselves. They described their peers as the broad category of "us" and the defining features of this category were shared experiences, knowledge, goals, and values. "Them" consisted of any individual who did not fit into the category of "us." Because members of the "us" group shared the same knowledge, skills and goals, interactions were typically easy and mutually beneficial. Working with people who shared similar perspectives allowed students to confirm what they knew without having to explain, explore or resolve misunderstandings. Interactions with people who constituted the group "them" were much more challenging for these students and took on one of two forms. When dealing with other healthcare professionals or peers who had different knowledge or experiences, these students felt that it was their responsibility to assume a leadership position in order to ensure that the group reached the "correct" answer. When dealing with patients, these students felt that it was their responsibility to persuade the patient to adopt their perspective and take whatever action the student deemed appropriate.

These students' dichotomous view of self vs. others during this phase of their development limited their opportunities for learning and development in several ways. In their discussion of the role of dialogue in science classrooms, Wells and Mejia-Arauz (2006) describe dialogic knowledge building and its role in learning. This type of interaction requires that participants consider the proposals, experiences and arguments of others and through such consideration revise their own opinions. In this way, dialogue leads to jointly created, common understandings which are superior to those constructed in isolation. By closing themselves off to

others who have different opinions or perspectives, these students limited their opportunities to engage in this type of knowledge building during the first phase of their development.

While students described this time in their development as a very selfish time when they were focused almost exclusively on themselves and their needs, they did not engage in critical reflection related to what they were doing or experience meaningful personal growth or development. Instead, they focused on meeting external goals and demands associated with being a physician. They attempted to answer questions related to what kind of doctor they wanted to be in order to determine what knowledge they needed to acquire and how they needed to act in order to meet this goal. In spite of these attempts to determine what they wanted to be and what knowledge or experiences they needed in order to achieve this, students did not feel that they changed significantly during this time.

For most students in this study, the first phase of this journey occupied much of the first two years of medical school. While this represents approximately half of their medical education, this period contributed very little to the development of medical professionalism and the acquisition of the associated identity. The only real change that students identified during this time was that they, "knew a whole lot more" than they did when they entered medical school. Historically, the first two years of medical education have focused primarily on providing students with the specialized knowledge and skills that were viewed as essential to the practice of medicine and were the defining features of the professional identity. In recent years, medical educators have attempted to change this and emphasize the values, attitudes and behaviors associated with the professional role by including a variety of activities not directly related to the acquisition of knowledge. In the case of this curriculum, such activities include Case Based

Instruction (CBI), Team Learning (TL), the Societies Program and lectures related to a variety of topics including defining professionalism, ethics and interprofessional communication. CBI and TL are modalities intended to provide opportunities for students to apply basic science knowledge to patient cases and engage in discussion problem solving. The Societies program, during which students work with a physician mentor to learn skills such as taking a patient history and conducting a physical exam, is intended to provide students with clinical experience. All of these activities address some aspect of medical professionalism but do so by teaching about practices rather than engaging students in those practices in authentic contexts. Students in the first phase of their development interpret these experiences as opportunities for knowledge acquisition. As a result, the focus of the first two years of medical school remains the acquisition of knowledge and skills.

This phase of development, during which students experience little growth toward medical professionalism and the associated identity, also provides some insight into the finding, frequently documented in literature on medical education, that attempts to implement curricular reforms that promote the development of medical professionalism result in no changes to students ways of thinking, acting, valuing and interacting (Coulehan & Williams, 2003; Whitcomb, 2005). Most medical schools, like the University of Arizona College of Medicine, have focused on teaching about medical professionalism rather than providing students with opportunities to observe and participate in these practices and processes. According to Gee (1996), the behaviors, values and social practices necessary to enact an identity are difficult to master through a process that relies on overt teaching. Instead, these practices are best mastered through a process of apprenticeship in which students observe and participate in the activities of

a given community of practice prior to receiving the explanation and analysis of those activities. The lack of development in years one and two may not be due to the impossibility of helping students develop the attributes of medical professionalism but instead related to the form and structure of the activities through which schools are trying to promote such development. For this reason, medical educators should carefully examine the methods through which they are seeking to help students develop medical professionalism in order to ensure that opportunities for acquisition proceed overt teaching. This study also highlights the need to examine the development of medical professionalism as a longitudinal process that unfolds throughout medical school rather than an outcome that can be achieved through a single course or during the first two years.

The second phase in these students' development, of medical professionalism and the associated professional identity, *identifying the goal*, occurred late in the second year or early in the third year.

There were two key experiences that played a role in moving students into this phase of their development. The first experience was failure. A significant failure in some aspect of their lives caused these students to question the goals they were trying to achieve and the formulas that they were using in their attempts to be successful. For these students, this failure was the first instance in medical school where they were unable to accommodate or adapt. As a result, this experience helped them to develop a conscious awareness of what they are attempting or being asked to do (Gee, 1996). In this way, their failure became their first opportunity to think critically about their goals and how best to achieve these goals.

The other experience that helped to move students into this phase of their development was increased exposure to the contexts in which medicine was being practiced. As students completed their first year of medical school, they took advantage of programs such as the Rural Health Professional Program (RHPP) or summer global health initiatives. As a part of these programs, students spent four to eight weeks working with physicians in a clinical setting. Other students became more involved in the community clinics sponsored by the College and with their increased knowledge and status having completed their first year of medical school were afforded opportunities for increased participation in these clinics. While students experience with failure helped them to reflect on the goals they were trying to achieve, engagement in contexts that allowed them to participate in the practice of medicine helped them to begin to consider ways of enacting the identity of physician.

During this time of their development, when students were becoming consciously aware of what they were being asked to do, the dimensions of knowledge, others and self were all objects of their consideration. Table 3 summarizes the learning environment and driving concerns of this phase as well as the characteristic features of the dimensions of knowledge, others and self.

