

AN EXPLORATION OF REFLECTIVE WRITING AND SELF-ASSESSMENTS TO
EXPLAIN PROFESSIONALISM LAPSES AMONG MEDICAL STUDENTS

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Background: Recent literature on medical professionalism claims that self-awareness and the ability to reflect upon one's experiences is a critical component of professionalism; however there is a paucity of empirical evidence to support this claim. This study employed a mixed methods approach to explore the utility of reflective writing and self- and peer assessments in explaining professionalism lapses among medical students.

Methods: A retrospective case-control study was conducted using students from Indiana University School of Medicine (IUSM) who had been disciplined for unprofessional behavior between 2006-2013 (case group; n=70). A randomly selected control group (n=230) was used for comparison. Reflective ability was assessed using a validated rubric to score students' professionalism journals. Mean reflection scores and assessment scores were compared using t-tests. Logistic regression analysis was used to determine the impact of reflection scores and self- and peer assessment scores on the likelihood of having been disciplined for unprofessional behavior. Subsequent qualitative analysis further explored when and how students learned professionalism during their clinical experiences.

Results: The study found that students in the case group exhibited lower reflective ability than control students. Furthermore, reflective ability was a significant factor in explaining the odds that a student had been cited for professionalism lapses.

There were no differences in self-assessment scores between the two groups, but students in the case group had significantly lower peer assessment scores than control students. Peer assessment scores also had the greatest influence on the odds that a student had been cited for professionalism deficiencies during medical school. Qualitative analysis revealed that students learn professionalism from role models who demonstrated altruism and respect (or lack thereof).

Conclusions: These findings suggest that students should be provided with guidance and feedback on their reflective writing to promote higher levels of reflection, which may reduce the number of students who are cited for professionalism lapses. These findings also indicate that peer assessments can be used to provide students with insightful feedback regarding their professional development. Finally, role models have a strong influence on students' professional development, and therefore must be cognizant of the implicit messages their behaviors convey.

Richard M. Frankel, Ph.D., Chair

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CHAPTER 1: INTRODUCTION

Professionalism is defined by the American Board of Internal Medicine (ABIM) as the commitment that physicians make to serve the interests of their patients above their own self-interests, and to uphold the values of altruism, accountability, excellence, duty, service, honor, integrity, and respect (ABIM, 1995). Among practicing physicians, lapses in professionalism are the most common reasons for disciplinary actions by state medical boards (Papadakis, Hodgson, Teherani, & Kohatsu, 2004). Unprofessional behaviors by physicians impede communication and collaboration in the workplace, and are associated with low staff morale, medical errors, adverse patient outcomes, and malpractice suits (van Mook et al., 2010). Papadakis and colleagues found that the strongest predictor of unprofessional behavior in practice is the occurrence of unprofessional behavior in medical school (Papadakis et al., 2004; Papadakis et al., 2005). The strong association between past and future behavior has prompted medical schools to adopt formalized systems to evaluate students' professionalism during their undergraduate medical education (Ainsworth & Szauter, 2006; Arnold, 2002). The goals of such systems are to identify and remediate students who have behaved unprofessionally to prevent future incidents of unprofessional behavior in clinical practice (Papadakis, Loeser, & Healy, 2001; Papadakis, Osborn, Cooke, & Healy, 1999).

While most medical schools address professionalism in the formal curriculum, much of students' understanding of professionalism is influenced by the informal and hidden curricula (Hafferty & Franks, 1994). The informal curriculum is the teaching and learning that takes place during personal interactions between teachers (faculty and residents) and students, while the hidden curriculum refers to the implicit messages, often

negative, conveyed by organizational structure and culture of medical education (Hafferty, 1998). While the formal curriculum emphasizes values such as altruism, respect, honesty, and compassion, students often observe incidents of disrespect toward patients, students, or other members of the healthcare team, violations of patient confidentiality, disregard for hospital regulations, and emotional detachment by their physician mentors (Brainard & Brislen, 2007). Furthermore, students are often praised for mimicking such behaviors, and penalized for reporting them, which leads to genuine confusion as to what constitutes professional behavior (Brainard & Brislen, 2007). Students need a strategy to help them reconcile the conflict between the values taught by the formal curriculum, and their experiences of the informal and hidden curriculum.

Reflection has been cited as a key component of professionalism (ABIM, 1995; Epstein & Hundert, 2002; Swick, 2000), and has been proposed as a strategy to help students distinguish between positive and negative role models and reconcile the conflicts between the formal, informal, and hidden curricula (Park, Woodrow, Reznick, Beales, & MacRae, 2010). Reflection involves the exploration and appraisal of one's own and other's experiences for the purpose of clarifying or creating meaning (Aukes, Geertsma, Cohen-Schotanus, Zwierstra, & Slaets, 2007). It is a process by which thoughts are "turned back" to an event or experience so it can be analyzed and interpreted to gain a new or better understanding. The insights gained during the reflective process can then be applied to similar situations in the future with the goal of improving outcomes (Sandars, 2009). The stimulus for reflection is often some "disorienting dilemma" (Mezirow, 1981) that causes one to question one's knowledge and assumptions about a situation. The discrepancy between their idealized notion of medicine and the reality of

medical practice provide such a stimulus, and reflecting on this dilemma can often help students to identify and learn from unprofessional behavior, and either accept or reject the experiences of the hidden curriculum (Fischer et al., 2008; Ginsburg, Regehr, Stern, & Lingard, 2002).

Reflection is also a means of self-assessment that enables physicians to monitor their own performance and recognize limitations in competence as part of their lifelong commitment to professional development (Roberts & Stark, 2008). After their formal training is complete, physicians' professional development depends upon their ability to identify their weaknesses and to take appropriate measures to remedy them (Rudy, Fejfar, Griffith, & Wilson, 2001). In this respect, reflection can increase the ability to accurately self-assess, which is a skill that many physicians lack (Davis et al., 2006). Studies have shown that physicians who earned the lowest performance ratings from external evaluators frequently overrated their own performance (B. Hodges, Regehr, & Martin, 2001). To remedy this deficit, medical students should be encouraged to reflect on and assess their own abilities and behaviors to develop professional habits such as self-regulation and lifelong learning (Rees & Shepherd, 2005). Haffling and colleagues (2010) have reported that reflection improved medical students' ability to analyze their own strengths and weaknesses and incorporate feedback in a constructive manner. The same study also reported that reflection encouraged students to be more observant of their own feelings such as frustration or anger that might negatively affect their interactions with patients (Haffling et al., 2010).

IUSM Competency Curriculum

At Indiana University School of Medicine (IUSM), professionalism and other non-cognitive aspects of medical education are addressed in a formal competency-based curriculum that requires students to demonstrate proficiency in areas other than medical knowledge and clinical skills. This curriculum consists of nine competency areas: (1) effective communication, (2) basic clinical skills, (3) using science to guide diagnosis, management, therapeutics, and prevention, (4) lifelong learning, (5) self-awareness, self-care, and personal growth, (6) social and community contexts of health care, (7) moral reasoning and ethical judgment, (8) problem solving, and (9) professionalism and role recognition (Litzelman & Cottingham, 2007). Educational activities that encourage reflection have been incorporated into the curriculum to foster development in the nine competency areas. In addition, a program of peer and self-assessments was instituted to help students develop habits of self-regulation and self-improvement. During years 1-3 of medical school, students are asked to rate themselves and their peers in domains such as communication skills, altruism, responsibility, collegiality, empathy, professionalism, etc. Each student then meets yearly with a faculty mentor to discuss any areas of weakness or large discrepancies between self-scores and peer-scores and to develop strategies for improvement.

Students are required to achieve beginner-level (Level I) proficiency in each of the nine competencies during the first two years of training, and intermediate-level (Level II) proficiency by the end of their third year. In addition, students must select three of the nine competency areas in which to pursue advanced-level (Level III) achievement by the end of their fourth year (Litzelman & Cottingham, 2007). Students who fail to achieve

the appropriate competency levels are required to appear before the Student Promotions Committee (SPC), which is responsible for remediation, disciplinary action, and promotion of such students as they progress through medical school (Litzelman & Cottingham, 2007).

Problem Statement

It has been shown that physicians who demonstrate unprofessional behavior in practice are likely to have demonstrated a pattern of such behavior while still in medical school (Papadakis et al., 2004; Papadakis et al., 2005; Teherani, Hodgson, Banach, & Papadakis, 2005). Although most medical schools address professionalism in their formal curriculum, students' perceptions of professionalism are often strongly influenced by their observations of physician role models, and their experiences with the hidden curriculum (Park et al., 2010). The example set by physician mentors and the values conveyed by the hidden curriculum sometimes undermine or conflict with the professional values that the formal curriculum encourages in medical students (Brainard & Brislen, 2007).

Reflective writing is a method for promoting and assessing professionalism that is growing in popularity among medical schools (Chretien, Chheda, Torre, & Papp, 2012). Through reflection, students are encouraged to examine their own deeply held values and consider the consequences of their decisions and behaviors. Reflection has also been proposed as a method of self-assessment, and can help students to identify their own strengths and weaknesses and develop strategies for self-improvement. While many medical schools, including IUSM, have introduced reflective writing assignments into their formal curriculum to foster students' professional development (Chretien et al.,

2012), there is no empirical evidence that reflection enhances students' professionalism. Furthermore, no studies have examined the relationship between reflection and one's ability to accurately self-assess, or whether reflection enhances self-awareness among medical students.

Purpose of the study

The purpose of this study was to examine the relationships between reflection, self-assessment, and professionalism by comparing the reflective writing samples and self- and peer assessment scores from students who have demonstrated unprofessional behavior during medical school, as determined by disciplinary action(s) by the SPC, with students who have not. This study also qualitatively analyzed reflective writing samples to learn which types of experiences teach students about professionalism, how students learn these lessons, and to compare the reflective writing of students who have had professionalism lapses with students who have not.

Research Questions

Several research questions emerged from the gaps in the literature. While many studies have suggested that the ability to reflect is a key component for professionalism development, none of these studies have examined the direct relationship between students' reflective ability and their demonstration (or lack) of professionalism. Nor have they compared the reflective ability of students who have been cited for unprofessional behavior with those who have not. Furthermore, the literature suggests that students with greater reflective ability have greater self-awareness, and are better able to monitor their learning and identify gaps in their knowledge and skills. However, none of these studies have attempted to link reflective ability with measures of self-awareness, such as self-

assessments and peer assessments, nor have they compared students who have and have not demonstrated unprofessional behavior during medical school in terms of their self-awareness. The following research questions attempted to address these gaps in the literature:

- Does reflective ability differ between students who have and have not demonstrated professionalism lapses during medical school?
- Do self-assessment scores, peer assessment scores, and self-assessment accuracy differ between students who have and have not demonstrated professionalism lapses during medical school?
- What is the relationship between level of reflection and self-assessment accuracy in medical students?
- Can reflective ability and self- and peer assessment scores explain the likelihood of a student demonstrating professionalism lapses during medical school?
- Do themes in medical students' professionalism journals differ between students who have had professionalism lapses, students who have not had professionalism lapses, and students who elected to pursue level III competency in professionalism?

Key Terms and Definitions

For the purposes of this study, reflective ability is defined as the extent to which a person is able to critically analyze and evaluate one's knowledge and experiences to achieve deeper meaning and understanding of the way one thinks and operates in various situations (Donaghy & Morss, 2000; Mann, Gordon, & MacLeod, 2009). The premise of this study is based on the assumption that the ability to reflect is not intuitive, especially

in students at early stages of professional development, however, this ability can be developed through educational methods such as journaling and critical incident reporting (Wald, Borkan, Taylor, Anthony, & Reis, 2012; Wald, Davis, Reis, Monroe, & Borkan, 2009). This study also assumes that reflective ability can be assessed from writing samples, which several studies have demonstrated is possible (Learman, Autry, & O'Sullivan, 2008; Plack, Driscoll, Blissett, McKenna, & Plack, 2005; Wald et al., 2012; Williams, Sundelin, Foster-Seargeant, & Norman, 2000; Wong, Kember, Chung, & Yan, 1995).

Self-awareness is defined as the ability to recognize one's own strengths and weaknesses, as well as an understanding of how their personal history, values, attitudes and biases can affect their interactions with others (Novack et al., 1997; Saunders et al., 2007). For the purposes of this study, self-assessment accuracy will be considered a proxy measure of self-awareness, as this measure compares a students' self-perception of competence (self-assessment score) with an external measure of competence (peer assessment score) on the same dimensions.

Throughout this study, the term professionalism lapse, when used to describe students in the case group, refers to some behavior or attitude demonstrated by a student that has been identified by a course or clerkship director as unprofessional and brought to the attention of the SPC for adjudication and remediation. Some common examples of unprofessional attitudes and behaviors that would be categorized as professionalism lapses pertained to personal demeanor (e.g. poor attitude, lack of initiative), disregard for patients and staff (e.g. disrespectful comments), disregard for education (e.g. unexcused absences or unpreparedness for activities), violations of hospital policy (e.g. breaches of

patient confidentiality), and inappropriate dress (Reddy et al., 2007; Teherani et al., 2005).

Overview of the Dissertation

Chapter 2 will introduce relevant literature regarding professionalism and current uses of reflection and self- and peer assessment in medical education, and provide theoretical framework used to guide the study. Chapter 3 will describe the quantitative and qualitative methods used to address the research questions. Chapters 4 and 5 will present the quantitative and qualitative results of the study, respectively, and Chapter 6 will present the conclusions and implications of the study, its limitations, and some suggestions for future research.

CHAPTER 2: REVIEW OF THE LITERATURE

To build a rationale for the use of reflection as a method of fostering and assessing medical students' professionalism and promoting self-awareness, this chapter presents the relevant literature on professionalism, reflection, and self-assessment as they relate to medical education. First, the concept of professionalism will be discussed from several different perspectives: as a social contract between a profession and the society it serves; as a set of values, attitudes, and behaviors that demonstrate a physician's commitments to serving the needs of patients and society; and finally, as a dynamic, socially constructed concept that is constantly re-negotiated depending on the context and participants involved (Monrouxe, Rees, & Hu, 2011). The second section discusses the need for professionalism to be addressed in the formal curriculum of undergraduate medical education (UME), as well as a summary of methods that are currently being used to promote professionalism in UME. This section includes a discussion of the informal and hidden curricula, both of which strongly influence medical students' perceptions of professionalism, followed by a summary of commonly-used assessment methods for professionalism, including self-assessment and peer assessment. The third section of this chapter introduces the concept of reflection, as well as the various theories on reflective processing and how it influences learning and professional development. This section also describes the use of reflection to enhance medical students' self-awareness and professionalism, and the instruments available for measuring reflection. The chapter concludes with an argument for the use of reflection as a means of assessing professionalism in UME.

Definitions of Professionalism

Historically, professionalism referred to one's membership in a profession. Members of these bodies had elaborate systems of instruction and training, together with entry by examination and other formal prerequisites. They also possessed and enforced a code of ethics or behavior (Martimianakis, Maniate, & Hodges, 2009). Medicine is such a profession in that it requires practitioners to maintain specialized knowledge and skills to serve the needs of society (Inui, 2003; Schlesinger, 2002; Swick, 2000). What truly defines a profession such as medicine, however, is not the specialized knowledge and skills of its members, but the moral and social value of the work they perform (Swick, 2000). In this context, professionalism refers to a social contract: the commitment of physicians to serve the interests of their patients above their own self-interests (Cruess, 2006). Other definitions of professionalism refer to the values, attitudes, and behaviors that demonstrate a worthiness of the trust bestowed upon physicians by their patients and the public (Swick, 2000).

Professional values are basic, fundamental beliefs: the unquestioned premises upon which an entire profession is based. These values are a declaration of what the profession holds true, and what all members of the profession strive to uphold (Aguilar, Stupans, & Scutter, 2011). It is believed that people who are motivated by intrinsic factors, such as a core set of values, will do right every time, regardless of reward or sanction risk (Low, et al., as cited in Aguilar et al., 2011). If values do indeed guide behavior, then it is important that definitions of medical professionalism identify those values that physicians' behavior ought to demonstrate. The American Board of Internal Medicine (ABIM) was one of the first medical organizations to explicitly define such

values. Its 1995 publication 'Project Professionalism' declared that "professionalism aspires to altruism, accountability, excellence, duty, service, honor, integrity, and respect for others" (ABIM, 1995, p. 5). This approach to professionalism assumes that these traits are inborn qualities that must be nurtured through the appropriate training program, and that guided by these virtues, physicians' behaviors ought to demonstrate their commitment to serving the interests of their patients above their own self-interests (Martimianakis et al., 2009). Defining professionalism as a list of values and behaviors provides a measurable means of assessment, but provides little consideration for the causal relationships among these elements. They fail to explain how professional behaviors arise from values (Martimianakis et al., 2009).

Due to the limitations of previous definitions of professionalism as a social contract or as a set of values and behaviors, more recent definitions consider professionalism as "a dynamic construct of actors and structures shifting across time" (Monrouxe et al., 2011, p. 587). This definition is based upon a growing consensus that professionalism is too complex to be reduced to a simple checklist of characteristics and behaviors. Professionalism is an extremely value-laden concept with societal, institutional, historical, and contextual expectations built into it (Martimianakis et al., 2009). Furthermore, many of these expectations are in constant conflict, and must be negotiated and re-negotiated from one situation to the next (Monrouxe et al., 2011).

The Need for Professionalism in UME

Regardless of its definition, unprofessional conduct remains the most common reason for disciplinary action against practicing physicians (Grant & Alfred, 2007; Papadakis et al., 2004; Papadakis et al., 2005). While unprofessional behaviors such as

abuse of power, impairment, and breaches of confidentiality often result in highly publicized and costly malpractice suits, the price of unprofessional behavior goes far beyond the financial cost of malpractice litigation. Unprofessional conduct is associated with low staff morale, high turnover, increased incidence of medical errors, and adverse patient outcomes (Hickson, Pichert, Webb, & Gabbe, 2007). The media's reporting of malpractice suits also tarnishes the reputation of the healthcare institution and its members, and rouses public distrust of the medical profession (van Mook et al., 2010). In a landmark study, Papadakis and colleagues found that physicians who demonstrate unprofessional behavior in practice had often demonstrated similar behavior during medical school (Papadakis et al., 2004; Papadakis et al., 2005; Teherani et al., 2005). This strong association between past behavior and future behavior reinforces the need for professionalism to be taught and assessed in the undergraduate medical curriculum. It is necessary to identify students who demonstrate unprofessional behaviors early in their training so that such behaviors can be remediated before they become habitual (Sullivan & Arnold, 2009). The goal of early detection and remediation of medical students' unprofessional behavior is to prevent or decrease future incidents of unprofessional behavior by practicing physicians, thereby regaining the public's trust and respect of the medical profession.

Fostering Professionalism in UME

In response to the increased attention given to professionalism by the medical community, most medical schools have instituted formalized systems for promoting professionalism in medical students. In a 1999 survey of U.S. medical schools, 104 of the 116 responding schools reported that they offered some type of formal instruction related

to professionalism in their curriculum (Swick, Szenas, Danoff, & Whitcomb, 1999). However, the strategies used to promote professionalism vary widely from one school to the next. Many institutions include coursework to teach aspects of professionalism such as communication skills, medical ethics, humanities, and public health. Many medical schools have instituted innovative curricular and teaching methods, such as problem-based learning, student-centered, or patient-centered learning, as well as small group activities, role-playing, and simulated patients in order to integrate aspects of professionalism into the formal curriculum. While these curricular efforts are pushing the professionalism movement in the right direction, it is widely recognized that most of students' learning about professionalism takes place outside of the formal learning environment, through observations of physician role models and experiences within the clinical setting.