Table 3: *Characteristic Features of Identifying the Goal*

Learning Environment & Driving Concerns	• Assuming responsibility and control • Defining goals and the methods to achieve them • Awareness of constraints and limitations
Epistemological Dimension: *What is knowledge? What do doctors know? How do doctors use knowledge? How do I know?*	• Knowledge = factual knowledge connected to practices and procedures • Fluency and familiarity • Building frameworks and identifying what you don't know • Using knowledge
Interpersonal Dimension: *How do doctors interact with others? How do I interact with others?*	• Awareness of and interest in other perspectives • Multiple ways of achieving a goal • Working around other perspectives
Intrapersonal Dimension: *Who am I? What does it mean to be a doctor? What kind of doctor do I want to be?*	• Awareness of self • Setting own goals • Self constrained by the environment

Students continued to consider what physicians needed to know and how to acquire this knowledge but they now began to focus on the role of the unknown and ways that knowledge was related to the practice of medicine. Students now used the concept of familiarity to describe what a physician needed to know. The idea of familiarity helped students to consider central concepts that they would use every day and needed to understand in depth as opposed to those concepts that they must be aware of in order to know when they needed to do more research or gather more information. Students' increasing comfort with the concept of familiarity came primarily from contexts where they were observing or participating in the practice of medicine. In these environments, students saw how physicians developed their knowledge, how knowledge connected to patient care and how physicians functioned in situations where they did not know something. These environments differed in many ways from the classroom contexts in which

students were told what to learn, encountered problems that had clear-cut answers and were evaluated on their ability to recall information.

Students in this phase of their development now acknowledged the many ways that others were different from themselves. This included the awareness that peers had different ways of understanding basic science content and different ways of learning this content. As students became increasingly aware of these differences, they sought out other perspectives and found that interactions with different people could be mutually beneficial. As a result, their conversations with peers during study groups and CBI began to change. While students previously used conversations to confirm what they knew, they now used different perspectives and misconceptions as opportunities to build and expand their own understanding of important basic science concepts. Students' willingness to acknowledge and discuss different perspectives plays an important role in students' use of language to develop meaning (Gee, 2004). This shift in students' view of others made them open to the possibility of using language and interactions with their peers to help them develop robust understandings of various concepts.

While students' awareness of multiple perspectives changed their interactions with peers, their interactions with patients did not change significantly during this period. Students acknowledged the importance of soliciting the patients' perspective but, for the most part, still felt that it was their responsibility to help patients understand and adopt their way of thinking. This difference may be due to the fact that during this time, most of students' interactions with patients still focused on the students' achievement of a specific, pre-determined outcome. For example, when students encountered patient cases as a part of CBI or TL, all of the information necessary to move forward with the case or bring the case to a conclusion was provided.

Students did not have to consider how to elicit information, what information might not have been provided or how the available information contributed to their thinking. When students in the first two years encountered real patients, whether through the standardized patient program or with their Societies mentor, interactions were similarly focused on a student learning outcome such as conducting an abdominal exam or diagnosing a cardiovascular problem. In these interactions, the patient functioned as a sort of a prop rather than an actual participant in the interaction.

During this part of their development, students began to consider their own identities, needs and goals. They attempted to define their own goals and find appropriate strategies for achieving those goals. As they did this, students became increasingly aware of their own unique voices, views and values. For some students this meant finding their own ways of studying and learning material. For others it meant choosing which concepts they would focus on and which they would "let go." For others this meant choosing to engage in activities other than studying.

This second phase of students' development was a time of uncertainty and disequilibrium for these students. The tension and dissonance that characterize this phase of students' development is similar to that identified by other research related to young adults' identity development (Baxter Magolda, 2004b). Such "transitional phases" of development include growing self-awareness and increased self-reflection that highlights the tension between internal goals and external formulas. Students in this part of their development were becoming increasingly aware of what they were being asked to do as a part of the curriculum and the ways in which these activities differed from the "real" practice of medicine. This disequilibrium helped students to consider the practice of medicine and the ways of thinking, interacting and

being that doctors used in their work. The primary source of this disequilibrium was students increased exposure to and participation in contexts in which they could observe and engage in the practices associated with being a physician. These experiences helped students to reconsider what they needed to know and how they wanted to interact with others. For these students, the majority of experiences that promoted this kind of reflection and growth took place outside of the formal curriculum or in the third year when students were working in a clinical environment. This again highlights the need for students to be functioning in authentic environments and observing and participating in the practice of medicine rather than be taught about the practice of medicine.

Students who participated in these types of extra-curricular activities seemed to move into this phase of their development more quickly than some of their peers, sometimes as soon as the beginning of their second year. While the types of activities such as RHPP and international study are widely advertised to all students in their first and second years, students must take the initiative for arranging all of the details related to their participation. This includes applying to the program, finding an appropriate preceptor or faculty sponsor and arranging transportation and housing. The finding that participation in activities that make meaningful contribution to development requires students to be initiators and negotiators of their own educational experience extends research related to students' experiences in the third and fourth year. This research has shown that in order to be successful medical students must assume primary responsibility for negotiating the structure of their own educational experience (Koff, 1989). The findings of this study indicate that similar active negotiation by students is required in the first two years in order to facilitate the development of medical professionalism. Students' active

negotiation of their experience during this time of transition and finding their own voice may be beneficial in that it allows them to identify their own needs and take responsibility for defining aspects of their experience. However, not all students are positioned to engage in such active negotiations of their experience and may be disadvantaged by such requirements. For this reason, educators need to ensure that requirements for such student participation are explicit and must support all students in understanding and meeting these requirements.

The final phase of students' development of medical professionalism and acquisition of a professional identity that was documented as a part of this study – *bringing the self into focus* - typically occurred late in the third year or during the fourth year of students' medical education. This is a time when students are comfortable in the clinical setting, immersed daily in the practice of medicine and assuming a great deal of responsibility for their experience as they assume different roles on the team, select electives and make decisions about their futures as resident physicians. For the first time in these students' development, the concept of self came to the forefront of their experiences. As they considered the question of "Who am I?" they reflected on different ways of being a physician and began to make conscious choices about how to act, interact and use knowledge in their professional lives. The learning environment and driving concerns of this phase, as well as the characteristic features of the dimensions of knowledge, others and self are summarized in Table 4.

During this phase, questions related to knowledge and interactions with others were no longer independent of questions related to the self. When considering knowledge, these students now focused on what they needed to know in specific situations, how they could gain this knowledge and how they would use that knowledge. For students in this phase of their

development, knowledge was a tool that guided their thinking and interacting with patients. In addition, students were beginning to express an awareness of the tacit elements of their knowing and the role this type of knowledge played in their work as physicians.