The Influence of the Informal and Hidden Curricula

The great amount of attention being paid to professionalism recently would lead one to believe that it is a relatively new objective for physicians in training; however, professionalism has always been an intended outcome of medical education. Before medical educators took it upon themselves to explicitly address it in the formal curriculum, professionalism was learned through the observations of and interactions with physician role models, and through the norms, customs, and rituals of medical culture. The social interactions and role modeling that teach students about professionalism, and how to behave like a physician, are referred to as the informal curriculum, while the norms and customs of medical culture, as well as the organizational structure of the academic institution, constitute the hidden curriculum (Hafferty, 1998).

It is worth noting that the distinction between the informal and hidden curricula, as defined by Hafferty (1998), is often blurred; many authors use these terms interchangeably, or consider the informal curriculum as part of the hidden curriculum. For the purposes of this study, I will refer to the teaching provided by observations and interactions with physician role models as the informal curriculum, and the implicit messages conveyed by the unspoken customs and rituals of medical culture as the hidden curriculum (Hafferty, 1998). While the formal curriculum attempts to instill professionalism through lectures and other carefully planned and orchestrated learning activities, it is widely acknowledged that most of students' professional development, for better or for worse, is strongly influenced by their experiences within the informal and hidden curricula (Hafferty & Franks, 1994).

Most physicians are positive role models of professionalism, demonstrating altruism, respect, compassion, and accountability in their interactions with patients, colleagues, and students. However, it has been well documented in the literature that some physician role models do not always demonstrate such exemplary behaviors (Feudtner, Christakis, & Christakis, 1994). Reports of abuse, discrimination, and harassment of medical students, as well as disrespect toward patients, nurses, or other members of the healthcare team have led to concerns about the professional values that students learn from the informal curriculum. Observations of behaviors that are inconsistent with the professional values taught by the formal curriculum can have a detrimental effect on medical students, who are in the process of forming their own professional identities. Although students are usually able to recognize unprofessional behavior, they are often more impressed by power and authority (Mahood, 2011).

The hidden curriculum also has a powerful, although much more implicit, impact on students' professional values. Much of "what students learn about the core values of medicine... takes place not so much in the content of formal lectures but rather between the blackboard and the pen, not so much at the bedside... but via its more insidious and evil twin, 'the corridor'" (Hafferty & Franks, 1994). "The corridor" refers to the latent, implicit teachings of the hidden curriculum: the curriculum that is buried within the lived experience of medical trainees (Gaufberg, Batalden, Sands, & Bell, 2010). The hidden curriculum refers to the culture of medicine: the norms, customs, and unspoken rules of medical practice that insiders know, and outsiders must learn if they are to be accepted into the culture (Mahood, 2011). Socialization is the "process by which people acquire the values and attitudes, the interests, skills, and knowledge – in short, the culture – current in the groups of which they are, or seek to become, a member" (Merton, et al., as cited in Hafferty & Franks, 1994, p. 865). By this definition, one of the goals of medical education is to socialize medical students into medical culture and to teach them the values, knowledge and skills that they need to serve their patients. The culture that is conveyed by the hidden curriculum, however, is not always consistent with the formal curriculum. Hafferty and Franks (1994) described the corridor as the bedside's "evil twin" alluding to the fact that the messages conveyed by the hidden curriculum often undermine or contradict the values taught by the formal curriculum. While the formal curriculum teaches idealistic practices such as respect, patient-centered care, and collegiality, the hidden curriculum values convenience, efficiency, and academic hierarchy (Mahood, 2011).

The inconsistencies between the formal curriculum and the informal and hidden curricula often evoke feelings of cynicism among medical students because their experiences of professionalism in the informal and hidden curricula contradict the values taught in the formal curriculum. Medical students learn that professionalism is relative, applying in some situations, but not in others. Regardless of what is taught in the formal curriculum, if medical students are surrounded by a culture that discourages values such as respect, compassion, and altruism, then students will embrace this attitude of emotional detachment very early in their training (Hafferty & Franks, 1994). For this reason, students must not only be taught professionalism, but they must be surrounded by a culture and role models that exemplify the values taught in the formal curriculum. However, changing an entire culture is a lofty and laborious undertaking, and in the meantime medical educators must rely on assessment techniques that identify students who demonstrate unprofessional behavior so that it can be remediated.

Assessment of Professionalism in Medical Education

Just as professionalism has been difficult to define and teach, it has also proven difficult to assess in UME. Nonetheless, according to a survey of 131 U.S. medical schools by the LCME in 2011, all responding schools reported some formal assessment of students' professional behavior (Source: LCME Questionnaire Part II). This is a dramatic increase from a 1999 survey, which reported that only 64 of the 116 responding schools formally assessed students' professionalism (Swick et al., 1999). The increase suggests that medical educators recognize that professionalism is as critical to a physician's competence as medical knowledge and clinical skills, and therefore it must be assessed accordingly. There have been many reported methods of assessing

professionalism in medical professionalism, but the most common method involves observation and evaluation of students' behaviors by faculty and peers, and less frequently by patients (real or standardized) or other members of the health care team. The advantages and disadvantages of faculty and peer assessment of students' professional behaviors are discussed below.

Faculty Assessment of Professionalism

Faculty assessment of professionalism is a very convenient, easily implemented, and cost-effective method of assessing professionalism in the clinical setting. Physician mentors are already called upon to observe and assess students' clinical skills, so it is logical that they assess professionalism simultaneously. The problem with this system of assessment is that the same physicians who are expected to act as role models, regardless of whether they are a positive or a negative role model, are then called upon to assess the students' professionalism. In these situations, professionalism resides in the eye of the beholder. Physicians often recognize and reward their own values demonstrated by their students, regardless of whether or not they are the desired values taught by the formal curriculum. A recent article written by medical students criticized this system of assessment because physicians who demonstrate unprofessional behaviors will often praise students who conform to their concept of professionalism and penalize students who question such behavior (Brainard & Brislen, 2007).

Echoing students' criticisms of this system, clinical faculty members have also expressed their reluctance to assess medical students' professionalism. Papadakis and colleagues (1999) identified several reasons why faculty members are disinclined to assess professionalism. The first has to do with the limited amount of time that faculty

are exposed to each student. Most clerkship rotations are relatively short – only a few weeks – and faculty are often reluctant to report unprofessional behavior because they cannot determine if it is an isolated incident or part of a pattern of unprofessional behavior on the part of the student. When faculty assessments are used for summative purposes, faculty members are less likely to provide a negative assessment that might significantly impact a student’s progress through medical training (Norcini, 2006). The hesitation to provide negative assessments allows many students with professionalism lapses to proceed through their medical training undetected. Faculty are also concerned that a negative evaluation will result in grievance procedures or other adversarial action by the student (Papadakis et al., 1999).

Peer Assessment of Professionalism

Peer assessment is another common method of assessing medical students’ professionalism. Peer assessments are perceived by some to be more authentic than faculty assessments because students often act professionally in the presence of faculty, whereas peers interact with each other in more informal settings when they feel that they can let their guard down. Peers can often give a more accurate account of a student’s professionalism in day-to-day interactions when they are not “putting on a show” for faculty evaluators. Studies of peer-assessment in medical education have found that peers are able to reliably evaluate each other’s professional competence (Dannefer et al., 2005), as well as a number of other dimensions related to professionalism such as attitude, reliability, maturity, patient rapport, conscientiousness, and integrity (Arnold, Willoughby, Calkins, Gammon, & Eberhart, 1981). Peer assessment is best used as an informal or formative assessment, however, as peers are often reluctant to give negative

assessments for a variety of reasons (Arnold, Shue, Kritt, Ginsburg, & Stern, 2005). Students do not want to be labeled a “tattle tale” for reporting a peer’s unprofessional behavior, nor do they want to put a black mark on someone’s permanent record. Fear of damaging personal relationships, “rocking the boat”, or having their assessment fall on deaf ears are other reasons cited for students’ reluctance to assess their peers’ professionalism (Arnold et al., 2005).

Other Assessment Methods

While peers and faculty may be able to provide accurate assessments of students’ professionalism, the subjective nature of such evaluations is often criticized. Behaviors that one assessor may deem unprofessional may not raise concern in another (McLachlan, Finn, & Macnaughton, 2009). Such inconsistencies have led to search for meaningful, objective measurements of professionalism. Veloski and Hojat (2006) developed scales to assess individual elements of professionalism, including empathy, teamwork, and lifelong learning, that could serve as a proxy for global assessment (Veloski & Hojat, 2006). McLachlan and colleagues (2009) proposed a scale called the Conscientiousness Index (CI) as such a tool. The CI is based on objective measures of conscientiousness, such as attendance, submission of required information such as immunization records and faculty evaluations, and voluntary service activities that correlate with faculty assessments of professionalism in the pre-clinical years (McLachlan et al., 2009). However, the validity of the CI decreases when applied to students in the clinical years (Kelly, O’Flynn, & McLachlan, 2012). The clinical setting often presents dilemmas for which there are no right or wrong answers leaving students to rely on critical thinking, problem solving, and moral judgment, rather than conscientiousness, to guide their

decisions and actions. Conscientiousness is only one component of professionalism, and critics assert that the CI fails to capture the multidimensional complexity of professionalism that underlies difficulty in its assessment.

The drawback of current assessment methods is that they rely on observable behaviors to assess professionalism, which reflects a superficial and inauthentic understanding of the term. As Aguilar et al. (2011) note, behaviors are not always an accurate reflection of one's core values. Behaviors are the manifestation of multiple intrinsic and extrinsic influences; therefore, simply observing one's behavior cannot provide a complete or accurate assessment of one's professionalism (Aguilar et al., 2011). The inconsistent messages about professionalism from the formal, informal, and hidden curricula, along with one's own inherent values and beliefs, often lead to internal conflicts that may be expressed as unprofessional behavior. Medical educators are increasingly acknowledging these sources of conflict that influence medical students' perceptions of professionalism and professional behavior, and the importance of providing students with strategies to reconcile such conflicts. Even the students, themselves, are not always consciously aware of the many factors that influence their conceptions of professionalism, which further stresses the need for students to engage in sense-making activities to help them develop a more sophisticated understanding of professionalism (Monrouxe et al., 2011).

Arnold (2002) supports the notion that unprofessional behaviors are often the expression of value conflicts and proposes that any assessment of professionalism should take into account its contextual nature. She also recommends more rigorous, qualitative methods for assessing professionalism as such methods can investigate how value

conflicts are resolved, taking into account the context of the behaviors (Arnold, 2002). For this reason, more and more medical schools are turning to assessment activities that allow students to make sense of the multitude of factors that motivate their behaviors, and successfully negotiate value conflicts. Portfolios, journals, critical incident reports, and discussion groups are gaining popularity because they allow students to provide evidence of their professionalism and they also give them the opportunity to reflect on their experiences – to actively process them, learn from them, and possibly modify their behavior based on their reflections of that particular experience (Chambers, Brosnan, & Hassell, 2011). Reflection helps students to develop professionalism because it allows them to acknowledge important ethical issues and become more aware of their own feelings and attitudes that can affect the patient encounter (Haffling et al., 2010). While observable behaviors provide a very superficial assessment of professionalism, reflective activities take into account the factors that motivated those behaviors; they can provide insight into the thought process or rationale of why the student acted in a particular way (Aguilar et al., 2011). By assessing medical students' reflective writing about professionalism, one can infer whether the students' actions reflect the values of professionalism, or some other motivating factor such as receiving a good grade, or avoiding reprimand (Aguilar et al., 2011). The following section introduces the concept of reflection and discusses some of the current theories of how reflection facilitates learning and understanding.

What is Reflection?

Reflection is commonly referred to as a mental process by which thoughts are “turned back” to an event or experience so it can be analyzed and interpreted in order to

gain a new or better understanding. The insights gained during the reflective process can then be applied to similar situations in the future with the goal of improving outcomes (Sandars, 2009). Moon (1999) identified two roles for reflection: reflection in learning, and reflection in professional practice. While there are similarities between the two, the distinction lies in the goal of each process. Reflection in learning involves making sense of experiences, while reflection for professional practice is aimed at professional development and improving the quality of practice (Moon, 1999). This section begins with a discussion of the role of reflection in learning, followed by the role of reflection in professional practice.

Reflection in Learning

Many theorists have examined the role of reflection in learning, and have concluded that reflection plays a critical role in learning, particularly when applied to complicated or ill-structured situations with no obvious solution (Dewey, 1933; Kolb, 1984; Mezirow, 1991; Moon, 1999). Some of the earliest work in reflection and learning was that of John Dewey (1933), who equated reflection with purposeful thinking. He termed this type of purposeful thinking reflective thought, which he defined as “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends” (Dewey, 1933, p. 9).

Dewey’s work has influenced many other theorists in the field of reflection and learning, particularly that of Kolb (1984), who included reflective observation in his theory of experiential learning. In the experiential learning cycle, reflective observation follows a concrete experience and allows the learner to give personal meaning to the

experience, create and appreciate alternative meanings, and evaluate these alternatives to choose a meaningful perspective (Kolb, 1984). Boud, Keogh, and Walker (1985) were also influenced by Dewey, but unlike Dewey, they highlighted the influential role of emotion in learning when developing their model of reflection in learning. Reflecting on emotions enables the learner to acknowledge that the emotions evoked by an experience may help or hinder learning (Boud et al., 1985).

The role of reflection in learning is also discussed in Mezirow's (1991) transformative learning theory. In the context of this theory, Mezirow defines reflection as "the process of critically assessing the content, process, or premise(s) of our efforts to interpret and give meaning to an experience" (Mezirow, 1991, p. 104). In this definition, Mezirow identified three different forms of reflection: content reflection, process reflection, and premise reflection. Content reflection focuses on what is perceived, thought, felt, or acted upon; process reflection goes beyond the "what" to examine how these functions of perceiving, thinking, feeling, or acting are performed, and how effective we are at performing them; and premise reflection then considers why we think, feel, perceive, or act the way we do, and the consequences of these thoughts, feelings, and actions. In short, reflection involves an examination of what we have learned, how we learned it, and whether this learning is valid based on our current perspectives (Mezirow, 1991).

In addition to discussing the role of reflection in learning, these theories also describe the process of reflection and the nature of learning that occurs from reflection. According to Dewey (1933) and Mezirow (1981), the reflective process is induced by a "disorienting dilemma" or some other state of perplexity, hesitation, or doubt when one's

knowledge or beliefs are challenged. This dilemma spurs a search or investigation for evidence that either supports or negates the knowledge or belief in question. Reflection involves a reassessment of prior learning to establish its validity. The desire for a solution to the perplexity guides the reflection process and the nature of the problem determines the end of the process (Dewey, 1933).

Boud and colleagues (1985) describe three phases in the reflective process: returning to experience, attending to feelings, and re-evaluating the experience. Re-evaluation can involve four aspects that influence the outcome of the learning experience: association, integration, validation, and appropriation. Association connects the ideas and feelings of the initial experience with existing knowledge and attitudes. Integration examines these new associations to determine if they are meaningful or useful. The newly integrated knowledge is then validated with existing knowledge and beliefs. Finally, if the new information is significant enough, it may become so intimately related to the self that it becomes part of one's sense of identity. Not all integrated and validated information becomes appropriated, but knowledge that is appropriated is less amenable to change than other knowledge. Appropriated knowledge becomes integrated into one's value system and can then influence one's interpretation of new knowledge (Boud et al., 1985).

Reflective learning can be either confirmative or transformative (Mezirow, 1991). Confirmative learning validates or reinforces existing assumptions or beliefs, while transformative learning occurs when existing beliefs or assumptions are found to be distorted or unjustified, resulting in a new or transformed perspective (Mezirow, 1991).

Reflection in Professional Practice

The reflective process in professional practice is similar to that in learning; however, the goal here goes beyond mere understanding of an experience. The goal of reflection in professional practice is to gain a greater understanding of the situations encountered in one's practice, and to apply those understandings to improve and develop one's knowledge and skills as a professional. Reflection is useful in professions such as social work or medicine, whose practitioners encounter situations with no obvious solutions, frequently involving value conflicts or moral ambiguity (Moon, 1999). Some of the most influential work on reflection in professional practice is that of Schön (1983), who proposes that much of a professional's work is guided by implicit or tacit knowledge which he calls 'knowing-in-action.' Schön argues that the advocated rules of the profession often fail to provide adequate guidance for coping with messy, real-world situations; practitioners must therefore develop their own strategies guided by their implicit knowledge. Incorporating reflection into such situations, a process that Schön calls 'reflection-in-action,' allows practitioners to examine and understand the tacit knowledge that guides their actions (Schön, 1983). The process of reflection-in-action is centered around the "art" by which practitioners such as physicians deal with uncertainty and value conflicts (Schön, 1983, p. 50).

Current definitions of medical professionalism include one's ability to reflect upon the actions and decisions of daily practice (ABIM, 1995; Arnold, 2002; Epstein & Hundert, 2002; Swick, 2000). After their formal training is completed, physicians' professional development depends upon their ability to identify their weaknesses and to take appropriate measures to remedy them (Rudy et al., 2001). Reflective practice – a

term coined by Epstein (1999) in his seminal article of the same name – describes the importance of reflection-in-action as a method of self-monitoring that helps physicians to maintain competence and prevent errors (Epstein, 2008; Novack, Epstein, & Paulsen, 1999; Novack et al., 1997). Reflection helps physicians gain insight into their own performance and behaviors, as well as the performance of others, in order to make accurate and appropriate judgments about their abilities (Roberts & Stark, 2008). In this respect, reflection can increase the ability to accurately self-assess, which is a skill that many physicians lack (Davis et al., 2006). A growing body of evidence also suggests that physicians who regularly reflect on their decisions perform better on tests of diagnostic accuracy than those who do not (Mamede, Schmidt, & Penaforte, 2008; Mamede et al., 2012). Reflection also helps physicians to maintain a more satisfying balance between personal and professional activities, monitor stress levels, and formulate adaptive responses to stress to prevent burnout (Krasner et al., 2009; Novack et al., 1997). Because reflection seems to be critical to maintaining a high level of professional practice, medical students should be given opportunities to practice and develop reflective skills throughout their training.

Reflection in Medical Education

Many medical schools have introduced reflective exercises into the curriculum to encourage students to critically examine their concepts of professionalism, the internal and external factors that influence this concept, and how professionalism is expressed in their behaviors. Reflection can help physicians-in-training to examine their beliefs and values, deal with strong emotions, make difficult decisions, and resolve interpersonal conflict (Epstein, 1999). Reflection can also improve self-awareness by helping students

identify their strengths and weaknesses, develop strategies for improvement, and monitor their progress (Haffling et al., 2010). Reflection has been incorporated into the medical curriculum through reflective writing in the form of learning portfolios, journals, critical incident reports, and blogging (Chretien et al., 2012). The goal of reflective writing exercises is to encourage humanism, and promote students' self-awareness, lifelong learning, communication skills, and professionalism (Chretien et al., 2012). Studies of reflection in medical education have utilized both qualitative and quantitative methodologies to identify important themes in the content of medical students' reflective writing, to examine the reflective process, and to measure the level of reflection demonstrated in writing assignments.

The primary focus of many qualitative studies of reflection in medical education is the influence of the informal and/or hidden curriculum on students' personal and professional development (Fischer et al., 2008; Gaufberg et al., 2010; Karnieli-Miller, Taylor, et al., 2010; Karnieli-Miller et al., 2011; Karnieli-Miller, Vu, Holtman, Clyman, & Inui, 2010). These studies have revealed that the informal and hidden curricula are powerful influences on students' conceptions of professionalism, and that students are able to recognize the individual attributes of professionalism at work in their clinical experiences. They found that medical students at all institutions described similar experiences, both positive and negative, about professionalism, communication, patient care, etc., which suggests that the clinical learning environments are similar enough that the findings of these studies, even though qualitative in nature, could apply to most institutions. Students' reflections can draw attention to the negative influences of the informal and hidden curricula and prompt organizational changes to improve the culture

of the learning environment and quality of care (Fischer et al., 2008; Gaufberg et al., 2010).

Fewer qualitative studies have analyzed the content of medical students' reflective writing to discover how reflection helps students learn about professionalism (D. Hodges, McLachlan, & Finn, 2009; Howe, Barrett, & Leinster, 2009). Hodges and colleagues (2009) reported the thematic analysis of students' reflections in response to critical incident reports involving unprofessional behavior by the student. The authors found that reflection on the incident can promote positive changes in professional behavior, while an absence of reflection can indicate a risk for future unprofessional behavior (D. Hodges et al., 2009). Furthermore, Howe et al. (2009) reported that medical students are able to reconstruct their clinical experiences to demonstrate their understanding of key components of professionalism, which suggests that reflection helps students link theory to practice.

Other studies, while not primarily focused on reflection, have identified it as a critical component of professionalism and self-awareness (Goldie, Dowie, Cotton, & Morrison, 2007; Haffling et al., 2010; Jha, Bekker, Duffy, & Roberts, 2006; Park et al., 2010). Jha and colleagues (2006) interviewed medical educators, students, physicians, and other allied health professionals about their conceptions of professionalism; all groups stressed the importance of personal awareness and reflective practice. Surgery residents reported that reflection was a key process involved in learning professionalism as it helped residents to distinguish between the positive and negative behaviors of role models (Park et al., 2010). Similarly, Goldie et al.'s (2007) interviews with medical students revealed that learning activities that incorporated reflection were most effective at raising their awareness of professionalism. Medical students have also reported that

reflection enhanced their self-awareness by improving their ability to analyze their own strengths and weaknesses and incorporate feedback in a constructive manner (Haffling et al., 2010). The same study also found that reflection encouraged students to be more observant of their own feelings such as frustration or anger, as well as other external factors that might negatively affect their interactions with patients (Haffling et al., 2010).

Quantitative studies of reflection have focused on developing measurement instruments and testing their validity against related constructs. Instruments frequently incorporated key components of the reflective process as identified by Dewey (1933), Boud and colleagues (1985), Mezirow (1981, 1991, 1998), Schön (1983), and others in order to establish hierarchical “levels” of reflection. This approach has been used by O’Sullivan and colleagues (2010) and Wald and colleagues (Wald et al., 2012; Wald, Reis, & Borkan, 2009) to develop rubrics to assess the level of reflective ability demonstrated in medical students’ writing in response to open-ended prompts. Other instruments measure students’ reflection in response to clinical vignettes (Boenink, Oderwald, De Jonge, Van Tilburg, & Smal, 2004) or scaled items (Sobral, 2001). Validity of instruments intended to measure reflection is often tested by establishing concurrent validity with other constructs believed to share common elements with reflection such as moral reasoning (Chalmers, Dunngalvin, & Shorten, 2011), problem solving and diagnostic ability (Sobral, 2001), and professionalism (Learman et al., 2008).

While much of the existing literature claim that reflection is a critical component of professionalism (Baernstein & Fryer-Edwards, 2003; Boenink et al., 2004; Epstein, 1999; Epstein & Hundert, 2002; Haffling et al., 2010; Mamede & Schmidt, 2004; Swick, 2000; Wittich et al., 2010), no current studies have examined students’ reflections in

conjunction with incidents of unprofessional behavior by those students. Furthermore, no studies have compared the reflective writings of students who have and have not been identified and disciplined for unprofessional behavior during medical school.

With the growing prevalence of reflective writing in the medical curriculum, it would be of great significance to medical educators if students' writing could help them to identify students who are at higher risk for unprofessional behavior based on their reflective ability or particular themes mentioned. The ability to identify students who are at higher risk for unprofessional behavior has implications for early intervention through guidance and positive role modeling to ensure that such students are exposed to the desired values of professionalism. Further research would be necessary to determine whether students who are at risk for unprofessional behavior actually benefit from early intervention.

The current study will address the previously mentioned gaps in the literature by analyzing medical students' reflective writing using both qualitative and quantitative methods to examine both the content and the process of students' reflection on professionalism. In addition, the study will compare the reflective writings of students who have and have not been identified and disciplined by the SPC for lapses in professionalism or related competencies such as self-awareness or moral judgment. The details of the study procedure are presented in the next chapter.

CHAPTER 3: METHODS

Research Design

The aim of this retrospective study was to explore medical students' performance on reflective writing and self-assessment activities to determine if an explanatory relationship exists between such activities and whether or not medical students have been cited for professionalism lapses serious enough to have prompted a "progress hearing" by the SPC. The study also qualitatively explored students' conceptions of professionalism for insight into how these concepts influence students' enactment of professionalism. The primary sources of data for the study were professionalism journals that students submitted during their third-year Internal Medicine (IM) Clerkship, and peer and self-assessments that students completed during years 1-3 of medical school. The study used a mixed methods design, which combines quantitative and qualitative analysis within a single study framework in order to gain a better understanding of the research problem (Creswell, 2009). The rationale for a mixed methods study design was that neither quantitative nor qualitative methods alone were sufficient to answer all of the research questions, nor to fully understand the relationship between reflective activities and medical students' perception and enactment of professionalism. Used together, quantitative and qualitative methods allowed for a more complete analysis of the data and a clearer understanding of the research problem.

Quantitative research is guided by a positivist paradigm, which holds that the world is governed by laws or theories that must be tested and verified before they can be considered true knowledge (Creswell, 2009; Patton, 2002). Positivists believe that relationships between variables can be discovered using objective measurements,

controlled experiments, and statistical analysis as a means of testing hypotheses (Tashakkori & Teddlie, 1998). The quantitative phase of this study attempted to establish an explanatory relationship between reflective ability, self- and peer assessment scores, and professionalism by testing the hypothesis that students who reflect at a higher level, or are more accurate in their self-assessments were less likely to have been disciplined by the SPC for lapses in professionalism.

Qualitative research, on the other hand, is guided by a constructivist paradigm, which assumes that individuals construct subjective meanings of their experiences based on social, cultural, and historical contexts (Creswell, 2007). Qualitative research is a means of exploring or understanding the meanings that individuals ascribe to a social or human phenomenon. The qualitative phase of this study attempted to discover and interpret students' conceptions of professionalism by examining their descriptions of clinical experiences that they perceive to have influenced their attitudes about professionalism. The exploration of the reflective journals of students who have and have not been disciplined by the SPC provided insights into how students' conceptions of professionalism influenced or contributed to unprofessional behaviors that warranted disciplinary action.

A mixed methods approach draws upon the strengths of both quantitative and qualitative research to study the complex problems addressed by social science researchers (Creswell, 2009). As with most mixed methods studies, this study was built upon a pragmatic paradigm. Pragmatism recognizes the compatibility of qualitative and quantitative methods and utilizes whatever methods, techniques, or procedures best meet the needs and purposes of the research problem (Tashakkori & Teddlie, 1998). As

discussed previously, a pragmatic, mixed-methods approach was appropriate because quantitative methods were needed to determine if a concurrent relationship exists between students' reflective ability, self-assessment, and professionalism; whereas qualitative methods were needed to gain a better understanding of how students conceptualized professionalism and their perceptions of professionalism in clinical situations. The pragmatic approach also rejects the need to choose between the context-specific results of qualitative research and the generalizability of quantitative research. Pragmatism is interested in transferability – how knowledge gained by one method of research in a specific situation can be appropriately applied to a similar situation (Morgan, 2008). While no two medical schools are identical, the learning environment and educational objectives are likely to have enough similarities that the results of this study could inform undergraduate medical education programs across the country.

There are three criteria that guide a mixed methods study design: implementation, priority, and integration (Creswell, Plano Clark, Gutmann, & Hanson, 2003).

Implementation refers to the sequence of data collection. Quantitative data collection can precede qualitative data collection, and vice versa, or both types of data can be collected concurrently. This study used a sequential, explanatory mixed methods design with the quantitative analysis preceding the qualitative analysis. When quantitative data is collected before qualitative data, the intent is usually to test a hypothesis using a large sample, and then follow up with a qualitative analysis of a few cases to explain the findings or explore the problem in more depth. The case-control study explored factors that might have influenced the likelihood that a student had been cited for a lapse in

professionalism. Based on the quantitative findings, a qualitative analysis further explored students' conceptions of professionalism in an attempt to explain those findings.

Priority refers to the emphasis of the quantitative versus the qualitative methods in the study. The methods may be equal, or one method may be given priority over the other (Creswell et al., 2003). This study used an explanatory approach, with an emphasis on the quantitative analysis, because the study purpose was to test the hypothesis that students who reflect at a higher level were better able to self-assess, and were less likely to have appeared before the SPC for professionalism lapses. After testing this hypothesis, the qualitative analysis was used to explain the findings, and to further explore students' concepts of professionalism.

Integration is the combination of qualitative and quantitative research at various stages of inquiry (Creswell et al., 2003). Integration occurred throughout this study – within the research questions, data analysis, and interpretation of findings. Both quantitative and qualitative research questions were set forth to test the relationships among the variables, and to further explore and verify these relationships. An integrative analysis transformed qualitative data (journal entries) into quantitative measures of reflective ability. The results of the quantitative analysis were then used to select a sample and provide a context for the qualitative analysis. The findings of the two analyses were integrated into a single discussion of the relationships between professionalism, reflective ability and self-assessment.

The quantitative analysis used a logistic regression model to explore the relationship between a set of explanatory variables (reflective ability and self-assessment scores), and whether the student had been cited for professionalism lapses while in

medical school. The variables for this analysis are described later in this chapter. Following the quantitative analysis, a sample of medical students' professionalism journals were qualitatively analyzed using immersion/crystallization analysis (Borkan, 1999) to explore students' conceptions of professionalism, and compare the themes present in journal entries between students who have and have not demonstrated unprofessional behavior.

Student Sample and Inclusion Criteria

The study population consisted of medical students who matriculated into IUSM between 2001 and 2009, and completed their third-year IM Clerkship between February, 2004 and May, 2012. All students included in the study had graduated or were otherwise no longer associated with IUSM at the time the data were collected.

As discussed in Chapter 1, IUSM has incorporated professionalism and other non-cognitive aspects of medical education into a formal competency-based curriculum. During the first 10 years (1999-2009) the competency curriculum was in place, 191 students were referred to the SPC for 317 separate competency deficiencies. Professionalism was the most frequently cited deficiency, comprising 29.3% of all competency-related citations. Another 17.7% and 9.1% of deficiencies were related to self-awareness and moral reasoning, respectively (Brokaw, Torbeck, Bell, & Deal, 2011). These three competencies frequently occurred together among students who had multiple competency deficiencies, which suggests that self-awareness and moral reasoning are closely related to professionalism. Furthermore, current literature that defines professionalism frequently includes self-awareness, ethics, and moral judgment as specific domains under the umbrella of professionalism (Hilton & Slotnick, 2005; Swick,

2000). For these reasons, these three competency areas – self-awareness, self-care, and personal growth; moral reasoning and ethical judgment; and professionalism and role recognition – were considered together as “professionalism” for the purposes of this study.

The case group included all students who had appeared before the SPC for competency violations related to professionalism (which includes the three aforementioned competencies) at any point during undergraduate medical education, and who also met the following inclusion criteria:

- All students in the sample must have submitted at least one entry into their professionalism journal during the 3rd year Internal Medicine (IM) clerkship that can be used to assess reflective ability.
- Each student must have at least one complete year of assessment data in order to calculate a self-assessment accuracy score.
- All students in the sample must have graduated or are otherwise no longer students at IUSM at the time of the study. This criterion was included because students are assured by the IM clerkship director that their professionalism journals would not be publicly used for any reason, including research purposes, until after they have graduated, or are no longer students at IUSM.

A total sample size of 300 students was needed in order to achieve adequate statistical power (Faul, Erdfelder, Buchner, & Lang, 2009). Seventy students met the inclusion criteria for the case group. The control group included 230 students, selected using a standard random number generator, who had not appeared before the SPC for

competency deficiencies at any point during medical school, and who met the aforementioned inclusion criteria. The student sample is summarized in Table 3.1.

Table 3.1

Student sample

	Control Group <i>n</i> (%)	Case Group <i>n</i> (%)	Total <i>N</i>
Males	132 (57.4%)	49 (70%)	181
Females	98 (42.6%)	21 (30%)	119
Total	230	70	300

Data Collection

Retrospective data were collected for all students in the study population. The primary source of data for measuring students' reflective ability were professionalism journal entries that medical students are required to submit during the eight-week IM clerkship. In these journals, students are asked to describe an experience during the clerkship that taught them something about professionalism. The journal entries were de-identified and assigned a unique code to allow the journal entries to be matched with other data points for each particular student.

Peer and self-assessment scores were obtained for all students in the study population. Students were required to complete these assessments once a year during years 1-3 of medical school; however, as these assessments were instituted in 2005, some students in the study population, particularly students from the classes of 2006 and 2007, do not have scores for all three years. The peer and self-assessment instrument includes 15 items for the first two years and 18 items for the third year (see Appendix B). The items assess such areas as communication skills, altruism, responsibility, collegiality,

empathy, professionalism, etc. The instrument asks students to rate themselves, or their peers, on a nine-point scale for each of the items. Each item includes descriptive anchors for “Unsatisfactory” (score of 1-3) and “Exceptional” (score of 7-9). The instrument was originally developed using a five-point scale, and was changed to a nine-point scale during the years included in the study. Conversion of the scales is described in the analysis procedures. Each student receives a score report that contains his or her self-assessment score for each item, as well as the average score assigned to the student by approximately 10 peers.

Data from the SPC regarding students’ competency deficiencies were collected by the Associate Dean of Medical Student Affairs who reviewed the official minutes of the SPC meetings for the years of the study. The researcher was provided with a summary of students’ competency-related deficiencies, including the specific competency(s) involved, the date(s) of the student’s progress hearing before the SPC, whether the lapse occurred during the pre-clinical or clinical years, and the remediation activity(s) the student was required to complete. The information provided by the Associate Dean did not provide any specific details of the students’ competency lapses that would enable the researcher to classify the infractions based on severity; however the summary did include information on recurring deficiencies, which enabled an analysis of students who were cited multiple times for competency-related deficiencies.

Quantitative Methods

The quantitative phase of the study focused on the validity of reflective ability and self-awareness scores for explaining whether medical students had been disciplined for unprofessional behavior. A retrospective, case-control design and logistic regression

analysis were used. Logistic regression was an appropriate statistical technique because the goal of this analysis was to describe the relationship between a dichotomous outcome, whether or not students have been disciplined for professionalism lapses, and a set of explanatory variables (Hosmer & Lemeshow, 1989).

Variables

The study included the following explanatory variables: reflective ability, average self-assessment scores, average peer assessment scores, and self-assessment accuracy scores, in addition to the demographic variables of gender and students' age at matriculation. The dependent or outcome variable was the case or control status of the student (i.e. whether or not the student had a reported professionalism violation that was adjudicated by the SPC).

Reflective Ability

Reflective ability was determined by using a rubric to determine the level of reflection demonstrated in students' professionalism journal entries. The reflective ability rubric (see appendix A) was developed by O'Sullivan and colleagues (O'Sullivan et al., 2010), and was published on MedEd Portal – a peer-reviewed publication service provided by the Association of American Medical Colleges (AAMC). The rubric incorporates components of reflection from models described by Boud and colleagues (1985), Mezirow (1981, 1998), and Schön (1983) to establish six levels of reflection, which are briefly summarized in Table 3.2. This rubric was selected because it takes a holistic approach to assessing reflective ability rather than focusing on individual components of reflection, and also because it includes a user guide for training raters to apply the rubric, and provides examples of each level of reflection.

Table 3.2

Levels of Reflection Measured by Reflective Ability Rubric

Level	Reflection Performance
0	Does not respond to the assignment
1	Describes procedure/case/setting without mention of lessons learned
2	States opinions about lessons learned unsupported by examples
3	Superficial justification of lessons learned citing only one's own perspective
4	Reasoned discussion well-supported with examples regarding challenges, techniques, and lessons learned, and includes obtaining feedback from others or other sources
5	Analyzes the influence of past experience on current behavior
6	Integrates all of the above to draw conclusions about learning, provides strategies for future learning or behavior, and indicates evidence for determining the effectiveness of those strategies

Source: "Reflective ability rubric and user guide," by P.S. O'Sullivan, L. Aronson, E. Chittenden, B. Niehaus, and L. A. Learman, 2010, *MedEdPORTAL* p. 5-6.

Validity and Reliability

The rubric's validity was established during development as well as during use in other studies (Aronson, Niehaus, DeVries, Siegel, & O'Sullivan, 2010; Aronson, Niehaus, Hill-Sakurai, Lai, & O'Sullivan, 2012; Aronson, Niehaus, Lindow, Robertson, & O'Sullivan, 2011; Learman et al., 2008). Aronson and colleagues used the rubric to confirm their hypothesis that guidelines and feedback on reflection would improve reflection scores in medical students, which supports the construct validity of the rubric (Aronson et al., 2012). The construct validity was further tested in this study based on the hypothesis that students who had been cited for competency violations would have lower reflection scores than those who had not. Learman and colleagues (2008) applied the rubric to 183 reflections (assigned as six different exercises) written by 32 obstetrics

and gynecology residents and found that reflection scores correlated with measures of professionalism and communication skills, which is evidence of convergent validity with these two related constructs. This study also showed adequate internal consistency reliability (Cronbach's $\alpha = 0.62$) for five of the six reflection exercises (Learman et al., 2008).

Rater training and reflection scoring

Raters were trained according to guidelines set forth by the rubric's developers (O'Sullivan et al., 2010). First, raters discussed the scoring guidelines for each level and their interpretations of how each level differs from adjacent levels. Then the raters reviewed the training examples provided in the rubric's user guide, discussing what score each rater would have given the example, and how this compared with the provided score. This process continued until the raters felt comfortable in their ability to apply the rubric to the professionalism journals. At this point, two raters scored five journal entries together, discussing the rationale for each score assigned. The two raters then scored ten journal entries independently and inter-rater reliability was calculated using Cohen's weighted kappa (Cohen, 1968). A weighted Kappa was selected for this study because it allowed for scaled degrees of agreement, such that a small discrepancy in scoring received greater weight than a large discrepancy (Cohen, 1968). If reliability is less than 0.8, the raters reviewed and discussed the scores assigned to the journals, until they once again felt comfortable with the scoring guidelines, and then five more journal entries were scored. This process continued until a reliability of at least 0.8 was achieved among raters (O'Sullivan et al., 2010).