Table 4: *Characteristic Features of Bringing the Self into Focus*

Learning Environment & Driving Concerns	• Opportunity to function as a member of the team • Exposure to multiple ways of being • Self-reflection
Intrapersonal Dimension: *Who am I? What does it mean to be a doctor? What kind of doctor do I want to be?*	• Focus on multiple ways of being • Defining self • Standing apart from and reflecting on experience
Epistemological Dimension: *What is knowledge? What do doctors know? How do doctors use knowledge? How do I know?*	• Knowledge = ways of thinking, valuing, acting and interacting associated with being a doctor • What do I know? • Applying knowledge in context • Creating knowledge to meet a purpose • Tacit knowledge
Interpersonal Dimension: *How do doctors interact with others? How do I interact with others?*	• Learning about and understanding others • Respecting other realities • Staying true to oneself while meeting others' needs

In this phase of their development students described interactions with others as complex and dynamic in nature. These students' acknowledged patients' perspectives and worked to include patients as active participants in interactions. While these students were now working to understand and negotiate other perspectives, their developing self did not disappear in these interactions. These students worked hard to remain true to the values and identity they were establishing even as they recognized and included others.

During the third phase of their development, these students were aware of and articulating all of the elements associated with medical professionalism and a professional identity. They were constructing, applying and evaluating knowledge, managing uncertainty and understood that not all elements of their knowledge could be easily expressed. They were negotiating multiple perspectives. In addition, they were solidifying internal belief systems that allowed them to engage in critical reflection on self and others. The educational environment in which students acquired the elements of medical professionalism and the associated identity is one where opportunities for both acquisition of and learning about a discourse were available (Gee, 1996). In their third and fourth year, these students were immersed in the practice of medicine. They assumed a variety of roles depending on their level of experience and the individual clerkship. These roles all allowed students to see, engage and become aware of the processes and practices they were attempting to master. In this way, third and fourth year provided the natural settings in which students were consistently exposed to and could begin to function in the ways of being associated with medical professionalism. Students' progression through a series of clerkships, each of which required them to adopt slightly different practices provided opportunities for learning about the discourse(s) they were acquiring. This juxtaposition of one specialty against another and participation in the range of behaviors associated with medical professionalism supported the reflection and critique that students in this part of their development were engaged in.

Factors that Mediate and Promote Development

Findings from this study revealed that a variety of factors and contexts that students encounter during medical school impact the development of medical professionalism and the

acquisition of the associated identity. Some of these elements reinforced misconceptions related to medical professionalism and this identity while others facilitated students' engagement in these practices and supported their developing understandings and enactment of the ways of thinking, acting and being a doctor.

Students' experiences prior to medical school, once thought to be an important element of transmitting the beliefs, attitudes and values essential for assuming a professional identity (Merton, Reader & Kendall, 1957), may in fact be reinforcing misconceptions about this identity. The emphasis on a specific set of experiences including undergraduate major and specific "essential" activities that prepare students for medical school provides pre-medical students with readily available formulas for success that may increase reliance on external goals and inhibit self-reflection and critique. In addition, the activities that are recommended to pre-medical students provide brief, decontextualized glimpses into the practice of medicine. They do not provide students with access to the full context in which physicians use knowledge, act and interact. As a result, students may emerge with misconceptions related to what physicians know, how they gain knowledge and how they use this knowledge.

The educational contexts in which students function during the first two years of medical school do little to support students' development of medical professionalism. While the skills and knowledge that physicians must possess are one element of medical professionalism, acquisition of this knowledge is the overwhelming focus of the first and second year. Over fifty percent of time during the first two years is devoted to lectures designed to help students gain the knowledge necessary to function as a physician. Attempts to lessen the emphasis on knowledge acquisition during the first two years by including teaching modalities such as Case Based

Instruction and Team Learning and including clinical elements through the Societies program have been unsuccessful. This may be due to the fact that these experiences emphasize the acquisition of knowledge and skills rather than providing exposure and opportunities to engage in the practices associated with medical professionalism under the supervision of more experienced peers or mentors.

Evaluation during the first two years is another powerful force working against the development of medical professionalism. Most evaluation that students experience during this time focuses on decontextualized knowledge and skills. In the blocks, the primary form of evaluation is multiple choice exams which tend to emphasize recall of detailed, factual knowledge. Evaluation in the Societies program consists of mentors watching students take histories and perform physical exams and then providing them with feedback. This feedback typically focuses on whether or not students included all of the elements of the exam and does not engage students in reflection about why these elements should be included or what they learned from them. In CBI and TL, knowledge is the only component of these activities that is evaluated thus reinforcing students' focus on what physicians know. In addition, evaluation of knowledge acquisition is the only factor used in making decisions about successful completion of blocks and advancement to the next block of phase of training. In many ways, the evaluation that students experience during the first two years of medical school is at odds with the development of medical professionalism. This evaluation focuses almost exclusively on students' mastery of the knowledge and skills associated with medical professionalism and does not consider any of the other elements related to medical professionalism including how students apply knowledge, their ability to use knowledge in ambiguous and uncertain circumstances, their

ability to reflect on what they know or their ability to interact with others and negotiate multiple perspectives. As a result, as students begin to consider other aspects of medical professionalism, their experience with evaluation reinforces the notion that in order to be successful they must replicate a vast, detailed database of facts.

Experiences that contributed positively or promoted the development of medical professionalism and the acquisition of an integrated professional identity included those that immersed students in the context of the practice of medicine, provided multiple perspectives and evaluated multiple aspects of students' progress while engaging students as partners in the process of evaluation. Contexts such as the Rural Health Professions Program that allowed students to work in a single setting for an extended period of time played a key role in helping students understand and engage in the practices associated with medical professionalism. In these settings, students were not only allowed to participate in these practices in a variety of ways, they were able to see the contexts in which physicians developed and used knowledge and consider how these differed from the classroom environment in which they were learning.

Experiences such as the third year clerkships, where students were immersed in and seeing subtle differences in the ways that physicians practice medicine, also supported the development of medical professionalism. For some students, clerkships early in the third year were the first opportunity in medical school to be consistently engaged in the practice of medicine. The process of moving from clerkship to clerkship which required students to enact slightly different ways of being helped them to understand the practices they were engaged in and begin to reflect on and critique these practices.

These experiences also differed from those of the first and second year in that students were active participants in their own evaluation. In contexts such as RHPP, third year clerkships and fourth year electives, evaluation focused on multiple elements of what students were doing including what information they used, how they gained this information and how they used this information. In these settings, mentors, residents and attendings frequently asked students why they had done something, how this had contributed and what additional elements they would like to include if they saw the patient again or had the opportunity to re-do an exam. As a result of these interactions, students were allowed to reflect on their processes and the connections between knowing and doing. It is important to note that during third and fourth year, evaluation of content knowledge was still a part of students' experiences. On third year clerkships students had to prepare for and pass national exams testing knowledge related to the clerkship. At the beginning of the fourth year, students had to complete USMLE Step 2, a high stakes, multiple choice exam. However, knowledge based assessments were now one of many elements used to evaluate students' growth and progress. As a result, the emphasis on knowledge acquisition was lessened.

Implications for Medical Education and Directions for Future Research

The findings of this study carry several implications for medical education as it seeks to help students develop medical professionalism and acquire a professional identity. In spite of efforts to broaden the focus of the first two years to include a variety of elements related to medical professionalism, it appears that years 1 and 2 are still largely disconnected from experiences that engage students in the contexts and practices in which medical professionalism and the associated identity are enacted. For this reason, it is important for educators to consider

changing or expanding the experiences during the first two years so that they provide opportunities for immersion in a variety of contexts rather than simply teaching about the elements of medical professionalism.

These students' experiences indicated that while contexts such as RHPP, where students are given significant levels of autonomy and responsibility are particularly meaningful, students do not have to have this level of independence in order to make meaningful progress toward medical professionalism. Students early in their third year who were doing little more than making rounds with a team still found opportunities to reflect on the practices and processes they were observing. This demonstrates that including first and second year students in activities where they have the opportunity to observe and reflect on the real work of doctoring has the potential to positively impact their development.

The emphasis on knowledge acquisition during the first two years demonstrates that medical educators, like other science teachers, experience a tension between the need to teach students scientific knowledge and the need to provide students with opportunities to engage in the discourse of the community and identify with the practices of that community (Alozie, Moje & Krajcik, 2009). In order to reduce this tension, it is necessary to employ methods and structure learning environments that promote connections between the content students are learning and the practices of a discourse. One method for achieving this is creating learning situations that foster productive disciplinary engagement (Engle & Conant, 2002). Promoting this type of engagement requires educators to consider four principles: problematizing content, giving students' authority, holding students accountable for the communicative practices of the discourse and providing relevant resources. In a setting such as CBI or TL, problematizing

content would require presenting students with cases that incorporate elements of their current abilities and knowledge but also require students to move beyond their current state of functioning. In addition, problematizing content would involve facilitators questioning and engaging students in a way that asked them to propose solutions, draw and support conclusions and challenge one another instead of answering questions or identifying procedures. Giving students authority involves placing them in the role of producing rather than consuming knowledge. Holding students accountable requires facilitators to model the norms of the discourse and support students in using these practices. Providing relevant resources includes making the tools and artifacts of practice available to students and requiring students to use them in authentic ways as they build their knowledge. These principles, in many ways, describe the practices of the third and fourth years that were identified as supporting students' development of medical professionalism. It is important to help medical school faculty articulate these practices and find ways to include them in the first two years when students spend more of their time in the classroom than in the clinic. It is also important to help faculty, particularly those who participate in modalities other than lecture, understand the ways in which discussion can contribute to students' construction and elaboration of scientific concepts and help them better understand and engage in the practices associated with medical professionalism. This will require consideration of the cases and problems used in these sessions, and explicit training for faculty in the different types of dialogue and interaction that can contribute to learning.

Using language effectively to promote both students' understanding of content and their participation in the linguistic practices associated with medical professionalism requires a better and more precise understanding of the ways physicians use language in the practice of medicine.

This study indicates that the discourse of medicine shares certain features with other science discourses. These features include reflective speech in which members articulate beliefs and concepts in order to understand similar views and argumentation which is used by members to construct and validate conclusions. However, elements of medical practice that differ from other science disciplines including patient interaction and a variety of tools and technologies indicate that this discourse likely has unique features. A better understanding of the features of this discourse would enable educators to provide opportunities for students to participate in and begin to master this discourse in the classroom environment that dominates the first two years of medical education.

Exploring the types of evaluation that students experience, particularly in the first two years is another area that offers promise for better supporting students' development of medical professionalism. Engaging in multiple forms of evaluation, including students in the process of evaluation and incorporating the "evaluative conversations" that are present in the third and fourth years into a variety of contexts in the first two years offers potential for shifting the emphasis from the acquisition of knowledge to the development of medical professionalism.

This research demonstrates that the phases of the journey toward medical professionalism and the construction of an integrated, professional identity appear to be relatively consistent for these students. However, there are indications that elements of these phases including the timing and specific characteristics differ. For example, for some students, the experience of failure that moved them to identify their own goals was multiple and repetitive rather than a single event. This supports findings (Pizzolato, 2003) that some students require multiple experiences before they begin to see the need for and move toward internal definition. Other students seemed to

spend an extended period of time in the second phase of their journey – *identifying the goal* – considering possible alternative but not making a commitment toward internal definition. It is important to further explore these differences in order to understand the nuances of students' development in this context.

While all of the students who participated in this study experienced some type of failure that helped to move them forward and develop conceptions of knowledge, self and others that supported the development of medical professionalism, those students whose experience of failure was academic in nature were overwhelmingly minority students, first generation college students and women. It is important to continue to examine the unique experiences of these groups in order to better understand their development and provide support for these student populations.

It is also important to continue to follow students longitudinally both to make the findings of this study more robust and to understand how medical professionalism and professional identity continue to develop through residency and into their professional lives. In addition, it is important to document the experiences of students at other medical schools as they relate to the development of medical professionalism and the acquisition of a professional identity. While the three phases in the journey toward medical professionalism seem to be shared by students in this study, it is important to extend this research to other medical schools in order to determine if these are particular to students at this medical school or if there are elements of this journey that are shared by all medical students.

APPENDIX A

PARTICIPANT PROFILES

Participants Entering Study as First Year Medical Students

Adam. Adam grew up in the Phoenix area. After high school he completed an Associate's degree in accounting and finance. While working on this degree, he took classes and became certified as an EMT. His experience as an EMT made him decide to complete an undergraduate degree and pursue a career in medicine. He attended the University of Arizona and graduated with a BS in Physiology. He applied to medical school multiple times before being accepted. While applying to medical school, he was accepted to the Master's program in Physiology at the University of Arizona. He received his Master's degree in Physiology the summer before starting medical school. He is married and his first child was born during the summer between his first and second years of medical school.