Following rater training, the researcher proceeded to score 559 journal entries written by the 300 students in the sample. If a student submitted multiple journal entries, as many students did, only the first two entries (determined by entry date and timestamp) were scored for each student. To ensure the reliability of the reflection scores, and to prevent drift and decay from the rubric criteria, inter-rater reliability was measured after every 65 entries. The secondary rater scored the last 15 of the 65 journal entries and inter-rater reliability was calculated using a weighted Kappa (Cohen, 1968). If Kappa was below 0.80, the two raters discussed any large discrepancies in scoring and reviewed the rubric criteria. The 15 entries were re-scored independently and inter-rater reliability was again calculated. This procedure continued until inter-rater reliability reached 0.80. Of the 559 journal entries, 135 were scored by both raters. The overall inter-rater reliability of the scores for these 135 entries was 0.84.

Assessment scores and self-assessment accuracy

Stern and colleagues (2005) found that self-assessment accuracy early in medical school predicts professionalism during the clinical years. For this study, self-assessment accuracy was determined using the peer and self-assessment scores for each student from years 1-3 of medical school. Because the assessment scale was changed from a five-point to a nine-point scale during the years included in the study, the scores were converted to a 10-point scale to make the scores easily interpretable. In addition, each score was converted to a z-score by subtracting the mean from each score and the dividing by the standard deviation (Afifi, May, & Clark, 2012). The z-scores allowed the researcher to determine how students in each group rated themselves, and how their peers rated them, when compared to the overall average self- and peer scores. The self-

assessment scores for each item were then averaged, resulting in three self-assessment scores, one for each year that the assessment was completed. The same was done for the peer scores, resulting in an average peer-assessment score for each of the three years. The average self-score was subtracted from the average peer-score to achieve a single self-assessment accuracy score for each year, as shown in the following equation:

$$\Delta_1 = \bar{y}_1 - \bar{x}_1$$

where

Δ_1 = self-assessment accuracy score for year 1

$\bar{x}_1 = \frac{\sum x_1}{n}$ = average self-scores for all items in year 1

$\bar{y}_1 = \frac{\sum y_1}{n}$ = average peer-scores for all items in year 1

A small discrepancy indicated a high degree of accuracy, and therefore, greater self-awareness. Large deviations from zero indicated a lower sense of self-awareness. A positive score indicated that a student under-rated him/herself, while a negative score indicated that a student over-rated him/herself, as compared with the scores assigned by peers.

Gender and Age

Gender was included as an explanatory variable because within the first ten years of IUSM's competency curriculum, 72.3% of students cited for competency violations were male (Brokaw et al., 2011). Furthermore, several studies have found that males are more likely than females to be disciplined by a state medical board (Clay & Conatser, 2003; Kohatsu, Gould, Ross, & Fox, 2004; Morrison & Wickersham, 1998), although these results were not replicated in subsequent studies (Papadakis et al., 2004; Papadakis et al., 2005), which warrants further investigation.

Few studies of professionalism have included age as a predictor variable (Papadakis, Arnold, Blank, Holmboe, & Lipner, 2008; Papadakis et al., 2004; Papadakis et al., 2005). In their early case-control studies, Papadakis and colleagues (2004; 2005) reported the average age of physicians at the time of disciplinary action; however, as the control physicians had no disciplinary action, it was not possible to compare the two groups on the basis of age. In a later study, Papadakis et al. (2008) reported physicians' age at the beginning of residency for both the case and control groups, but failed to report any significant findings regarding age. The authors of these studies acknowledged that the study design prevented a full assessment of age as a risk factor for unprofessional behavior; therefore this study included students' age at matriculation into medical school as an explanatory variable to fill this gap in the literature.

Statistical Analysis

The purpose of this study was to examine the relationships between reflection, self-assessment, and professionalism by comparing the reflective writing samples and self- and peer assessment scores from students who have demonstrated unprofessional behavior during medical school, as determined by disciplinary action(s) by the SPC, with students who have not. Several statistical tests were used to examine these relationships, including independent Pearson chi-square analysis, independent samples *t*-tests, Pearson correlations, logistic regression analysis and Poisson regression analysis. All statistical analysis was conducted using IBM SPSS Statistics Version 20.0 (IBM Corp., 2011), unless otherwise noted.

A Pearson chi-square test was used to examine the gender distribution between the case and control groups, and independent samples *t*-tests were used to compare the

mean scores between the two groups for all continuous independent variables (age, reflection score, self- and peer assessment scores, and self-assessment accuracy scores). Effect sizes for all significant *t*-tests were calculated using Cohen's *d* (Cohen, 1988). An effect size describes the difference between the two means in standard deviation units, thus providing a standardized measure that indicates the magnitude of the significance. Pearson correlations were used to examine the associations between all of the continuous independent variables.

Logistic regression analysis was used to explain the odds that a student had been cited for a professionalism lapse based on a set of explanatory variables (Hosmer & Lemeshow, 1989; Pedhazur, 1997). Logistic regression analysis is a multiple regression model that is used in research designs when the dependent variable is dichotomous, rather than continuous. A multiple regression model uses information from independent variables in an attempt to explain the variability of the dependent variable, in this case, whether or not students have been cited for lapses in professionalism (Hosmer & Lemeshow, 1989).

Before performing the logistic regression analysis, descriptive statistics, including means and frequency distributions, were run on all independent variables for both the case and control groups. The data were also screened to identify potential multicollinearity among the independent variables. Collinearity refers to two variables having the same linear relationship, that is, they are highly correlated. Hence, multicollinearity simply refers to collinear relationships between more than two variables. Multicollinearity can lead to imprecise estimates of the regression coefficients. To avoid these adverse effects, the independent variables for each regression model were

screened for potential multicollinearity by examining the correlations and the variance inflation factor (VIF), which indicates the inflation of the variance in the regression coefficient that is a result of high correlations between independent variables (Pedhazur, 1997). Due to the unique properties of dichotomous variables, the logistic regression model makes no assumptions of normality, linearity, and homoscedasticity of the independent variables (Pedhazur, 1997).

Simple bivariate relationships between each independent variable and the dependent variable were assessed using the Pearson chi-square test for dichotomous variables (gender) and t-tests for all continuous variables as previously described (Hosmer & Lemeshow, 1989). The model fit was assessed using the Hosmer-Lemeshow goodness-of-fit test (Hosmer & Lemeshow, 1989), and three different pseudo-R² measures. Three pseudo-R² measures were used because each of these measures provides only a rough estimate of the reduction of poorness in model fit. The first, described by Pampel (2000), estimates the proportion of poorness of fit that is reduced by the model. Another measure proposed by Cox and Snell tends to underestimate the model fit, which is adjusted for in the Nagelkerke measure, but this adjustment often overestimates the fit (Pampel, 2000). Pampel (2000) cautions that there is no consensus on the single best measure for estimating model fit, and therefore “researchers should use these measures as only rough guides without attributing great importance to a precise figure” (p. 50). The significance of the overall model was assessed using the omnibus test of model coefficients, which is a chi-square test for the log likelihood difference, and the significance of the variable coefficients were assessed using the Wald statistic (Pampel, 2000). Significance was reported at the 0.05 level. Odds ratios were

interpreted to explain the effects of each independent variable in the model on the outcome variable.

While a logistic regression model is useful for determining which factors affect the odds that a student had been cited for a professionalism lapse at any time during medical school, it does not discriminate between students who only had one citation and those who had multiple citations. Because many students in the sample had been cited multiple times for professionalism lapses, a follow-up analysis was conducted to examine the rate of professionalism lapses based on a set of explanatory variables.

The incidence of professionalism competency citations during medical school was relatively rare, resulting in a positively skewed distribution called a Poisson distribution, which is truncated at zero and gradually tapers off at higher values (Hutchinson & Holtman, 2005). A Poisson regression analysis was used to determine the expected change in the frequency of professionalism lapses that would result from changes in the explanatory variables. The explanatory variables for the Poisson regression were selected based on the significant findings of the logistic regression analysis.

Similar to the logistic regression model, the Omnibus test was used to determine the significance of the model, and the Wald statistic indicated the significance of the independent variables. Rate ratios were interpreted to determine the effect of each independent variable on the rate of professionalism lapses.

Qualitative Methods

The qualitative phase of the study attempted to explain the results of the quantitative analysis and further explored students' conceptions of professionalism by qualitatively analyzing the journal entries from a purposeful sample of students.

Purposeful sampling is a common practice in qualitative research because it allows the researcher to select individuals who can “purposefully inform the research problem and central phenomenon in the study” (Creswell, 2007, p. 125). The journal entries were selected from both the case and control groups, as well as a third group – those students who achieved Level III competency in professionalism. The initial quantitative sampling did not consider whether or not a student had elected to pursue level III competency in professionalism, because this is a self-selected group and would introduce bias into the sample. Nonetheless, several students who had earned Level III competency in professionalism were randomly selected for the control group; however, the number was insufficient for qualitative analysis and additional students had to be added to the study to populate this group. The goal of the qualitative analysis was to understand how students’ experiences within the clinical setting shape their perceptions of professionalism, and how these perceptions differ between students who have and have not been cited for professionalism lapses, as well as students who elected to pursue advanced training in professionalism. Because the vast majority of students in the medical school population have not been cited for professionalism lapses, the purposeful inclusion of Level III students was intended to enhance the differences between average performing students, and those students who demonstrated superior achievement in professionalism. Sixty students were selected for each of the three groups for a total of 180 students, and one journal entry was analyzed from each student. Interestingly, there were three students from the case group who had also achieved Level III competency in professionalism. These three students were considered as a separate group during analysis.

Qualitative research focuses on making sense of, or interpreting, phenomena in terms of the meanings that people bring to them (Denzin & Lincoln, 1994). The qualitative phase of this study focused on understanding the meanings that students bring to their experiences of professionalism in the clinical setting. Due to the retrospective nature of this study, it was impossible to conduct interviews or directly observe students in the clinical setting to collect first-hand data about how they experience professionalism. As a result, the qualitative analysis relied on students' stories of their experiences in their professionalism journals, and employed a technique called immersion/crystallization analysis (Borkan, 1999) to interpret these experiences and to identify themes related to their perceptions of professionalism.

Immersion/crystallization (I/C) is a technique by which the researcher immerses him/herself in the data until themes and ideas begin to crystallize (Borkan, 1999). It is an iterative process that involves multiple cycles of immersion, contemplation and reflection, and illumination of insights and interpretations from the data (Borkan, 1999). The critical tool for this technique is the researcher (or research team) – particularly one who is open to uncertainty, reflection and experience. I/C requires the cognitive and emotional engagement of the researcher to move beyond the obvious interpretations to fully experience the data. The researcher must also reflect on her own experiences, emotions, and biases that influence the findings and interpretations of the data (Borkan, 1999). The researcher was blinded to the case or control status of the student during the analysis.

In the beginning stages of the qualitative analysis, the primary researcher (LAH) analyzed the journals using an established codebook (see Appendix C and D) that has

been used in prior analyses of the IM professionalism journals (Karnieli-Miller, Taylor, et al., 2010; Karnieli-Miller, Vu, et al., 2010). For this study, the codebook was used to identify the professionalism theme present in each entry (e.g. altruism, respect, empathy, honesty, etc.), and other features such as the point of view of the student, the valence of the story, and any emotions the student reported feeling either during or after their experience. Twenty-five percent of the journals were also coded by a second coder to assure reliability of the codes. Following preliminary analysis, the primary researcher then used the I/C technique to conduct a more in-depth analysis of the journals to identify any other important themes that were not captured by the initial codebook. The researcher underwent multiple cycles of immersion and contemplation until no new themes emerged from the data (saturation). Periodically during the I/C analysis, the primary researcher reconvened with another researcher to validate the themes that emerged.

Triangulation

To ensure the rigor and reliability of the results, three methods of triangulation will be used in this study: Data triangulation, investigator triangulation, and methodological triangulation (Denzin, 1989). Data triangulation involves the use of multiple sources of data to understand the phenomenon under analysis. This study used two sources of data to explain professionalism lapses among medical students: professionalism journals and self- and peer assessments. As discussed previously, multiple investigators were used to triangulate the scoring of reflective ability and the themes identified during qualitative analysis. Investigator triangulation removes some of the bias that may result from a single investigator and improves the trustworthiness of the

analysis (Denzin, 1989). The mixed method study design also incorporated methodological triangulation by using both quantitative and qualitative methods to examine the professionalism journals. The rationale for combining methods was that the researcher can take advantage of the strengths of one method to compensate for the deficiencies of another (Denzin, 1989). Quantitative analysis of the professionalism journals allowed for a statistical analysis of reflective ability to explain professionalism lapses, but did not examine students' conceptions of professionalism. A qualitative analysis revealed valuable insights into how students experience professionalism, which provided a more complete understanding of why some students exhibit unprofessional behavior and others do not. Qualitative analysis of the journals can also be used to examine outliers or to explore unexpected findings from the quantitative analysis (Morse, 2008).

Research Permission and Ethical Considerations

The Institutional Review Board (IRB) at Indiana University has reviewed the protocol and granted approval to conduct the study (Study number 1205008665). Permission to use the students' professionalism journals was granted by the Internal Medicine clerkship director with the stipulation that students may not be included in the study unless they have graduated or are otherwise no longer affiliated with IUSM. Permission to use the peer and self-assessment data was granted by the Director of Assessment in the Office of Undergraduate Medical Education, and permission to use the SPC data was granted by the Associate Dean for Medical Student Affairs at IUSM. Students' anonymity was assured by assigning each student a randomly generated four

character code that was used to link each piece of data with that particular student. All study data was stored electronically on a secure, password protected server.

CHAPTER 4: QUANTITATIVE RESULTS

The quantitative phase of this study was conducted to explore the relationships among reflection, self-assessment, and professionalism in undergraduate medical education. It specifically explored the utility of curricular activities such as reflective writing and self-assessments in explaining the likelihood that a student had been disciplined for professionalism-related competency deficiencies during medical school. This chapter will present the results of several statistical analyses aimed at answering the four quantitative research questions. Each research question will be restated alongside the analysis procedures and results that addressed that question.

Data Screening

The quantitative phase of this study included several statistical techniques including independent samples *t*-tests, Pearson correlations, and logistic regression analysis. All statistical analyses, unless otherwise noted, were conducted using IBM SPSS Statistics, Version 20.0 (IBM Corp., 2011).

Before conducting any statistical analyses, the data were examined to ensure that the assumptions of these statistical tests were met. If the assumptions were not met, the literature was consulted and preliminary analyses were conducted to determine if it was appropriate to conduct the test anyway. The independent samples *t*-test assumes that the data are approximately normally distributed, that the variance is equal among the two groups being compared, and that there are no significant outliers in the dataset. Pearson correlation also assumes a normal distribution, and that there is a linear relationship between the two variables.

Visual inspection of histograms and normal probability plots of the independent variables revealed an approximately normal distribution for all variables except students' age at matriculation, which showed a strong positive skew. There were some minor deviations from normality among a few of the other variables which were largely the result of outliers in the dataset, particularly among the self-assessment scores for years 1 and 2. To determine how much impact these outliers had on the analysis, independent samples *t*-tests and Pearson correlations were conducted both with and without the outliers in the analysis. For all variables, with the exception of age, there was no difference in the results of the *t*-tests or correlation analyses with and without the outliers; therefore the outliers were included in the analysis. Any resulting violations of the normality assumption caused by the inclusion of these outliers were ignored because the independent samples *t*-test is fairly robust with regard to departures from normality, particularly with large sample sizes (Sawilowsky & Blair, 1992).

As mentioned above, the distribution of students' ages at matriculation had a strong positive skew, which was largely a result of several students who were much older than the mean age at matriculation. A non-parametric Mann-Whitney *U* test indicated that the distribution of students' ages at matriculation was the same across the case group and the control group ($p > .05$). In order to conduct an independent samples *t*-test the data had to be transformed in such a way as to reduce the outliers. To correct for the positive skew in the distribution, a log transformation was conducted using SPSS, but failed to adequately reduce the outliers. A more powerful statistical program, Stata Statistical Software Version 13 (2013), was then used to produce a transformation equation that could sufficiently reduce the outliers such that a *t*-test could be conducted to

compare the mean age at matriculation between the two groups of students. The following formula was used to transform the age variable: $\ln \text{Age} = \ln (\text{Age} - 19.87758)$. The resulting variable, $\ln \text{Age}$, was used in all subsequent data analyses. This transformation was the only instance in which Stata was used in the study.

When conducting an independent samples *t*-test, SPSS tests for homogeneity of variance using Levene’s Test for Equality of Variances. If Levene’s test is significant, the assumption of homogeneity of variance is violated, and equal variances between the two groups cannot be assumed. By default, SPSS reports the *t*-values for two different versions of the independent samples *t*-test: one assuming equal variances, and the other not assuming equal variances. For those variables with a significant Levene’s test, the latter *t*-value was reported and interpreted.

Gender

As Table 4.1 indicates, there was a gender discrepancy between the case group (70% male) and the control group (57% male).

Table 4.1
Student Sample for Quantitative Analysis

	Control Group <i>n</i> (%)	Case Group <i>n</i> (%)	Total <i>N</i>
Males	132 (57.4%)	49 (70%)	181
Females	98 (42.6%)	21 (30%)	119
Total	230	70	300

A Pearson Chi-square test indicated that gender was not significantly associated with professionalism competency deficiencies during medical school, $\chi^2 (1, N = 300) = 3.57, p > 0.05$. This was an unexpected finding given the gender discrepancy between

the two groups, and considering that prior analyses of students who have been cited for competency deficiencies at IUSM revealed that males were significantly over-represented among students with competency deficiencies when compared with the overall student population (Brokaw, Torbeck, Bell, & Deal, 2011). One possible explanation for this discrepancy is that the study by Brokaw et al. only looked at gender distribution, and did not include competency distribution as an independent variable in the analysis. The study also included a much larger sample of students who had competency deficiencies (n = 191) and compared them with the overall medical school population over the ten years included in the analysis (n = 2,843). Larger sample sizes also lower the threshold for significance, which might explain the contradiction in findings between these two studies.

Reflection Scores

Reflective ability was assessed by applying the reflective ability rubric (see Appendix A) to the professionalism journal entries submitted by students during the third-year medicine clerkship. The scoring rubric, as well as a summary of the scoring process, was described in Chapter 3. Raters were blinded to the case or control status of each student during the scoring process. A total of 559 journal entries were scored from the 300 students in the sample. Only the first two entries were scored for those students who had submitted multiple journal entries. Inter-rater reliability of reflection scores, calculated using weighted Kappa (Cohen, 1968), was 0.84. Because some students had only one reflection score while others had two, only the highest score for each student was included in all subsequent statistical analysis. Reflection scores ranged from 0 to 6 with an average score of $2.73 \pm .89$ for the entire student sample.

Assessment Scores

Self- and peer assessment data from years 1-3 of medical school were obtained for each student in the sample. Because the self- and peer assessments were implemented after some students had already matriculated into medical school, many students, particularly from the classes of 2006 and 2007 were missing assessment data from years 1 and/or 2. Thirteen students from the case group were missing year 1 assessment data, and 5 were missing year 2 assessment data. One student from the case group was missing peer assessment data from year 3. These students were allowed to remain in the sample in order to maintain an adequate number of students in the case group; however, they may have been excluded from some of the statistical analyses because of these missing data points. Assessment scores for the overall student sample are summarized in Table 4.2. As described in Chapter 3, scores from both the 5-point and 9-point scales were converted to a zero to 10 scale to facilitate the interpretation of the scores.

Table 4.2

Assessment Scores for Student Sample

	Year	<i>N</i>	<i>M</i>	Min	Max	<i>SD</i>
Self-Assessment Score	1	276	8.13	0.00	10.00	1.17
	2	295	8.21	2.08	10.00	1.06
	3	300	8.38	5.00	10.00	0.93
Peer Assessment Score	1	276	8.49	5.67	9.90	0.74
	2	297	8.67	5.25	9.80	0.75
	3	299	8.90	6.31	10.00	0.58
Self-Assessment Accuracy	1	276	0.37	-3.44	8.44	1.27
	2	295	0.45	-3.87	6.62	1.19
	3	299	0.53	-2.58	3.28	1.03

As Table 4.2 indicates, the self-assessment averages were lower than the peer assessment averages for all three years. The self-assessment accuracy score was calculated by subtracting the self-assessment scores from the peer assessment scores. Therefore, with higher peer scores, the self-assessment accuracy scores are positive. This indicates that, overall, the students tended to rate themselves lower than their peers rated them. The discrepancy between the self and peer scores increased each year from year 1 to year 3 of medical school, which was due to peer scores increasing more from year to year than self-scores.

The self- and peer assessment scores were also converted to z-scores (see Table 4.3) in order to examine how each group's assessment scores compared to the overall mean. With the exception of year 1, the control group's self-assessment scores were above the overall mean, while the case group's self-assessment scores were below the mean. The self-assessment scores for the control group tended to increase each year compared to the overall mean, beginning with year 1 scores being slightly below the mean, and ending with year 3 scores slightly above the mean. The opposite trend is seen in the self-assessment scores for the case group, with year 1 scores being above the mean, and year 3 scores being below the mean.

Peer assessment z-scores for the control group were above the mean for all three years, and the distance from the mean steadily increased from year 1 to year 3. The peer assessment scores for the case group, showed the opposite trend as those for the control group. Peer assessment scores for the case group were below the mean for all three years with the distance from the mean increasing in the negative direction from year 1 to year 3. Peer assessment scores, consequently, showed a clear discrepancy between case

students and control students, with control students consistently receiving peer assessment scores that were above the mean for the overall student sample, and case students consistently receiving peer assessment scores that were below the overall sample mean.

Table 4.3

Self- and Peer Assessment Z-scores by Group

	Year in School	Control Group			Case Group		
		<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Self-Assessment Z-score	1	219	-.03	.93	57	.11	1.24
	2	230	.001	1.01	65	-.004	.96
	3	230	.05	.94	70	-.18	1.16
Peer Assessment Z-score	1	219	.09	.95	57	-.35	1.12
	2	230	.13	.90	67	-.43	1.19
	3	230	.20	.73	69	-.67	1.41

Independent Samples *t*-tests

Following data screening, a series of independent samples *t*-tests were conducted to answer the following two research questions:

- Does level of reflection (as measured by the reflective ability rubric) differ between students who have and have not demonstrated professionalism lapses during medical school?
- Do self-assessment scores, peer assessment scores, and self-assessment accuracy scores differ between students who have and have not been identified as having professionalism lapses during medical school?

The average age of the students at the time of matriculation was also compared between the two groups using the transformed age variable (ln Age).

The *t*-tests showed significant differences between the case group and the control group in several of the independent variables including reflection score, average peer assessment scores for all three years, and the self-assessment accuracy scores for years 1 and 2. There were no differences between the two groups in terms of students' age at matriculation, average self-assessment scores for any of the years, or self-assessment accuracy score for year 3. The results of the independent samples *t*-test are reported in Table 4.4.

There was a statistically significant difference in the mean reflection scores between the control group and the case group. Students in the control group had, on average, reflection scores that were 0.36 points higher than students in the case group ($p < 0.01$), which suggests that students in the control group reflect at a higher level than students in the case group.

There were also significant differences between the case group and control group in terms of average peer assessment scores from years 1, 2, and 3. For all three years, average peer assessment scores for students in the control group were significantly higher ($p < 0.01$) than for students in the case group (see Table 4.4). Peer assessment scores for students in the case group began at 8.24 in year 1 and increased to 8.52 in year 3, an increase of just over a quarter of a point. In contrast, peer assessment scores for students in the control group began at 8.56 in year 1 and increased to 9.02 in year 3 – an increase of nearly half a point. This data shows that not only did students in the control group start out with higher peer assessment scores in year 1, but their peer assessment scores also increased more from year to year than those of students in the case group.

Table 4.4

Independent Samples *t*-tests

	Year in School	Control Group		Case Group		<i>t</i>	Mean Difference	95% CI of the Difference	Effect size
		M	SD	M	SD				
In Age		0.99	0.57	1.13	0.76	-1.48	-0.14	[-0.31, 0.02]	–
Reflection Score		2.82	0.83	2.46	1.05	2.62**	0.36	[0.09, 0.63]	.41
Self-Assessment Score	1	8.09	1.10	8.25	1.46	-0.91	-0.16	[-0.57, 0.25]	–
	2	8.212	1.07	8.207	1.01	0.03	0.005	[-0.28, 0.29]	–
	3	8.43	0.87	8.21	1.08	1.53	0.22	[-0.06, 0.50]	–
Peer Assessment Score	1	8.56	0.70	8.24	0.83	2.70**	0.32	[0.08, 0.56]	.44
	2	8.76	0.67	8.34	0.89	3.54**	0.42	[0.18, 0.65]	.57
	3	9.02	0.42	8.52	0.81	4.91**	0.50	[0.30, 0.70]	.93
Self-Assessment Accuracy	1	0.47	1.16	-0.02	1.57	2.17*	0.48	[0.04, 0.92]	.38
	2	0.55	1.16	0.12	1.24	2.56*	0.42	[0.10, 0.75]	.36
	3	0.59	0.97	0.32	1.19	1.76	0.28	[-0.04, 0.59]	–

Note. Significant *t*-values are indicated in bold; Effect size was calculated using Cohen's *d*

* $p < 0.05$. ** $p < 0.01$

The self-assessment accuracy scores were also significantly different between the case and the control group for years 1 and 2 of medical school. Students in the case group actually tended to be *more* accurate in their self-assessments (i.e. closer to zero), as compared to self-assessment accuracy scores for the control group. Self-assessment accuracy scores were significantly higher for students in the case group than for students in the control group, meaning that students in the control group tended to rate themselves lower than their peers rated them. Alternatively, self-assessment scores for students in the case group were nearly identical (in year 1) or just slightly lower than peer assessment scores.

Effect sizes for significant variables were calculated using Cohen's d (Cohen, 1988). An effect size of 0.2 indicates a small effect size; 0.5 indicates a medium effect size; and 0.8 or higher indicates a large effect size. As indicated in Table 4.4, reflection score, peer assessment scores from year 1, and self-assessment accuracy scores from years 1 and 2 were found to have small to medium effect sizes. Peer assessment scores from years 2 and 3 had medium and large effect sizes, respectively, with the peer assessment score from year 3 having a particularly large effect size (Cohen's $d = .93$). This indicates that there was a large difference between the case group and control group in terms of their peer assessment scores for year 3.

Pearson Product-Moment Correlation

Pearson product-moment correlation analysis was used to explore the association between reflection and the various assessment measures to answer the following research question:

- What is the relationship between level of reflection and self-assessment accuracy in medical students?

Significant correlations are indicated in Table 4.5. Analysis revealed no correlation ($r < .010$) between reflection score and self-assessment accuracy score for any of the three years; however there were some small, but significant, correlations between reflection score and year 3 self-assessment score, and between reflection score and peer assessment scores for years 2 and 3. Not surprisingly, there were some moderate correlations ($r > 0.30$) among the self-assessment scores, peer assessment scores, and self-assessment accuracy scores both within each year and between years 1-3. Surprisingly, self-assessment scores and peer assessment scores were only weakly correlated, and among some years, not correlated at all ($r < 0.10$). Self-assessment scores had a strong negative correlation ($r < -0.7$) with self-assessment accuracy scores for the same year, which is largely due to the fact that the self-assessment accuracy score contains the self-assessment score with the sign reversed (Bereiter, 1963).

In addition to revealing the strength of association among the variables, the correlations were also examined as a preliminary step in the logistic regression analysis, because high levels of correlation among the independent variables can have adverse effects on the regression coefficients. Based on the correlation analysis, the only variables that might be of concern are the strong negative correlations between self-assessment scores and self-assessment accuracy scores. The VIF between these variables were also examined before conducting a logistic regression analysis to ensure there was no multicollinearity. The VIFs of these variables were all near 1, indicating no multicollinearity among the variables.

Table 4.5

Pearson Correlations

		Reflection Score	Self-Assessment Score			Peer Assessment Score			Self-Assessment Accuracy		
			1	2	3	1	2	3	1	2	3
Reflection Score		–	.099	.084	.152**	.046	.169**	.214**	-.065	.031	-.018
Self-Assessment Score	1		–	.538**	.419**	.192**	.103	-.074	-.819**	-.429**	-.415**
	2			–	.604**	.182**	.164**	.028	-.394**	-.785**	-.529**
	3				–	.137*	.117*	.130*	-.310**	-.460**	-.832**
Peer Assessment Score	1					–	.608**	.280**	.407**	.196**	.025
	2						–	.396**	.260**	.483**	.113
	3							–	.233**	.223**	.442**
Self-Assessment Accuracy	1								–	.513**	.400**
	2									–	.539**
	3										–

Note. Significant correlations indicated in bold.

* $p < 0.05$. ** $p < 0.01$

Logistic Regression Analysis

Logistic regression analysis was conducted to address the following research question:

- Can reflective ability and self- and peer assessment scores explain the likelihood of a student demonstrating professionalism lapses during medical school?

Several preliminary models were examined to determine which combination of variables produced the best fitting model and had the greatest influence in explaining the likelihood that a student had been cited for professionalism competency lapses during medical school. The variables for the regression model were selected based upon the result of the independent samples *t*-tests, as these significant variables were the most likely to have a significant impact on the odds that a student had been disciplined for professionalism lapses. Although significant, peer assessment scores and self-assessment accuracy scores from year 1 were not included in the model due to the large number of students in the sample who were missing year 1 assessment data.

The variables that produced the best fitting model included gender, the transformed age variable (ln Age), peer assessment scores from years 2 and 3, and self-assessment accuracy score from year 2. Examination of the VIF between each variable indicated no multicollinearity between these variables. The overall model was significant, as indicated by the Omnibus test of model coefficients, $\chi^2 = 49.326, p < 0.001$. The Hosmer and Lemeshow Goodness-of-fit test was not significant ($p > 0.05$) indicating a good model fit. The Cox and Snell R^2 is 0.154 and the Nagelkerke R^2 is 0.238. Pampel's R^2 (2000) was calculated to be 0.160. These three measures indicate a

15 - 24% improvement in model fit as a result of including the independent variables in the model. Results of the regression model are reported in Table 4.6.

The Wald statistic indicated that reflection score and peer assessment score from year 3 were significant ($p < 0.05$). The coefficient (B) is the log of the odds of a student having been cited for professionalism lapses during medical school (Pampel, 2000). The odds ratio (OR) is the exponentiated coefficient and indicates the change in the odds of having a professionalism lapse that results from a one-point increase in the independent variable. An OR of greater than one indicates an increase in the odds of the event occurring, whereas an OR of less than one indicates a decrease in the odds of the event occurring. The OR for reflection score was 0.697 (95% CI .494 - .984), indicating that for every one-point increase in reflection score the likelihood of having a professionalism lapse decreased by a factor of 0.697. With an OR of less than one, it is convenient to examine the inverse of the OR, which indicates the change in likelihood caused by a one-point *decrease* in the independent variable. This inverse relationship allows the OR to be interpreted as an increased risk, which is often more easily interpretable than a decreased risk. The inverse of the OR for reflection score is 1.43, indicating that for each one-point decrease in reflection score, a student was 1.43 times more likely to have been disciplined for a professionalism lapse. The OR for the average peer assessment score from year 3 was 0.287 (95% CI .158 - .522), the inverse of which is 3.48. This means that for each one-point *decrease* in average peer assessment score a student was 3.48 times more likely to have had exhibited a lapse in professionalism during medical school.

Table 4.6

Logistic Regression Coefficients

	B	S.E.	Wald	<i>df</i>	Sig.	OR	95% CI
Gender	.525	.336	2.442	1	.118	1.690	[.875, 3.263]
Ln Age	.320	.240	1.783	1	.182	1.377	[.861, 2.204]
Reflection Score	-.361	.176	4.217	1	.040	.697	 [.494, .984]
Peer Assessment Score – Year 2	-.324	.244	1.768	1	.184	.723	[.448, 1.166]
Peer Assessment Score – Year 3	-1.248	.305	16.735	1	.000	.287	 [.158, .522]
Self-Assessment Accuracy – Year 2	-.089	.157	.321	1	.571	.915	[.673, 1.245]
Constant	12.799	3.048	17.633	1	.000	361989.336	

Note. OR = odds ratio; CI = confidence interval; Significant coefficients and odds ratios are indicated in bold.

The classification results of the logistic regression model are reported in Table 4.7. Overall, the regression model correctly classified 82.3% of students at the default cutoff value of 0.50. Of the 64 students in the case group, the model correctly classified 16 students (25.0%), but it also misclassified four control students as cases. Decreasing the cutoff value to 0.45 and 0.40 increased the number of students correctly classified into the case group; however it also increased the number of control students that were misclassified into the case group.

Table 4.7

Classification Table for Logistic Regression Model

Cutoff Value	Observed	Predicted		Percentage Correct
		Control	Case	
.40	Control	219	11	95.2
	Case	43	21	32.8
	Overall Percentage			81.6
.45	Control	222	8	96.5
	Case	46	18	28.1
	Overall Percentage			81.6
.50	Control	226	4	98.3
	Case	48	16	25.0
	Overall Percentage			82.3

Poisson Regression Analysis

The logistic regression analysis indicated that reflection score and peer assessment scores from year 3 were significant factors in explaining the likelihood that a student had been disciplined for professionalism lapses during medical school. Among those students who had professionalism lapses, most ($n = 43$) had only one citation. Another 21 students had only two citations, and the remaining six students in the case

group had three or more, up to a maximum of six, citations. While the logistic regression model was useful for understanding which factors influenced whether students had been cited for professionalism lapses at any time during medical school, it did not discriminate between students who only had one citation and those who had multiple citations. These “repeat offenders” elicit much more concern from medical educators because they failed to alter their behavior, even after multiple remediation attempts. A follow-up analysis was conducted to determine whether reflection score and peer assessment scores could explain the occurrence of multiple professionalism competency lapses.

The frequency of professionalism lapses during medical school ranged from zero to six and followed a Poisson distribution, which is truncated at zero and gradually tapers off at higher values (Hutchinson & Holtman, 2005). A Poisson regression analysis was used to determine the expected change in the frequency of professionalism lapses that would result from changes in reflection score and peer assessment scores. The dependent or outcome variable was the number of professionalism citations the student had accrued during medical school. The independent or explanatory variables included students’ gender, the transformed age variable (ln Age), and the significant variables from the logistic regression model: reflection score and peer assessment score from year 3. The resulting regression model was significant, as indicated by the Omnibus test, $\chi^2 = 76.110$, $p < 0.001$. The results of the Poisson regression are presented in Table 4.8.

Similar to the logistic regression, the Wald statistic indicated that reflection score and year 3 peer assessment score were both significant factors ($p < 0.05$) in explaining the frequency of professionalism lapses. Unlike the logistic regression model, the Poisson regression model found that gender was also a significant factor ($p < 0.05$) in

Table 4.8

Poisson Regression Coefficients

	B	S.E.	Wald	<i>df</i>	Sig.	Exp(B)	95% CI for Exp(B)
Gender	Female	0	–	–	–	1	–
	Male	.679	.229	8.770	1	.003	[1.258 - 3.090]
Ln Age		.288	.149	3.738	1	.053	[.996 - 1.787]
Reflection Score		-.228	.106	4.675	1	.031	 [.647 - .979]
Peer Assessment Score – Year 3		-.869	.118	54.016	1	.000	 [.332 - .529]
Constant		6.337	1.026	38.124	1	.000	–

Note. CI = confidence interval; Significant coefficients and rate ratios are indicated in bold.

explaining the frequency of professionalism lapses. Poisson regression is similar to logistic regression in that the coefficient is actually the natural log of the number of competency citations. The inverse of the natural log ($\text{Exp}(B)$ in Table 4.8) indicates the change in the outcome variable that would result from a change in the explanatory variable (Hutchinson & Holtman, 2005). However, instead of reporting on the odds of the outcome event occurring, the $\text{Exp}(B)$ in a Poisson regression is interpreted as a rate ratio, or the rate of change in the frequency of the outcome event that occurs as a result of changes in the explanatory variable (Afifi, May, & Clark, 2012). A rate ratio of greater than one indicates an increase in the rate of professionalism lapses, while a rate ratio of less than one indicates a decrease.

Gender was found to be a significant factor in explaining the likelihood of a student having multiple professionalism lapses during medical school. Using female students as a reference group, the rate of professionalism lapses for males was 1.972 (95% CI 1.258 – 3.090), which means that the rate of professionalism lapses for males was nearly twice that of females. The rate ratio for reflection score was 0.796 (95% CI 0.647 – 0.979). This means that for every one-point increase in reflection score, the rate of professionalism lapses decreased by a factor of 0.796. The rate ratio for year 3 peer assessment score was 0.419 (95% CI 0.332 – 0.529), indicating that a one-point increase in year 3 peer assessment score, decreased the rate of professionalism citations by a factor of 0.419.

Chapter Summary

In summary, students in the case group were found to have significantly ($p < 0.05$) lower reflection scores and peer assessment scores than students in the control

group. The self-assessment scores did not differ significantly between the two groups, which suggests that the differences in self-assessment accuracy scores were largely driven by the differences in peer assessment scores. There were moderate correlations ($r > 0.5$) between many of the variables, particularly among the self-assessment scores and peer assessment scores for each year, and among the self-assessment accuracy scores for each year. There was a strong negative correlation ($r < -0.7$) between self-assessment scores and self-assessment accuracy scores.

Logistic regression analysis revealed that reflection score and peer assessment score from year 3 were significant factors ($p < 0.05$) in explaining the odds that a student had been disciplined for professionalism lapses during medical school. Low reflection scores and low peer assessment scores were both associated with an increased likelihood that a student had been cited for professionalism lapses. A follow-up analysis of the number of professionalism citations for each student in the sample using a Poisson regression model revealed that gender, reflection score, and peer assessment score for year 3 all had a significant ($p < 0.05$) influence on the number of professionalism citations a student received during medical school. Male students had a higher rate of professionalism lapses than females, and the rate of lapses decreased with higher reflection scores and peer assessment scores.