Adela. Adela is a Mexican American woman who was raised in a rural community in southeastern Arizona. She was the first in her family to graduate from college. After receiving her undergraduate degree in Public Health from the University of Arizona, she entered the Master in Public Health program and completed an MPH before applying to medical school. During her first year of medical school she failed two blocks. As a result, she had to repeat the first year of medical school. She refers to this experience as "my effort to frontload my failure." Her greatest accomplishment to date is passing USMLE Step 1 on the first attempt.

Ajit. Ajit was born in Viet Nam and came to the United States with his parents when he was a young child. His father was trained as a doctor in Viet Nam but was not able to practice as a physician after coming to this country. Ajit was raised in the Phoenix area and attended the

University of Arizona where he earned a degree in mathematics. Before applying to medical school he considered doing graduate work in mathematics but decided he would rather work with people than spend time by himself worrying about "really abstract things."

Christina. Christina is a Tucson native. Her first exposure to medicine came in high school when she spent a summer working in Panama with Amigos de las Americas. After graduating from high school she attended the University of Arizona and earned a degree in Latin American Studies. While completing her pre-med coursework she always made sure to take at least one humanities class so that she wouldn't forget that she had a right brain. After being accepted to the University of Arizona College of Medicine she enrolled in the dual MD/MPH program and plans to spend her MPH year focusing on maternal and child health.

Elyse. Elyse is the future doctor in a family of lawyers and bankers. She attended Northwestern University and earned her undergraduate degree in Biomechanical Engineering. After completing college, she spent two years doing research at the National Institutes of Health studying children's behavioral and mental health. She wants to be a primary care doctor in a rural area. She spent the summer between her first and second year in Winkelman, Arizona as a part of the Rural Health Professions Program and hopes to return to the same clinic for her family practice rotation. During her "free time" she sings alto for the College of Medicine's *a capella* group, "Docapella."

*Erik***.** Erik graduated from the University of Arizona with a BS in biochemistry. He has always had, "a weird obsession with science" and after graduating from college he went to Nicaragua to conduct research. While there, he became interested in public health issues. Before entering medical school he completed a Master's degree in Public Health. He can't wait to

graduate from medical school but worries that he has forgotten how to do anything but be a student.

Esther. Esther was born and raised in Romania. As a child she dreamed of becoming a doctor but knew that there was no way her parents could afford to provide her with the education necessary to pursue this dream. After the Romanian Revolution in 1989, her family immigrated to the United States. When she started considering undergraduate degrees, she developed a plan that would get her to medical school. She completed an undergraduate degree in Nursing and worked as an ICU nurse while she completed her medical school pre-requisites. She is in the top 10% of her medical school class and wants to be a vascular surgeon when she graduates.

Garrett. When he graduated from high school, Garrett knew that he was not mature enough to go to college. He attended a community college for one year and after that "ridiculous experience," joined the military. In the military he completed Ranger School and served as a medic. After completing tours of duty in both Iraq and Afghanistan he returned to school and completed his undergraduate degree in Molecular and Cellular Biology at Arizona State University. He is married and has two young children.

Hope. Hope is a Mexican American and Native American woman who grew up in a small town in Arizona on the US/Mexico border. When she graduated from the University of Arizona with a degree in Molecular and Cellular Biology, she became the first in her family to earn a college degree. Her experience caring for her elderly parents and serving as their translator during doctor's visits sparked her interest in medicine. During her first year of medical school she failed two blocks and as a result had to repeat her first year of medical school. While this was

not an experience she would recommend to others it, “made her stronger than anyone could imagine.”

Jeanne. Jeanne grew up in the halls of the University of Arizona College of Medicine. She was born shortly after her father started medical school and remembers her mother bringing her to visit him while he studied. As teenager she “rebelled against all things medical” and wanted to be a professional ballet dancer. While completing her undergraduate degree in psychology she became interested in neuroscience and developmental psychology. She began taking pre-medical courses and “never turned back.” She was married two weeks before starting medical school and doesn’t know which is harder – having a successful marriage or being successful in medical school.

Marc. Marc grew up in Tucson and never considered himself a “school person.” A summer spent delivering refrigerators for Sears convinced him that he needed to go to college and he completed an undergraduate degree in Electrical Engineering at the University of California, San Diego. After finishing his undergraduate degree he returned to Tucson and applied to medical school. His first two applications to medical school were rejected but in the meantime, he completed a Master’s in Public Health. During his second year of medical school he failed three final exams and had to complete retake exams in those blocks. While taking retake exams defined the low point of medical school, his summer working in Polacca, Arizona as a part of the Rural Health Professions Program was the high point.

Zachary. Zachary was born in Michigan and moved to Arizona with his family when he was 13. After graduating from high school he enrolled in the University of Arizona. He “never felt like he fit” and didn’t really have a direction. Following September 11, 2001 he dropped out

of school and enlisted in the military. He served in Iraq as a medic and then joined the Army Reserves. He returned to school at Arizona State University and spent two years there proving to himself that he was smart enough to go to college. He was again called up to Iraq and found himself frustrated by the lack of challenge he experienced in the military. He completed his degree in biochemistry and applied to medical school while he worked at the VA hospital in Tucson. He is in the top 10% of his medical school class.

Participants Entering the Study as Second Year Medical Students

Alex. When Alex agreed to participate in this study, he was concerned that his experience made him "too much of an outlier." As the oldest member of his class, he was first accepted and enrolled in medical school in 1986. At that time, everything about him was "typical medical student." He was married shortly after starting medical school and his first child was born soon after that. After completing the first three semesters of medical school it became clear that he had to make a choice between being in medical school or being married. He dropped out of medical school and spent the next several years working and raising a family. After his children were grown, he and his wife divorced and he decided to return to medical school. After three unsuccessful applications, he was finally accepted and returned to medical school in the fall of 2008. Looking back, he should have stayed in medical school in 1987 and faced the end his marriage but he believes that his experiences as a husband and father and "working in the real world" will help him to be successful as a doctor.

Charles. Charles is an African American man who grew up in Phoenix. After graduating from high school, he came to the University of Arizona because moving to Tucson was an opportunity to "get away from where everyone knew me via my Dad." He began his

undergraduate career as a Physiology major but then switched his major to Political Science when he was unable to enroll in the necessary classes. Looking for additional challenges, he added majors in Molecular and Cellular Biology, Chemistry and Spanish. His first year of medical school presented him with his "first real academic challenge" and he had to complete retake exams in two blocks because of poor academic performance. His second year of medical school was easier because he knew what to expect and because he had spent the summer working at the Betty Ford Clinic. This worked helped him to solidify his interest in psychiatry and the treatment of addiction. He recently enrolled in the MD/MBA program and will spend a year between his third and fourth years of medical school completing the coursework for his MBA.