The next chapter will present the results of a qualitative analysis of the professionalism journal entries, which attempted to explain the results of the quantitative analysis. The qualitative analysis also further explored students' perceptions and interpretations of professionalism by examining what students report that they learned about professionalism during their clinical experiences and how they learned it. The

qualitative analysis focused on exploring the differences between the case and control students in terms of how they described their experiences with professionalism, and expanded the sample to include a third group – students who elected to pursue level 3 competency in professionalism – in order to highlight the differences between poor and exemplary demonstrations of professionalism during medical school.

CHAPTER 5: QUALITATIVE RESULTS

This study follows a sequential, explanatory mixed methods approach. In this approach, the quantitative analysis is followed by a qualitative analysis that is intended to confirm and explain the quantitative findings (Creswell et al., 2003). Inclusion of both quantitative and qualitative methods within the same study is also a means of methodological triangulation (Denzin, 1989). The qualitative analysis can be used to confirm that the findings of the study are valid and reliable, and can also be used to examine outliers or explore unexpected findings (Morse, 2008). The qualitative analysis was facilitated using Dedoose (2013), a web application for managing and analyzing qualitative and mixed methods data.

The qualitative phase of this study had three primary objectives: First, to examine the types of situations that students described as teaching them about professionalism; second, to examine how students described their experiences of professionalism; and third, to further explore the way students reflected on their experiences in order to explain the difference in reflection scores between students in the case group and students in the control group.

Because the vast majority of students in the medical school population had not been disciplined for professionalism lapses, the control group represents a broad spectrum of professional behavior ranging from questionable to exemplary. In order to enhance the differences between students who have been cited for professionalism lapses and those who demonstrated exemplary professionalism, a third group was added to the qualitative analysis: students who elected to pursue level III competency in professionalism. The process used in selecting students for the qualitative sample is

illustrated in Figure 5.1. Sixty students were selected for each group and one reflection from each student was selected for qualitative analysis. There were 20 students from the initial control group and another three students from the case group who had earned level III competency in professionalism. Another 40 students were randomly selected from a list of students who had earned level III competency in professionalism to obtain the desired sample size of 60 students for the level III competency group. The three students from the case group who also earned level III competency in professionalism were considered as a separate group in the analysis.

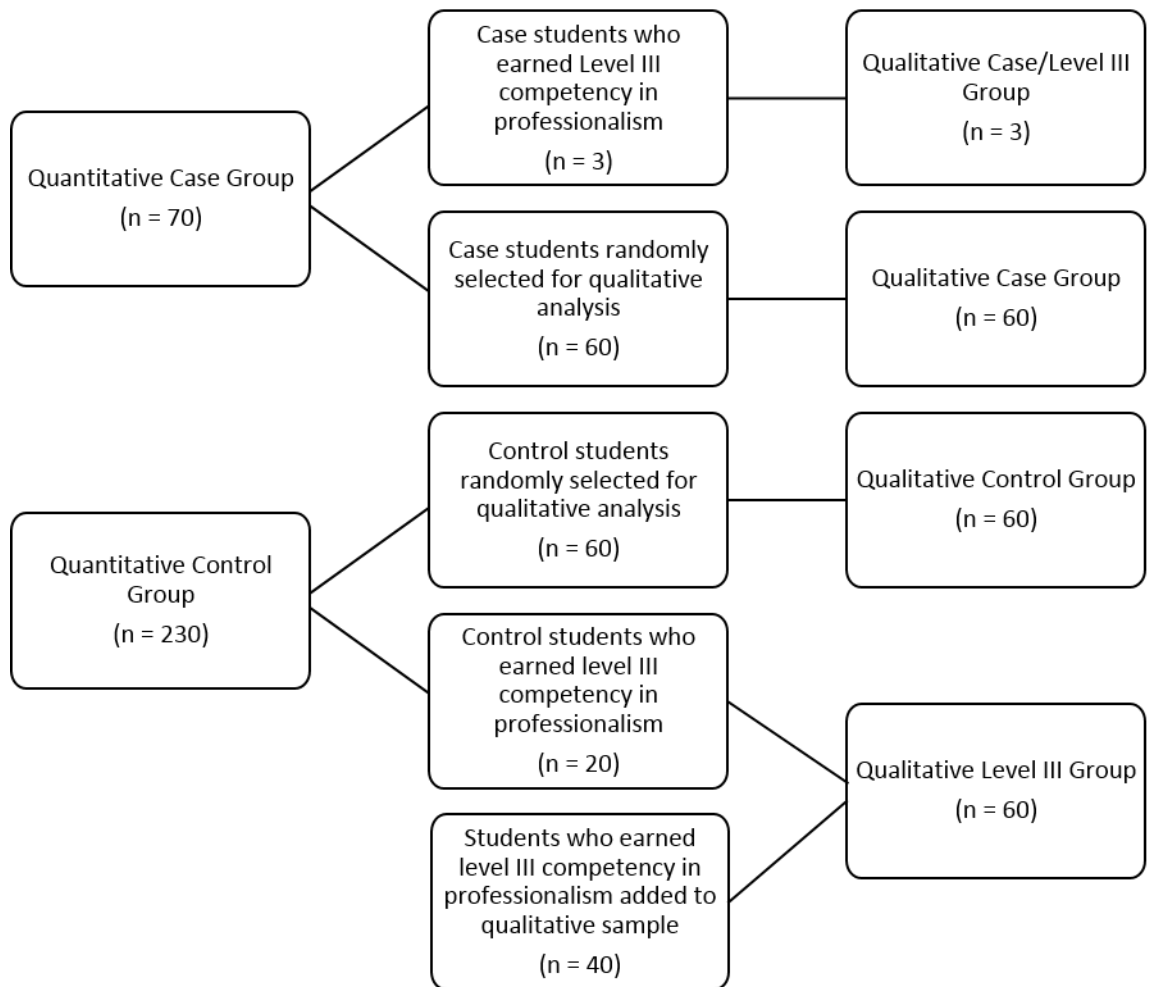


Figure 5.1. Process for selecting student sample for qualitative analysis

This chapter will first examine the types of clinical experiences students describe as teaching them about professionalism, followed by a discussion of how students learn professionalism from these experiences. Finally, the chapter will report on the findings from the qualitative analysis that might explain the difference in reflection score reported in the quantitative phase.

Which Experiences Teach Students About Professionalism?

The first objective of the qualitative analysis – to examine the types of experiences that taught students about professionalism – addressed the following research question:

- Do themes in medical students' professionalism journals differ between students who have had professionalism lapses, students who have not had professionalism lapses, and students who earned level III competency in professionalism?

To answer this question, a preliminary analysis of all 183 journal entries was performed using a codebook (see Appendix C) that had been developed and previously used to analyze professionalism journals from the IM clerkship at IUSM (Karnieli-Miller, Taylor, et al., 2010; Karnieli-Miller, Vu, et al., 2010). Using this codebook, each journal entry was coded based on the overall theme of professionalism that captured the essence of the experience (see Appendix D). Professionalism themes included: Altruism, respect, empathy, patient autonomy, equanimity, ethics, honesty, and equality. The distribution of themes among students in each group is presented in Table 5.1. By examining the types of themes that students chose to write about in their journals, the researcher hoped to gain insight into the types of scenarios that students encountered during their clerkships that they perceived as teaching them about professionalism. The researcher

was also interested in whether the themes differed among the three groups of students in the study.

Table 5.1

Frequency of themes present in professionalism journals by group

	Case Group <i>n</i> = 60	Control Group <i>n</i> = 60	Level III Group <i>n</i> = 60	Case/Level III Group <i>n</i> = 3	Total N = 183
Altruism	15	17	23	–	55
Respect	22	16	13	2	53
Empathy	5	9	4	1	19
Equanimity	5	4	6	–	15
Honesty	3	7	3	–	13
Ethics	5	3	4	–	12
Patient Autonomy	3	2	7	–	12
Equality	2	2	–	–	4

Well over half of the students in the sample (108/183) focused on the themes of altruism and respect, with empathy a distant third. There is also an interesting distribution of stories about altruism and respect among students in the case group and level III competency groups. Although the differences in distribution are relatively small, it is interesting to note that students in the case group tended to focus more on experiences that involved respect, while students in the level III group tended to discuss experiences that involved altruism. Among the three case/level III students, two of them wrote stories of respect and none of them wrote about altruism, which aligns them more with the case group in this analysis. Because respect and altruism were the most prominent, only these two themes will be discussed in detail. Descriptions of the remaining six themes are included in Appendix D.

Altruism

Altruism applied to journal entries in which a student described physicians, residents, students, or nurses who went above and beyond the call of duty, who always had the patients' best interests in mind, and who took the time to ensure that their patients received the best care possible. This theme was also applied to negative examples of altruism – situations in which the student felt that the patients' needs were not being fully addressed, or that the physician or resident does not demonstrate a concern for the patients' interests.

Altruism was the most common theme with 55 of the 183 students in the sample choosing to discuss experiences involving altruism. Most of the experiences were positive (42/55), with students describing situations in which they observed someone providing what they perceived to be exceptional patient care, as illustrated in the following example:

I observed a nurse-patient interaction that really impressed me. The patient was in the ICU with multiple problems as well as decreased mental status. While I was in the room examining the patient, the nurse was talking to the patient, turning the TV on for him, and overall treating him as though he was fully functional and awake. She genuinely cared about his well-being and did not seem burdened by his many requirements. She had a great attitude and enthusiasm that was inspiring. I was glad that my patient was able to receive care from her. – Reflection ID 2106, control group

On the flip side, a few students (10/55) described situations in which they felt that a physician did not demonstrate an altruistic approach to patient care:

He [the physician] went into the room, opened the empty folder, and said, 'This is all the information I have on you. You need to call your doctor and have him fax your records to me. Here's my card. We can't do anything until we have those records.' I couldn't even look at the patient or her daughter as we left the room... I had taken a 'complete' history, but he did nothing with it. He didn't even ask her about her previous tests or therapy. He just moved on to the next patient without doing anything for

the previous one. She didn't even get 5 minutes from him. I felt like a heel because I wasn't able to convince this doc that she deserved a diagnostic workup at the least. This man was so un-engaged that I didn't feel comfortable asking him why he wouldn't do ANYTHING for her. I felt like I let her down. – Reflection ID 1692, case group

This example illustrates how the physician's lack of altruism to patients also affected his relationship with the student. Because of the physician's aloofness toward the patient, the student did not feel comfortable talking to him about the situation. Notice, too, that the student (who was in the case group) focuses only on that negative aspect of the encounter and fails to identify any meaningful lesson from this encounter. This tendency was more prevalent among case students and will be discussed later in the chapter.

A small subset of journal entries within this theme described experiences in which a physician's dedication to a patient was met with criticism. The first example of this type of altruism involved a physician treating a meningitis infection in an elderly woman who had dementia and a relatively poor quality of life:

This was met with much resistance by the nursing and ancillary staff. Frequently our team was questioned and hassled regarding our decision to continue treating an elderly woman with meningitis... I was impressed by my housestaff's resolve throughout this ordeal as he/she clearly and repeatedly stated that DNR does not mean 'do not treat', and that until our team and the family believe the treatment is futile we should continue. I felt the housestaff's response and dealings with the nurses and ancillary staff were remarkably composed and professional for how frustrating the situation was. I hope to maintain the same clarity and composure in my own practice. – Reflection ID 1303, control group

The second example involves a patient who had been caught filling narcotics prescriptions from two different doctors:

My attending admitted that although continuing to treat this patient and continuing to prescribe narcotics may reflect poorly on her record, she believed the patient was in pain due to a known organic cause and that without her help this patient would remain untreated. Her example of care for the needs of the patient, even though the situation was difficult,

inspired me to reconsider how I view a difficult patient. – Reflection ID 1160, case group

These excerpts illustrate the physicians' dedication to serving the best interests of their patients, even when it is met with criticism or, as in the second example, might have repercussions for the physician. The students expressed admiration for these physicians for having the courage to stand up for what they thought was right in terms of providing the best care for the patient.

The prevalence of journal entries involving altruism suggests that students perceive these types of experiences as having a profound impact on their professional development. Students are often very impressed by physicians who spend a great deal of time with their patients, despite the other responsibilities piling up around them, and who go above and beyond the call of duty by taking an interest in their patients' emotional and social concerns in addition to their medical needs.

As noted in Table 5.1, students from the level III competency group tended to discuss experiences involving altruism more frequently than students from the other two groups, particularly the case group. This suggests that students who elected to pursue level III competency in professionalism were particularly sensitized to situations involving altruism and perceived those types of experiences as teaching them about professionalism more so than types of other experiences.

Respect

Respect was the second most frequently occurring theme with 53 students submitting stories involving respect or, more commonly, disrespect. Unlike the other themes, which included mostly positive stories, the majority of the journal entries involving respect described negative experiences (38/53). Only ten stories were positive

and each of the remaining five stories included both positive and negative examples of respect. Most of the situations involving respect could be classified into one of two subthemes: respect for patients, and collegial respect. Respect for patients included showing respect (or disrespect) toward patients and their families while interacting with them, as well as during discussions in their absence. Collegial respect, on the other hand, involved demonstrations of respect or disrespect toward students and other members of the healthcare team, and situations that emphasized teamwork, or lack thereof. Both of these subthemes, along with examples, are discussed below.

Respect for patients

Students from all three groups described experiences that involved patient respect, and like the overall theme, most of these stories described negative experiences in which disrespect was shown to a patient or their family members.

She [the patient] was a fairly obese woman, so many obscene comments were made about her by the nursing staff, night float resident, and several others as she lay naked and unconscious, unable to breathe or speak for herself... I don't remember the particulars, but I do remember finding one comment particularly funny and laughing myself. That night when I got home, I felt sick to my stomach for having done so. – Reflection ID 1478, control group

This excerpt illustrates the prevalence of disrespect in healthcare that many obscene comments were made, yet no one objected or stood up for the patient. This story also shows how negative experiences can result in positive lessons. The student expressed deep remorse for having laughed at one of the jokes made at the patient's expense. This example of learning from regret will be discussed again later in the chapter. Other incidents of patient disrespect occurred during bedside teaching:

Over the course of the rotation, I was struck by how poorly certain teaching opportunities were handled. The attending physician would

discover an interesting finding with a patient during rounds, and would proceed to teach the students about that finding, often giving lengthy discourse on the subject. This was great for my benefit... however, I feel that in just about every instance, the patient was instantaneously transformed into 'the specimen'... It was like turning a switch on and off; one moment, the attending would be speaking to the patient like a human being, and the next moment, he would ignore the patient completely and dispassionately describe to the students whatever finding that was of interest, leaving the patient to sit and feel uncomfortable. – Reflection ID 1050, level III group

Alternatively, the following excerpt is an example of a positive experience in which a patient was treated with respect:

I remember one particular patient we had on our service who we saw together as a team. This patient had had a stroke in the past and was left with minimal mobility and extreme difficulty communicating. Nonetheless she was treated with respect. I believe that in a similar circumstance I would try hard to do the same and to fully communicate with them what I would to any other patient because such individuals may have awareness preserved despite their inability to communicate. – Reflection ID 70, case group

While there were some positive stories, the overwhelming majority of stories described situations in which the patients were treated with disrespect, either directly or indirectly. This speaks to the culture of medicine and the influence of the hidden curriculum that such comments are often overlooked:

I was disappointed to see how so many little comments can get made that are totally unprofessional. I have a team member who constantly makes comments on how the nursing here is terrible, how the lab is the worst, and he also likes to interject his opinions on the patient's personalities. Most of the times the comments are not extremely offensive, but sometimes they are a little more colorful... Another portion of these episodes that bother me, is the lack of control/reprimanding from the superiors in these instances. By passively allowing these somewhat 'harmless' comments to continue, we are as bad as the person saying them. – Reflection ID 1302, level III group

As this student points out, when disrespectful comments are ignored or overlooked it sends the message to students that this type of behavior is acceptable, which perpetuates the culture of disrespect in healthcare.

Collegial respect

Another subtheme of respect included discussions of collegial respect. Collegial respect included instances when members of the healthcare team communicated with each other in a respectful manner, or worked together as a team. Here too, most of the students reported experiences of collegial disrespect in which tempers flared, egos clashed, and patient care often suffered as a result.

The following excerpts illustrate the kind of collegial disrespect that students observed during their clinical experiences:

I observed an attending physician talking negatively about another staff member in front of students. It was not only unprofessional, but also showed complete disrespect for a colleague. I think that learning to work with each other as a team is an extremely important goal for everyone in the medical profession. With our system as highly broken up into specialties as it is, obviously we need to learn to both listen to the opinions of others as well as share recommendations from our own particular fields. There is no room for condescending attitudes if we are truly seeking to keep patients' well-being as our top priority. – Reflection ID 2354, control group

Even students themselves were sometimes the targets of disrespect:

After speaking with the patient, the doctor looked at me and asked... 'How exactly should we adjust the dose of each type of insulin he is on?' I was pretty dumbfounded - as a new 3rd year student, I had no idea... So I admitted I didn't know, and he responded sarcastically, 'Well this is going to be a long day!' I thought that was very rude and inappropriate. – Reflection ID 2205, level III group

Although much less frequent, some students also witnessed some incidents in which cooperation and teamwork among members of the healthcare team led to better patient care:

An intern was going to drain a pleural effusion on a [patient] who was [short of breath]. Just before puncturing the skin a nurse noticed that the intern was about to drain the wrong lung and spoke up. The intern quickly thanked the nurse and drained the correct lung. It made me proud that everyone involved was focused so much on the [patient] instead of their own egos. – Reflection ID 4550, case group

Although stories of respect (and disrespect) were common among all three groups, they were more prevalent among students in the case group than students in either of the other two groups, as shown in Table 5.1. This suggests that students in the case group tended to focus more on experiences involving respect than other types of experiences, although stories of respect among students in the case group did not contain a greater proportion of negative stories than in the control group or level III group. This indicates that students in the case group do not preferentially focus on incidents of disrespect any more than the other two groups.

These findings highlight the conflicting messages students receive from the formal curriculum, which teaches respect, and the informal and hidden curricula, which demonstrate disrespect. The informal curriculum will be discussed again in the next section which explores how medical students learn professionalism and the influence of role models.

How Students Learn Professionalism

Following the preliminary analysis of professionalism themes, a more in depth qualitative analysis was conducted using the immersion/crystallization technique described in Chapter 3. After multiple iterations of analysis and reflection, patterns

began to emerge about how students perceived these experiences as teaching them about professionalism. First, students frequently cited the behavior of their physician role models as powerful examples of both exceptional and poor professionalism. Second, students sometimes turned their focus inward and reflected on how they thought *they* might have behaved in that situation, or how they hope to handle similar situations in the future (although the reflection prompt specifically asks students to reflect on how they might have responded in a similar situation, not all students did this). Finally, a small number of students discussed situations in which they did or said something that they later regretted, and these mistakes led to meaningful lessons in professionalism. These three themes: Learning from role models, self-reflection, and learning from regret, will each be discussed in turn.

Learning from Role Models

Over a third of the students in the sample attributed at least some of their understanding of professionalism to the examples set by role models – usually the attending physicians, residents, and interns with whom they worked. During their clinical clerkships, medical students observe the way their superiors interact with patients and their families, with other members of the healthcare team such as nurses, and with other physicians. This observation and modeling of physicians’ behaviors is known as the informal or “hidden” curriculum in medical education (Hafferty, 1998). In their journals, students described both positive and negative behaviors of their attending physicians, residents, and interns that shaped or reinforced their perception of professionalism.

Learning from positive role models.

A large number of students described what they perceived to be exemplary behavior by an attending, resident, intern, or, less frequently, by a nurse or fellow student. However, not all of these descriptions of exemplary behavior were coded as learning from positive role models. This code was only applied to reflections in which the student expressed a desire or intention to emulate the behavior they observed. A description of exemplary behavior without such an intention did not provide enough evidence to the researcher that the role model's behavior had any impact on the student's behavior. In order to be coded as "learning from positive role models" the student had to convey that the behavior they observed influenced their concept of professionalism, and that they intended to incorporate this new perspective into their own practice. The following excerpts illustrate how positive role models influenced students' learning of professionalism:

Both of the interns on my service were outstanding and observing the way in which they went about treating patients on a day to day basis was a perfect example of how to exhibit professionalism as a physician... In a way it is unfair to both of them to choose one incident as an example of professionalism because it takes away from the fact that they acted as professionals every minute of every day and that is what will have the longest lasting impact on me. They showed me that professionalism is not about the way in which you handle one particular difficult circumstance but more so about the way you act with every single person you encounter whether it be a patient or one of their family members, a nurse, another doctor, or even a student. They treated everyone with respect and held themselves accountable and I hope to do the same as I move forward in the medical profession. – Reflection ID 1757, case group

From the example set by the interns, this student learned that professionalism is not demonstrated in isolated behaviors, but rather in a general attitude or way of being that guides one's behavior in all situations. The same principle is illustrated in the next

excerpt, in which a physician shared his philosophy for patient care with the student and also embodied it in the care that he gave his patients:

I feel nearly obligated to mention one physician in particular that has stood out in my training as being exceptional with patients. An interventional cardiologist which exemplifies what it means to be professional, compassionate, knowledgeable, and a true leader... He often made decisions WITH the patient, rather than FOR the patient... In fact, the most important thing he stressed, and often said in clinic was 'getting along with your patients' and having a good rapport... I hope to be this type of physician in my practice. – Reflection ID 979, control group

As these examples illustrate, students learned a great deal by observing the way physicians interacted with patients and other members of the healthcare team. Although the difference was not large, students in the level III competency group (n = 19) and control group (n = 18) tended to discuss the influence of positive role models more frequently than did students in the case group (n = 14). This does not mean that students in the case group were not as strongly influenced by positive role models as those in the other two groups. The first example above described the tremendous impact the interns' behavior had on the student's concept of professionalism, and was written by a student in the case group. This finding suggests that all students are strongly influenced by the positive role models that they observe and interact with during their clinical experiences.

Learning from negative role models

Just as students were able to easily identify exemplary professional behavior, most students were equally able to identify unprofessional behavior. Fortunately, there were far fewer stories in which a student described behavior that they considered to be a negative example of professionalism by one of their physician role models. Several students observed situations in which a physician failed to listen to a patient's concerns, lost his/her temper with a patient, or provided what the student perceived to be

substandard care. These types of entries were coded as “learning from negative role models” when the student expressed a desire or intention to never repeat these behaviors, or identified the behavior as an example of “what not to do,” as illustrated in the excerpts that follow.

This first example comes from a journal entry that described a GI fellow consenting a patient for an endoscopy. The patient did not speak English and was communicating with the physician via an interpreter:

The fellow briefly explained the procedure and asked if the man had any questions. He asked several questions and was obviously quite nervous regarding the upcoming procedure. Nonetheless, throughout the entire conversation the fellow only looked up from her notes once. She hardly made any eye contact and eventually walked over for the patient to sign the consent form. Even after he signed the consent form it was apparent to me that he was still anxious regarding the endoscopy. However, the fellow was already leaving the room and heading off to do something else. She made little to no attempt to establish a rapport with the patient and ease his concerns. I feel that it is important to effectively communicate with all of your patients and to make direct eye-contact when speaking. This is especially true when there is a language barrier between the physician and the patient, as eye-contact is the only method of communicating DIRECTLY with the patient. In the future, I will remember this encounter and never rush through a Q&A session with a patient and display what I felt to be a complete lack of patient interest.
– Reflection ID 2797, case group

This is a subtle example of unprofessional behavior, as the fellow did not do anything egregiously wrong or inappropriate that might endanger the patient. However, the patient likely felt slighted and more anxious by the impersonal interaction that the student observed. The behavior described in the following excerpt also serves as a lesson to the student of “what not to do:”

The attending was chronically late, rude to patients and staff, and even canceled appointments due to his tardiness. Once this happened after patients were already checked in. This is an example of how not to be a

professional. I will do my best not to ever repeat his behavior. – Reflection ID 3503, level III group

As these examples illustrate, students recognized unprofessional behavior and witnessed the detrimental impact that such behavior had on patient care and on the work environment. Some students explicitly stated that they hope to never repeat such behaviors. Others were less clear about how these experiences will influence their future practice. While no student explicitly condoned unprofessional behavior, some students did attempt to justify what they observed, for example, by citing stressful working conditions. The fact that students attempted to justify unprofessional behavior is concerning because it suggests that these students view such behavior as acceptable under certain conditions. For this reason, more effort should be made by attending physicians, residents and interns to exemplify professional attitudes, values, and behaviors, and to provide more consistent messages to students about professionalism. More importantly, when unprofessional behavior occurs and is obvious to everyone it should be discussed openly instead of simply disregarded as, “the way we do business around here.”

Self-Reflection

Another way that students used to discern lessons about professionalism from their experiences was to reflect on how they might have responded in the situation that they witnessed, or how they planned to respond to a similar situation in the future. This theme differs from “learning from role models” because the student did not explicitly state that they would or would not have behaved in the manner that they observed. On the contrary, the students reflected on what they considered to be an appropriate response, and if they would have the fortitude or composure to respond in this manner. When students observed behavior that they perceived as negative, rather than simply

stating that they would not repeat this behavior, they often elaborated on how they might have responded differently. Students from all three groups tended to speculate on their own behavior, with students in the level III competency group (n = 33) tending to do so with a slightly higher frequency than students in the control group (n = 23) or case group (n = 27). All three of the case students who also earned level III competency in professionalism reflected on their own behavior, either prospectively or retrospectively.

The following excerpts illustrate the kind of self-reflection students undertook to extract lessons about professionalism from their experiences and to envision how they might apply these lessons in their own practice. The first excerpt is from a student who observed her attending conduct a physical exam on a homeless man with very poor hygiene who was suspected of having tuberculosis. The physician saw past the man's unkempt appearance and provided the same exceptional care that she would give to any other patient.

[This experience] taught me that I will face many barriers to caring for my patients but the one thing that I can control is how I approach each of them. It should be in a very equal and unbiased manner. I am a minority myself and have walked away from personal situations believing very deeply that I was treated differently because of my female minority status. I would hate for a patient to feel that I somehow treated him in a biased way. Furthermore I would also hate that I did not provide the best care possible. Lastly I learned that whatever area of medicine I do choose to do I hope that I approach my patients in the same manner that my attending did. You can see the love that she has for her patients and I hope to have that same burning passion for my patients as well. – Reflection ID 3847, case group

After watching the physician's unbiased approach to caring for the homeless man, the student reflected upon her own personal experiences of being treated differently and came away with the resolve to treat all patients equally.

Similarly, the next excerpt involved a situation in which the patient had a history of narcotics abuse and became combative when the physician refused his request for narcotics to treat his neuropathic pain. The student later reflected on how the physician handled the situation:

While I was talking to the patient, I honestly saw him as a drug-seeker frustrated that he wasn't getting his way. I was probably right. But what if I wasn't? This could have been an honest man desperately trying to come up with a solution for his inability to do the work he needs to on his farm. If I had allowed my frustrations to get the better of me, as I was tempted to, and not acted as my preceptor did, I could have really done him a serious injustice in terms of his care. And, regardless, even if he was a drug-seeker he still deserves the respectful treatment my preceptor gave him. I was really impressed through the entire situation and it will undoubtedly serve as a great example of how to handle similar situations professionally in the future. – Reflection ID 2035, control group

These two examples demonstrate the power of reflection as a learning tool. While the students may have initially recognized the positive examples set by the physicians in these two situations, upon further reflection, the students internalized these lessons and came away with new perspectives on how to approach patient care.

Learning from Regret

The third type of experience that students described as teaching them about professionalism included situations in which they did or said something that they later regretted. These types of stories were very few in number, however, each of the students who wrote about such an experience also described the tremendous impact that they felt the experience would have on their future behavior. The following example illustrates this point:

This will be a report on my own behavior and how I think it could have been better. On my first inpatient medicine month I had a very talkative

amiable patient who presented with nausea vomiting and abdominal pain and was soon diagnosed with diffuse large B-cell lymphoma with a poor prognosis... One morning before rounds I was pressed for time. As I was leaving he brought up another issue, and although I reassured him it would be addressed, I included the phrase 'I have to go see another patient.' For the first time since admission he stopped talking and he almost apologetically said 'Oh, okay.' I really regret saying that to him. I am afraid he will start withholding concerns from doctors for fear of bothering them. I won't ever again refer to being busy or caring for other patients; when I am in a room with a patient he will be my only patient for that time frame. Also I will better manage my time so that I will never feel, or at least patients will not sense, that I am in a hurry. I have learned a lot from my attendings who manage to be efficient while genuinely caring for the patients. Sometimes all it takes is squeezing the patient's hand or speaking calmly even if the doctor cannot stay for a long time. – Reflection ID 4202, level III group

Stories of regret were not exclusive to any one group of students in the study. In fact, there were examples of this type of story from students in all three groups, and each of the students described how they felt following the situation, and what they planned to do in the future to ensure that they never made the same mistake again.

These three themes, learning from role models, self-reflection, and learning from regret, all emerged from a careful analysis of how students described their experiences of professionalism during a clinical rotation. These themes illustrate the role that reflection plays in learning from the behavior of others, as well as from one's own behavior, both actual and imagined. Engaging in the reflective process can help students gain a better understanding of how their actions and decisions can impact patient care.

The next section will take a closer look at the students' professionalism journals in an attempt to uncover aspects of the reflective process that might explain and reinforce the findings of the quantitative analysis.

Explaining Differences in Reflection Score

The third objective of the qualitative analysis was to explain the difference in reflection score between the case and control groups that was observed in the quantitative analysis. Students who achieved level III competency in professionalism were included in this analysis to provide enhanced contrast between students who have demonstrated unprofessional behavior, and those who pursued a higher level of achievement in professionalism. The immersion/crystallization technique was again used to critically examine the journal entries from the three groups of students to discover if there were any meaningful differences in the ways students reflected that might help to explain why students in the case group tended to have lower reflection scores than students in the control group. Three fundamental differences emerged from the analysis: First, students in the case group identified a clear lesson or take-home message less frequently than students in the control group or level III competency group. Second, students in the case group discussed their emotional response to the situation much less frequently than did students in the other two groups. And third, students in the case group tended to use the professionalism journal as an outlet for venting their frustrations rather than for discussing how their experiences taught them about professionalism. These three themes (unclear lessons, expressing emotions, and venting) are described in detail with examples below.

Unclear Lessons

The prompt for the professionalism journal asked students to describe an experience that taught them about professionalism; therefore part of the qualitative analysis focused on identifying these lessons learned. Some form of conclusion or take-

home message was identified in most of the journal entries, but only 50 of the 177 students in the sample explicitly stated what they learned from the experience, as indicated by phrases such as “I learned that...” or “this experience taught me that...” Students from the control group and level III competency group used explicit statements of the lessons learned from their experience with much greater frequency than students in the case group as indicated in Figure 5.2. Other students used phrases like, “this reminded me that...” and “it made me appreciate the importance of...” All of these phrases signaled to the researcher that this is what the student took away from this experience.

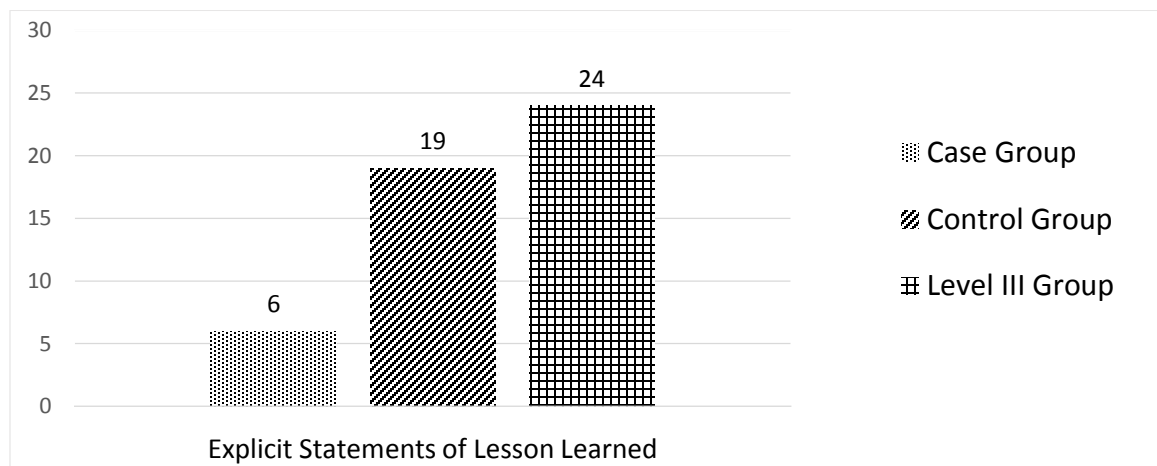


Figure 5.2. Frequency of students' explicit statements of lesson learned professionalism journals by group

However, there were 14 journal entries from which the researcher was either not able to infer any sort of conclusion or take-home message, or the students' conclusion was overly vague and not well connected to the experience. Of these, 12 of them were written by students in the case group, while the remaining two were from students in the control group. The following excerpt was taken from a journal entry in which the

student described observing some egregious unprofessional behaviors of a group of physicians in a specialty clinic. After providing numerous examples of the unprofessional behavior he witnessed, the student wrote:

The staff are not bad people. The environment of the staffing room is cramped and about 7-9 people at any time [are] fumbling to use resources or to find a chair... I don't know what to make of it, but the whole environment was fast-paced and confrontational, with interludes of patient-blasting jokes leaving a bad taste of unprofessionalism in my mouth. I know if I was to follow the lead of this clinic I would be set back ~ 6 months in my professional development. – Reflection ID 3317, case group

While the student acknowledged that this behavior was detrimental to his professional development, he also attempted to justify such unprofessional behavior, citing the cramped and fast-paced working environment. The student was clearly able to recognize unprofessional behavior, but it is unclear whether the student could envision what the alternative would look like. Similarly, the following excerpt also illustrates an attempt to justify a resident's derogatory remarks about patients:

During my inpatient month my resident often referred to patients [using] derogatory terms... or [as] a waste of tax dollars. In his defense some of the patients made no effort to improve their health and weighed heavily on the system, but his description of patients bothered me. I only spoke up once during a friendly conversation but I did not at other times because his bedside manner and patient care did not reflect his mindset. – Reflection ID 4114, case group

Again, this student recognized the impropriety of the resident's remarks, but then proceeded to justify the behavior because the resident behaved appropriately in the presence of patients. This student, therefore, seems to be condoning this disconnect between one's attitudes and behaviors.

Another feature of reflections that was coded as “unclear lessons” was the tendency to draw vague or generic conclusions from the experiences, as illustrated in the following excerpt:

[W]e had a patient who bounced back because we didn't specifically warn him about a medication that might cause syncope. We discussed issues surrounding medical errors and I have been of the mind that the only way to decrease errors is to build systems with efficacy in them. – Reflection ID 3371, case group

In this example, the student’s conclusion (building systems with efficacy in them) is not a specific behavior that the student can incorporate into his/her practice to help decrease medical errors. Rather, it is a broad, overarching principle that could apply to any number of situations. These and similar excerpts from students’ reflections were coded as “unclear lessons” because the students did not clearly articulate what was learned from the experience, nor did they specify how their experience helped to shape their understanding of professionalism.

Expressing Emotions

According to Boud et al. (1985), attending to one’s emotional response during and after an experience is an essential step in the reflective process. Analysis revealed that less than half of the students in the sample discussed the emotional response that they felt during their experience. Students in the control group and level III competency group tended to discuss the emotional aspects of their experiences far more often than students in the case group. This point is illustrated in the following excerpts in which each student recounts the death of a patient. The first excerpt was written by a student in the case group:

Another student on my team had a patient that he had had for only a day pass away in the hospital which was an expected death. He went down

afterwards and sat with the family and talked with them for an hour. This just showed how much he cared and how thoughtful he was for each of his patients no matter how long they had been there for. – Reflection ID 453, case group

Although the patient was actually being cared for by another student, the writer describes the fellow student's response to the patient's death very matter-of-factly, expressing little to no emotion about the event. The student even points out that the death was 'expected' and that the patient had only been in the hospital for one day, suggesting that perhaps an emotional response was not warranted in this situation. Alternatively, the following excerpt from a student in the level III group describes an emotional reaction to a patient's death, and the student reflects on how this reaction might impact the care of other patients:

Early on during my 2nd week on rotation, one of our patients that suffered from a chronic disease passed away. I had never been around that close to death before and was so touched by the emotion of the deceased's family. I found it unbelievably alarming... I never knew the patient and was overcome by emotion and was impressed by how composed and professional the doctor was. He continued the rest of his day like nothing had happened... At this stage in my career, I know something like that would most definitely affect me, which means my other patients can suffer as a result. Learning early on that medicine is full of highs and lows, and not letting the 'peaks' and 'valleys' that come with patient care impact me so much could go a long way in making me a better physician. – Reflection ID 292, level III competency group

Overall, students in the case group discussed their emotions with about half the frequency ($n = 12$) of students in the control group ($n = 24$) or level III competency group ($n = 30$). Among the three case students who had also pursued level III competency in professionalism, two of them described an emotional response in their reflections, which aligns them more with the level III group than with the case group. The lack of attention to their emotional response by students in the case group could explain why these

students tended to have lower reflection scores than students in the control group. This suggests that perhaps students in the case group are either less emotionally affected by their clinical experiences, or are less able to recognize their emotional responses during such experiences.

Venting

In their professionalism journals, students were asked to reflect on an experience that taught them about professionalism; however, a small number of students seemed to use the journal as an outlet for venting their frustrations or complaints about attending physicians, residents, other students, or the medical school system in general. These reflections often included an explicit statement of a lesson learned from the encounter, but justification for the lesson was usually little more than a list of complaints about a person or situation.

Regarding an attending physician who tended to be overly critical of medical students' mistakes, one student from the case group wrote:

It kind of seems like some staff forget that they were in my shoes at one point and even if they thought they were the cat's pajamas they were not. So they should try and visualize what it's like being a noob and hold off on their temper tantrums until they have to repeat themselves on the same issue. Then I will gladly accept criticism. – Reflection ID 4167, case group

This student seems to be expressing frustration over the hypocritical nature of the physician's remarks, while at the same time doing so in an unprofessional manner, based on the casual language and use of an obscure slang term. A second example of venting also discusses hypocrisy in medical education:

My thought on this topic is that during my surgery rotation I skipped a small group lecture when I was post call, and I failed my professionalism competency. In my mind the faculty would do better to instill these

competencies by living out the values the school professes to hold as important, rather than evaluating students in rather arbitrary manners. – Reflection ID 2451, case group

Here too, the student expressed frustration that attending physicians are not held to the same standards of professionalism as medical students. While this may be a valid point, the student failed to extract any meaningful lessons from this experience other than that life is not fair.