Ethan. Ethan grew up in Tucson and attended the University of Arizona. He paid for his college education by working as an EMT. As an EMT, he found that the greatest limitation he faced when providing care for patients in rural parts of the state was the inability to communicate with those who spoke only Spanish. As a result he began taking Spanish language classes and eventually graduated with his degree in Spanish. Throughout college he volunteered in border communities throughout the state helping to establish clinics and medical records systems to help doctors address trans-national health issues such as tuberculosis. He is enrolled in the dual MD/MPH program and completed his MPH internship in clinics in Nogales, Arizona and Nogales, Sonora. He is married and depends on his wife and three dogs to keep him "grounded and remind him of the things that really matter."

*Greg***.** After completing high school, Greg joined the military as "a way to get away from having to go to school." In the military, he worked as a paramedic and as a result of this work, realized that he wanted to go into medicine. When he got out of the military, he became licensed

as a paramedic and returned to community college to "learn everything I ignored in high school." After completing the basic courses required for admission to the University, he returned to the military, and was deployed to Afghanistan as a medic for a Special Operations team. Experiences during this deployment showed him that he was mentally mature enough to complete college and apply to medical school. Having completed his first three years of medical school, he wants to be a cardiothoracic surgeon even though he realizes this will leave time for little else in his life.

Heather. Heather grew up in Pennsylvania and came to the University of Arizona because she received an athletic scholarship and Arizona was as far from Pennsylvania as she could get. During her four years as an undergraduate, she competed on the women's gymnastics team and completed a degree in psychology. She returned to Pennsylvania and worked as the women's gymnastics coach at a small university. As a university employee, she was able to take classes for free and began studying social work. After the women's athletic program was "discontinued," she returned to Arizona and began working as a case manager for CODAC Behavioral Health Services. Several of the psychiatrists that she worked with encouraged her to apply to medical school. She spent the next two years completing the necessary prerequisites and "couldn't have been more surprised" when she received her acceptance letter. Her most difficult moment came when she failed Step 1 of the USMLE and realized "doctors are ashamed of failure." Navigating that experience and the associated stigma has helped her to better understand patients dealing with mental illness and the stigma they face. She is currently in her fourth year of medical school and has "fooled four residency programs into interviewing her for a position in psychiatry."

Marin. Marin grew up in Phoenix and attended the University of Arizona. She majored in biochemistry and Latin American studies and completed her undergraduate degree in three years because she "didn't know what else to do." Even though she promised herself that she would not take on as much in medical school as she had in undergrad, her first year of medical school was "overwhelming, at best." After her first year in medical school she spent a summer working in Polacca, Arizona as a part of the Rural Health Professions Program and realized that doctors "still do all of the things that keep them grounded." Because of that experience, she has worked to maintain a balance among all of the elements of her life. In addition to being a med student, she teaches yoga, rock climbs and "tries to be regular." After completing her third year, she is still not sure what she wants to do and has applied to residencies in both emergency and family medicine.

Nancy. Nancy grew up in Wyoming and completed her undergraduate degree in biology at Ripon College in Wisconsin. As the first in her family to graduate from college, her biggest challenge was, "learning how to be in school." She worked as an EMT while in school and after graduating from college she worked as a case manager for a mental health/social service organization, which she hated, and a researcher for the Food and Drug Administration, which she loved. She then moved to Arizona where she completed two years in the Master's program in Physiology prior to being accepted to medical school. During the summer between her first and second year, she worked in a clinic in Kenya. After that experience she enrolled in the Global Health distinction track and after residency hopes to practice internationally.

Thomas. Thomas grew up in White River, Arizona where his mother was a school teacher and he was "one of the only white kids around." He attended the University of Arizona

and graduated with a degree in Theater Arts which made him, “the least likely kid to attend medical school.” Realizing that he was “unlikely to make much of an impact as an actor” he began working as an EMT and taking public health classes. During this time he saw that public health and medicine offered opportunities to “make a real difference in the lives of real people.” He applied to medical school and was the last person from the waiting list admitted to class of 2012. He enrolled in the dual MD/MPH program and spent his internship developing training programs for non-physician health care professionals in rural areas. He is considering a career working for the Indian Health Service.

Participants Entering the Study as Third Year Medical Students

Cheryl. Cheryl graduated from the University of Arizona with an undergraduate degree in Molecular and Cellular Biology. She is the first in her family to go into the medical field and was inspired to pursue a career in medicine by doctors who cared for her when she was a child. Her best experiences have been in her third and fourth year of medical school where she was working with real patients, real doctors and “got to see what all of this stuff means and where it all fits.” Her time in medical school has been difficult because she hasn’t always been able to live up to the high expectations she sets for herself. But, being a medical students has taught her who she is and how to stand up for herself and say “this is me.

Christopher. Christopher’s first exposure to health care came through working with his father who was a firefighter and EMT in northern Arizona. After completing high school, he followed in his father’s footsteps and became an EMT. While working as an EMT he attended college and “for some unknown reason” completed an undergraduate degree in hotel and restaurant management. After graduating from college he continued working as an EMT and

eventually became certified as a paramedic and a flight medic. These jobs exposed him to a variety of acute care settings in rural Arizona and he realized that he wanted to learn more and take on more responsibility. After completing his medical school pre-requisites he was accepted to medical school and moved to Tucson with his wife and three children. Throughout medical school he was convinced that he wanted to be an emergency medicine doctor but late in his third year he "realized there might be other options." On a whim he completed a rotation in radiology and "never turned back." He graduated in May 2011 and started a residency in radiology.

Gordon. Gordon is the "most traditional of traditional" medical students. He never had a single "a-ha" moment that led him to pursue a career in medicine but his interest in science and positive volunteer and clinical experiences helped him feel comfortable with this profession. He attended Northwestern University and graduated with a degree in Biology. He went straight from college into medical school and as one of the younger members of his class feels that he is "probably less experienced, less mature and more idealistic" than some of this classmates. When he entered medical school he dreamed of setting up a private practice and being a primary care provider in a rural community. Primary care rotations during his third year made him realize that he wanted something more intense and more specialized and that living in a community where everyone knew his business was "a fantasy." He graduated in the top 10% of his class and entered a residency in Radiation Oncology.

Michael. Michael was raised by his American mother and his German father and spent his childhood "commuting" between his father's home in Germany and his mother's home in Tucson. He is fluent in English and German and attended Arizona State University. He is "very logical and a planner" and these traits served him well as he finished his undergraduate degree

and applied to medical school. He selected his undergraduate major – biomechanical engineering – because of the high acceptance rate into medical school and completed all of the necessary experiences "by the book." Meeting, falling in love with and marrying another medical student was not a part of his plan but has been "the best part of medical school." Failing Step 2 on the first attempt was not a part of the plan either but both experiences have helped him to think about who he is and how he wants to live his life. His first child was born shortly after he received news that he had passed Step 2. Once dedicated to the idea of being a cardiothoracic surgeon, Michael graduated from medical school and entered a residency in pediatrics.

Patrick. Patrick graduated from Northern Arizona University with a degree in Wildlife Ecology Management. Unable to find a job founding a national park, he began working as an EMT and participating in cancer biology research. After three unsuccessful applications to medical school, he was accepted and spent his first year "trying to prove to people that I belonged." During the summer between his first and second year in medical school he worked with a general surgeon in Flagstaff, Arizona as a part of the Rural Health Professions Program. While the experience was a positive one, it showed him that he did not want to pursue a career in general surgery. He spent the next two years "getting up to speed" with the experiences that he would need in order to apply for a residency in orthopedic surgery. He met Shannon on a rotation early in third year and they were married two weeks before their graduation. He graduated in the top 10% of his medical school class and entered a residency in Orthopedic Surgery at Mayo Clinic in Rochester, Minnesota.

Shannon. Shannon first became interested in medicine when she was ten and realized that "girls could be doctors." In college she found out that being a doctor would require an additional

eight years of school and "opted out" deciding instead to pursue a career as a professional runner. She majored in Marketing because it allowed her time to train and offered a "fallback career." After experiencing numerous injuries, she realized that "the fallback was the reality" but could not see herself sitting in a cubicle, trying to sell things. She returned to school to completed her medical school pre-requisites and applied to medical school. She spent the first semester of medical school convinced that she was going to fail out but eventually gained confidence. She met Patrick during a rotation early in their third year. They were married two weeks before their graduation. She graduated in 2011 – "four years later than if I had just stuck with my original plan" – in the top 10% of her class and entered a residency in Radiology at Mayo Clinic in Rochester, MN.

Participants Entering the Study as Fourth Year Medical Students

Ruby. Ruby is a Mexican American woman who grew up in Globe, Arizona. She attended the University of Arizona and when she graduated with a degree in Microbiology became the first in her family to graduate from college. She first became interested in medicine when she participated in the MedStart program, a program designed to introduce underrepresented minority students to careers in the health professions. As a college junior she participated in the Minority Medical Education Program, another pipeline program designed to better prepare underrepresented minority students to apply to medical school. For Ruby, these programs were her first opportunity to "really see herself being a doctor." During her first semester in medical school she had to complete a retake examination in one block due to academic failure. Throughout her first three years she was convinced that she wanted to be an OB/GYN. After completing a sub-internship in OB/GYN she "began looking for something

else." She found that something else when she completed her psychiatry rotation. It was on this rotation that she realized she "really had to listen to people." She is currently in her second year in a psychiatry residency and hopes to specialize in Child and Adolescent Psychiatry.

John. John didn't enter medical school immediately after finishing his undergraduate degree in engineering at the University of Arizona. His first application to medical school was denied and he spent the next six years working at the Arizona Cancer Center. The opportunity to see various research projects move from the bench to the bedside convinced him that he wanted to be "on the clinical side of things" and he eventually worked up the courage to reapply to medical school. He started medical school "a few years later and with less confidence" than he had originally planned. Having to repeat one of the blocks due to academic failure and failing USMLE Step 2 on his first attempt didn't help his confidence but he "figured out a way around those setbacks." His fourth year rotations helped him to "regain some of that confidence" and his wife and son helped him to keep the challenges in perspective. John is currently in his second year of a residency in Internal Medicine and is "a better resident and teacher than I thought I could be."

Anna. Anna is a full-blooded Navajo from Sawmill, Arizona. Her interest in allopathic medicine stems from her traditional Navajo belief in "Sa'ah naaghai bik'e hozho" which means that ideal health maintains a balance with the mind, body, spirit, family, community and environment. Throughout medical school she worked to understand the connections between social issues, health and health policy and advocated for the health needs of her community and the Navajo Nation. She failed USMLE Step 1 on her first four attempts and failed Step 2 on her first two attempts. Each time she attempted these exams she learned more about the difficulty of

blending her responsibilities to home and family with the demands of medical school. After completing her third year of medical school, she spent a semester working in the Department of Health and Human Services helping to implement the Affordable Care Act in Indian Country. Her time away from patients demonstrated that while advocacy is an important part of her role as a physician, her goal is to provide patient care. She returned to Tucson and completed her fourth year of medical school. She has received her MD and is in the process of applying for residencies in family medicine and pediatrics.

Arthur. Arthur was born in the Phillipines and came to the United States when he was four. He was raised in Illinois and completed his undergraduate degree at the University of Chicago. While he was a pre-medical student in college, a summer research program convinced him that he should go to graduate school instead of medical school. He completed a PhD in chemistry at the University of Arizona and then worked for six years as an intellectual property manager. During that time, his mother was diagnosed with breast cancer and he became her primary care giver. This experience facilitated a renewed interest in medicine and his eventual return to medical school. It took Arthur his first three years of medical school to realize that he had no idea what he wanted to do and one rotation in ophthalmology to realize that this field was his passion. It is "the one field in health care where you can make an immediate impact on someone's quality of life." He is has completed his internship and is currently in his first year of an ophthalmology residency.

Arturo. Arturo was born in Mexico and came to the United States to live with his grandmother when he was eleven years old. During his senior year in high school a college guidance counselor told him that he "wasn't college material." He attended community college

and became a licensed respiratory therapist. The physicians and nurses he worked with praised his patient interactions and encouraged him to complete an undergraduate degree and consider applying to medical school. While working full time to support his wife, daughter and parents he completed his undergraduate degree in Psychology and his medical school pre-requisites. When he received his degree, he became the first in his family to progress beyond the fourth grade. He participated in the College of Medicine's Post-Baccalaureate program which was designed to help non-traditional students develop the academic skills necessary for success in medical school. While he successfully completed the first two years of medical school, he required five attempts to pass USMLE Step 1. He used each attempt at this exam to refine his content knowledge and learn about himself as a student. After completing this exam, he finished his third and fourth years, receiving honors in three of his clinical clerkships and completing and MPH. Upon graduating he received the Dean's Special Achievement Award given to a student who achieves for excellence in patient care and academics in spite of adversity. He entered a residency in family medicine.

Oliver. Oliver is a Mexican American man who was born and raised in San Diego, California. After graduating from high school he attended the Air Force Academy and graduated with a degree in Biology. He served for several years as an officer in the Air Force before leaving the military to attend medical school. After serving in the military, medical school was a "liberating experience" and offered Oliver his first opportunity to "explore everything and be whoever I wanted to be." He enrolled in and completed the MD/MPH program with an emphasis in maternal and child health. He was "lucky enough" to enjoy every one of his third year rotations and eventually decided to pursue a residency in family medicine because it would allow

him to work with “every kind of patient imaginable.” He is currently in his first year of a family medicine residency in California.

APPENDIX B

HUMAN SUBJECTS INFORMED CONSENT FORM

Informed Consent

Considering Medical Professionalism as Developmental Transformation

Introduction

You are being invited to take part in a research study. The information in this form is provided to help you decide whether or not to take part. Study personnel will be available to answer your questions and provide additional information. If you decide to take part in the study, you will be asked to sign this consent form. A copy of this form will be given to you.

What is the purpose of this research study?

The purpose of this study is to examine how medical students understand medical professionalism, how they develop a professional identity and the learning outcomes associated with this process.

Why are you being asked to participate?

You are being invited because you are currently enrolled as a student at the University of Arizona College of Medicine and you represent the diversity of experiences of the student body.

How many people will be asked to participate in this study?

Approximately 16 persons will be asked to participate in this study.

What will happen during this study?

During this study you will be participating in two interviews, each approximately one hour in length. The interviews will take place at significant periods during the current year of your medical education. Each interview will be divided into three segments. The first segment will focus on your background and experience prior to the interview, the second segment will focus on your current experiences and the third segment will focus on the meaning and significance of these experiences.

These interviews will not follow a formal structure. Instead, you will be encouraged to identify topics and experiences that you feel are relevant.

How long will I be in this study?

The two interviews will be conducted at different points during the current academic year. Each interview will last approximately one hour.

Are there any risks to me?

There is a small risk that information you provide during the interview may include information which could be used to identify you.

Although we have tried to avoid risks, you may feel that some questions we ask you to do may be stressful or upsetting. If this occurs you can stop participating immediately. We can give you information about individuals who may be able to help you with these problems.

Are there any benefits to me?

Participating in this study may provide you with opportunities to reflect on and develop insight into your training and experiences that you can use to promote your professional development.

What are the alternatives for participating in this study?

The alternative is not to participate in this study.

Will there be any costs to me?

Aside from your time, there are no costs for taking part in the study

Will I be paid to participate in the study?

You will not be paid to participate in the study

Will video or audio recordings be made of me during the study?

We will make an audio recording during the study so that we can be certain that your responses are recorded accurately only if you check the first box below:

☐ I give my permission for audio recordings to be made of me during my participation in this research study.

☐ I do not give my permission for audio/video recordings to be made of me during my participation in this research study.

Will the information that is obtained from me be kept confidential?

The only persons who will know that you participated in this study will be the Principal Investigator and research personnel.

Transcripts of your interview will be confidential. You will not be identified in any reports or publications resulting from the study. Because of the qualitative nature of this study, it is possible that some of the information you provide in your interviews could be used to identify you. If such information is relevant to reporting findings for this study, you will be contacted and given the opportunity to review the information. If you do not want the information to be reported, it will not be.

It is possible that representatives of the sponsor that supports the research study will want to come to The University of Arizona to review your information. Representatives of regulatory agencies including The University of Arizona Human Subjects Protection Program may access your records.

May I change my mind about participating?

Your participation in this study is voluntary. You may decide to not begin or to stop the study at any time. Your refusing to participate will have no effect on student status. You can discontinue your participation with no effect on student status.

Whom can I contact for additional information?

You can call the Principal Investigator to tell him/her about a concern or complaint about this research study. The Principal Investigator Joanna Arnold, MA can be called at (520)626-2203. If you have questions about your rights as a research subject you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721. If you have questions, complaints, or concerns about the research and cannot reach the Principal Investigator; or want to talk to someone other than the Investigator, you may call the University of Arizona Human Subjects Protection Program office. (If out of state use the toll-free number 1-866-278-1455.) If you would like to contact the Human Subjects Protection Program via the web (this can be anonymous), please visit http://www.irb.arizona.edu/contact/.

Your Signature

By signing this form, I affirm that I have read the information contained in the form, that the study has been explained to me, that my questions have been answered and that I agree to take part in this study. I do not give up any of my legal rights by signing this form.

_____

Name (Printed)

_____ _____

Participant's Signature Date signed

Statement by person obtaining consent

I certify that I have explained the research study to the person who has agreed to participate, and that he or she has been informed of the purpose, the procedures, the possible risks and potential benefits associated with participation in this study. Any questions raised have been answered to the participant's satisfaction.

_____

Name of study personnel

_____ _____

Study personnel Signature Date signed

APPENDIX C

INTERVIEW QUESTIONS

Interview Segment 1: Focused History

- Tell me about yourself and your background.
- How did you come to be interested in medicine?
    - What experiences (academic, personal, etc.) were important in brining you to this point?
- What expectations did you bring with you to medical school (or to the current phase of your medical education?)
- How have these expectations been met?

Interview Segment 2: Detailed Experiences Related to Development of Medical Professionalism

- What are some meaningful experiences that have contributed to your medical education?
- Describe the most significant/best/worst experience.
    - What did this experience mean to you?
    - How did you make sense of it?
    - How did it affect how your feel about yourself? Your relationships with others? Your beliefs?

Interview Segment 3: Putting it All Together

- How would you describe the person you are today?
- How has your experience thus far shaped what you believe, who you are, how you relate to others?
- What insight or understanding are you taking away from these experiences?
- What have you gained in the past year (or since we last spoke?)
    - How have your experiences shaped your expectations about the future?

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