Although the number of reflections coded as “venting” was small ($n = 13$), it is notable that nine of them were written by students in the case group, although one of the nine had also achieved level III competency in professionalism. Only three reflections from students in the control group, and only one from the level III competency group (not counting the aforementioned student who was also in the case group) were coded as venting. While the tendency toward using the professionalism journals to air their complaints was not exclusive to students in the case group, it is notable that they did so with greater frequency than students in the control group and level III competency group combined. In considering the tendency toward venting among case group students, it might be worthwhile to examine the timing of their professionalism citation relative to the writing of the IM professionalism journal. Students who had been cited for professionalism lapses before writing their journal entries might be more likely to vent about their citation, as the student did in the last example provided.

These three themes point to some crucial differences in the ways students in the case group reflect on their experiences when compared to students from the control and level III groups. Students in the case group are less clear about what they have learned from their experiences, they do not discuss their emotional responses as frequently, and

they tend to use their opportunity to write about professionalism to vent their frustrations more than other students. When considered in conjunction with the quantitative finding that students with lower reflection scores are more likely to have been cited for professionalism competency lapses, it seems reasonable to suggest that students should receive more feedback on their professionalism journal entries to promote deeper reflection and be provided with more opportunities for reflection to develop their reflective capacity.

Chapter Summary

The qualitative phase of this study had three primary objectives: to examine which types of experiences students perceived as teaching them about professionalism; to explore how students learned about professionalism; and to explain the quantitative finding that students who, at some point in time, had a lapse in professionalism on average had lower reflection scores than students who had not.

First, there were two main types of experiences that students perceived as teaching them about professionalism: 1) experiences in which physicians demonstrated altruism toward patients; and 2) experiences in which physicians demonstrated respect (or, more commonly, disrespect) toward patients or colleagues. Students in the level III group tended to discuss altruism most frequently, while students in the case group tended to discuss respect most frequently. Control group students discussed both of these themes equally.

Second, the qualitative analysis revealed that students learned professionalism in three ways: 1) by observing the behaviors of positive and negative role models; 2) by

reflecting on how they might have or planned to respond to a similar situation; and 3) by resolving to behave differently after engaging in a behavior that they later regretted.

And finally, three findings emerged that might help to explain the differences in reflection score: 1) students in the control group and level III competency group were much better at identifying and articulating what they had learned from their experiences than students in the case group; 2) students in the control group and level III group discussed their emotional responses to their experiences more frequently than did students in the case group; and 3) students in the case group tended to use their professionalism journal as an outlet for venting their frustrations rather than to discuss the lessons they had learned about professionalism. The implication of these findings as well as limitations and suggestions for future research are discussed in the next chapter.

CHAPTER 6: CONCLUSIONS AND DISCUSSION

This study has explored how reflective writing and self- and peer assessments might provide some insight into why some medical students exhibit lapses in professionalism while others do not. The study employed an explanatory mixed methods approach that included an initial quantitative analysis of data, followed by a qualitative analysis that was intended to explain and triangulate the quantitative findings.

The quantitative phase used a retrospective case-control study design to compare the reflective ability and self- and peer assessment scores of students who had been disciplined for professionalism lapses with those of students who had not. The analysis resulted in two main conclusions: First, lower reflection scores were associated with an increased odds of professionalism lapses during medical school; and second, students who had professionalism lapses had lower average peer assessment scores than students who did not, and lower peer assessment scores from year 3 of medical school had the greatest influence on the odds that a student had been disciplined for professionalism lapses while in medical school.

The qualitative phase of the study revealed several key differences that explained the discrepancy in reflection scores between students who had been disciplined for professionalism lapses and those who had not. The qualitative analysis also revealed that students' identified situations involving altruism and respect as teaching them about professionalism more so than other situations; and that role models had a strong influence on their professionalism. These findings and the implications of each will be discussed in the following sections.

Reflective Ability and Professionalism

Current literature in medical education claims that reflective ability is an essential component of professionalism (Epstein & Hundert, 2002; Sandars, 2009; Swick, 2000). A lack of critical reflection among practitioners has been implicated as a potential cause for some lapses in professionalism (Epstein, 1999). This study provides empirical evidence to support these claims. Lower reflection scores were found to have a significant influence on the odds that a student had been disciplined for professionalism lapses during medical school. Additionally, students who were cited for professionalism lapses had significantly lower reflection scores than students who had not, which provides further evidence of the association between reflective ability and professionalism.

These results merely point to an association between reflection and professionalism; however, the exact nature of this relationship is still unclear. Does reflection foster and enhance students' professionalism, making it a learning tool; or is reflection a consequence of professionalism, thus showing promise as an assessment tool? A 2008 survey on the use of reflective writing during the internal medicine clerkship revealed that most clerkship directors believed the former, that reflection enhances students' professionalism and thus they used reflective writing as a learning activity during that clerkship (Chretien et al., 2012). This notion is also the foundation of narrative medicine, in which physicians seek to understand patients' stories of illness to promote empathy, reflection, professionalism, and trustworthiness (Charon, 2001). Some anecdotal evidence has been collected that supports the use of reflection as a means of enhancing professionalism in medical education. After participating in a narrative

medicine elective, students perceived that they had further developed their capacity for empathy and patient-centeredness, and that they also developed personally and professionally through reflection (Arntfield, Slesar, Dickson, & Charon, 2013).

Empirical evidence to support the use of reflection as a tool to enhance professionalism is scant (Baernstein & Fryer-Edwards, 2003; Stark, Roberts, Newble, & Bax, 2006) and further research is needed in this area.

Alternatively, others view reflection as a means for students to demonstrate their professionalism by providing evidence of personal and professional growth and learning, and therefore might be used as a tool to assess professionalism (Friedman Ben David et al., 2001). Prior studies that have examined the utility of reflective writing to assess professionalism have relied largely on qualitative methods to gain insights into students' professional attitudes and values (Braun, Gill, Teal, & Morrison, 2013; Howe et al., 2009). The drawbacks of this approach are that qualitative analysis can be extremely time-consuming and subjective in nature. A quantitative approach to assessing professionalism via reflective writing could provide a more efficient and reliable means of assessment; however, this approach first requires substantial evidence to support the validity of reflective ability as a proxy measure for professionalism. This study provides some evidence to support this perspective, as students who exhibited higher reflective ability were also found to be "more professional" (as evidenced by their lack of citations for unprofessional behavior). The qualitative analysis also revealed that students in the case group were often less engaged with their experiences, as evidenced by an inability to articulate what was learned from the experience, a lack of emotional response, and the tendency to vent frustrations rather than discuss their learning. These results are far from

conclusive, as there were many negative cases in this study (i.e., case group students who demonstrated high reflective ability and vice versa), but they provide a foundation for further research on this topic.

Regardless of the specific nature of the relationship between reflection and professionalism, the fact that students who had higher reflection scores were less likely to have had a professionalism lapse suggests that increasing students' reflective ability may help to reduce the number of students who are cited for professionalism lapses during medical school. Reflective ability may be increased by providing students with guidelines and feedback on their reflective writing, and by effectively integrating reflection into the curriculum (Sandars, 2009). The tendency toward reflection may not come naturally to all students; therefore providing guidance and feedback, in addition to regular practice, may help students to develop their reflective capacity. Reflection must also be integrated into the curriculum, lest it be perceived as an afterthought that is disconnected from the overall educational experience. In order for students to recognize the importance of reflection, the activities must be accompanied by a culture that values reflection and aims to develop reflective practitioners (Sandars, 2009).

Peer Assessment and Professionalism

Independent samples t-tests found that peer assessment scores from years 1-3 of medical school were significantly lower among students who had been cited for professionalism lapses than among students who had not. This corroborates the findings of previous studies which have shown that students are able to provide valid and reliable assessments of their peers' professionalism (Dannefer et al., 2005; Kovach, Resch, & Verhulst, 2009). Previous studies have also shown that students perceive peer feedback

as more meaningful than feedback from faculty (Asch, Saltzberg, & Kaiser, 1998), and that many students make positive changes in their attitudes and behaviors in response to peer feedback (Nofziger, Naumburg, Davis, Mooney, & Epstein, 2010). Peer assessment scores of students in the case group increased steadily from year 1 to year 3, which suggests that students made positive changes in their behavior, but without more information it is impossible to determine whether these increases were a direct result of conscious efforts to improve in response to peer feedback.

In addition to providing valuable feedback on students' current performance, peer assessments have been found to be valid predictors of residency performance (Lurie, Lambert, Nofziger, Epstein, & Grady-Weliky, 2007), and were moderately correlated with NBME scores and other measures of academic performance (Arnold et al., 1981; Levine, Kelly, Karakoc, & Haidet, 2007). This study found that peer assessments are also valid predictors of professionalism during medical school. Peer assessment scores from year 3 of medical school were the strongest predictor of professionalism lapses among the students in the study, likely because the clinical years provide students with more opportunities to demonstrate, and observe each other's, professionalism via their interactions with patients and other members of the healthcare team, than the pre-clinical years. This finding indicates that students are keenly observant of their peers' attitudes and behaviors, particularly those that they consider to be concerning or problematic; consequently, peer assessment scores may be useful for identifying students who might be at increased risk of professionalism lapses during medical school. As overall peer assessment scores were relatively high, even for students in the case group, the raw scores did not provide enough information to identify which students might be at risk.

Examination of z-scores, however, revealed that average peer assessment scores for students in the case group were negative (i.e. below the mean) for all three years of the assessments, while control group scores were positive (above the mean), providing a clear demarcation for identifying students who may be at increased risk for professionalism lapses.

The significant findings of this study regarding peer assessments – that peer assessment scores are significantly lower among students in the case group, and that year 3 peer assessment scores are strong predictors of professionalism lapses – indicate that peer assessment is a valuable addition to the overall evaluation of students’ professional behavior during medical school. Furthermore, peer assessments often provide students with surprising and unexpected insights about specific attitudes or behaviors of which they were previously unaware. Receiving feedback that is inconsistent with self-perceptions provides students with an opportunity to reflect upon their conduct and demeanor. Reflection has been cited as a critical link between receiving and using feedback, and has been found to have a positive influence on acceptance and assimilation of feedback (Sargeant, Mann, van der Vleuten, & Metsemakers, 2009). Based on the findings of this study, the same students who demonstrate low reflective ability and who tend to vent, rather than learn from, their experiences, may also be the same students who fail to effectively respond to peer feedback that is inconsistent with their own self-perceptions.

Where and How Students Learn Professionalism

Qualitative analysis revealed that a majority of students perceived experiences involving altruism and respect as teaching them about professionalism, and that role

models played a key role in influencing their perceptions of professionalism. Altruism was the most common theme in students' professionalism journals, and most of the stories were positive, indicating that students were particularly impressed by physicians who demonstrated a deep commitment to their patients. Stories of respect, on the other hand, were mostly negative. The abundance of negative experiences involving respect is consistent with prior analyses of students' professionalism journals, which also found that respect is often manifested as disrespect (Karnieli-Miller, Taylor, et al., 2010). The prevalence of stories involving respect and disrespect implies that students are particularly observant of the way physicians conduct themselves during interactions with patients, families, students, and other members of the healthcare team. It is worth noting that, although respect was the second most common theme in this analysis, there were many stories that were coded as "patient autonomy" or "equanimity" that contained underlying messages about respect, which identifies respect as a universal value that is present in the majority of, if not all, situations.

Another important theme that emerged from the qualitative analysis was the influence of role models on students' professional development. Over a third of students in the sample cited examples of role models as having a substantial influence on their understanding of professionalism and how they intended to embody professionalism in their future practice. This finding emphasizes the role of the informal and hidden curricula in shaping medical students' attitudes and values. Recall that the informal curriculum is the teaching and learning that takes place via interpersonal interactions between faculty and students, while the hidden curriculum is embedded in the unspoken norms and rituals that govern medical culture (Hafferty, 1998). Although students

frequently recognized and criticized the disrespect that they observed, the absence of any reprimand for physicians who behaved disrespectfully sends the implicit message to students that this type of behavior is tolerated, and even accepted, in medical culture. Respect was the most common theme among students in the case group, which suggests that these students are particularly affected by experiences involving respect and/or disrespect. The conflicting messages about respect may have contributed to their professionalism lapses considering that case group students were sometimes not able to clearly articulate what they had learned from their experiences and some even attempted to justify the unprofessional behavior (usually disrespect) they observed.

In light of these findings, more attention must be paid to the explicit and implicit messages that are conveyed when physicians' attitudes and behaviors do not reflect the professional values that the formal curriculum espouses. IUSM has a committee in place (the Teacher Learner Advocacy Committee) that addresses reports of unprofessional behavior by attending physicians or residents, but few students take advantage of this resource, likely out of fear of reprisal for reporting on the behavior of a superior who is responsible for the students' evaluation. Given their reluctance to report one of their superiors' professionalism lapses, students must have a means of resolving any conflicting messages they receive during their clinical encounters. Reflecting on negative incidents can help students to recognize unprofessional behavior and its consequences, and strengthen their commitment to professional values (Hodges, McLachlan, & Finn, 2009).

Limitations

While every attempt was made to minimize confounding factors and other potential sources of bias, the researcher acknowledges that this study was limited by several factors. First, this study was conducted at only one institution; therefore, these findings may not be generalizable to students at other medical schools. Similarly, the professionalism journals used for this study were written during the Internal Medicine clerkship, and the themes and other findings from the analysis of these journals may not be generalizable to other clerkships. Other confounding factors are that the study was retrospective, the choice of scoring rubric may have impacted reflection scores, and the timing of professionalism citations and remediation activities may be a confounding factor in students' reflective ability. Each of these limitations and the implications of each will be discussed below.

Retrospective Nature of the Study

No current students were included in the study because the professionalism journals from the internal medicine clerkship are only available for research after the students have graduated or are otherwise no longer affiliated with IUSM. This step was taken by the faculty running the narrative program to ensure confidentiality and to eliminate the possibility of reprisal while students were still enrolled in medical school. Because the study was retrospective, the researcher had to rely on the data that were available, and was not able to collect any additional data. This resulted in missing data points for many students in the population and also limited the number of students that could be included in the study. This was particularly problematic when selecting students for the case group because many students who had professionalism lapses during the

years of the study did not have a reflection to score. This may have been because the students failed to submit their professionalism journals, or the entry was not properly recorded or exported by the course management software. Nonetheless, the size of the case group was limited by the number of students who had a reflection to score, as the reflective writing piece was of most interest to the researcher.

There were also a number of students in the study, particularly from the classes of 2006 and 2007 who were missing assessment data from years 1 and/or 2 of medical school because the self- and peer assessments were not implemented at IUSM until 2005. These students were allowed to remain in the study as long as they had at least one year of complete assessment data in order to maintain the size of the case group at 70 students. However, due to the large number of students who were missing year 1 assessment data, the year 1 variables were eliminated from some of the statistical analyses.

Another limitation of the available data was that the assessment scale used for the self- and peer assessments was changed during the years of the study from a 5-point scale to a 9-point scale. In order to conduct any statistical analysis, all assessment scores had to be converted to the same scale. For simplicity, the researcher chose a 10-point scale to facilitate analysis and interpretation of assessment scores. These different scales meant that the students who rated themselves and their peers using the 9-point scale had more precision in assigning scores because the difference between adjacent scores was much smaller for the 9-point scale than for the 5-point scale. Students using the 9-point scale were able to capture more subtle nuances in attitudes and behaviors of themselves and their peers than students using the 5-point scale. This also meant that there was a larger discrepancy between adjacent scores on the 5-point scale when they were converted to

the 10-point scale. For example, the second highest score on the 5-point scale, ie. 4, would translate to 7.5 on the 10 point scale, while the second highest score on the 9-point scale, ie. 8, would translate to 8.75. Given the tendency for students to assign high ratings to both themselves and their peers, the discrepancy in the scales may have resulted in higher overall assessment scores for students who were assessed using the 9-point scale.

All of these limitations, limited sample size, missing data, and inconsistent rating scale, were a consequence of the retrospective nature of the study.

Choice of Reflection Scoring Rubric

Another limitation of the study was the choice of rubric used to assess reflective ability from the students' professionalism journals. The reflective ability rubric (O'Sullivan et al., 2010) takes a holistic approach to measuring reflection, assigning an overall score for reflective ability as opposed to analyzing its individual components. The hierarchical scoring guidelines of the reflective ability rubric may have resulted in lower scores for reflective ability because each level of reflection assumes the level below. Thus, one cannot achieve a score of 6, indicating deep reflection, without first meeting all of the criteria for scores 1-5. The criteria for receiving a score of 6 includes providing strategies for future behavior or application of the lessons learned from the experience. Many students alluded to how they might apply what they have learned from their experiences; however, they often failed to meet the criteria for levels 4 and 5, which involve obtaining feedback from others and analyzing the influence of their past experiences on the current situation; therefore, their reflections could not receive a score of 6. These types of reflection might have received higher scores using an instrument

such as the one developed by Plack et al. (2005) that rewards students for engaging in individual elements of reflection, rather than a global demonstration of reflective ability. It would be useful in future studies to compare the differences between the case and control groups using these two different rubrics to determine the benefits and challenges of each.

Timing of Professionalism Citation

This study did not attempt to determine whether students' professionalism citation occurred before or after they submitted their professionalism journal entries. This is a limitation of the study because remediation following a professionalism competency deficiency often involved a writing assignment, followed by feedback from the competency director. This experience with reflective writing may have pre-conditioned some of the students in the case group to be more reflective. If their remediation occurred before they participated in third-year medicine clerkship, this prior conditioning could have resulted in a higher reflection score than they would have received had it been their first experience with a reflective writing assignment. As there was still a significant difference in reflection scores between the case group and control group, with students in the case group having significantly lower reflection scores, this limitation likely did not affect the results of the study.

Campus Assignment

IUSM is a multi-site institution and students complete their pre-clinical years at one of nine regional campuses located throughout the state. While this study did not consider students' campus assignment as an explanatory variable, it is worth noting that a previous study of competency citations at IUSM found that the Northwest campus

contributed significantly more citations than the other regional campuses (Brokaw et al., 2011). This discrepancy was attributed to the problem-based learning curriculum at that campus which enabled faculty to more easily identify students' problematic behavior. Similarly, there may have been differences in the teaching and assessment of professionalism at the various campuses, which could have influenced students' professional development. The small class size at the regional campuses compared to the Indianapolis campus may have influenced peer-assessment scores because, presumably, students were better acquainted with one another at the smaller campuses. Some campuses may also have provided students with more opportunities for reflective writing and feedback, which may have influenced the level of reflection that students demonstrated in their third-year professionalism journals. Further research is needed to examine whether campus assignment has any impact on the likelihood that a student will be cited for professionalism lapses during medical school.

Future Research

To the researcher's knowledge, this has been the first study to quantitatively and qualitatively compare the reflective writings and self- and peer assessments of students who have demonstrated unprofessional behavior with those who have not. While this study has provided many new insights into the role of reflection and the value of peer assessments in medical education, it has also opened the door to new questions about these activities and what they reveal about medical students. Several key areas for future research based on the findings of this study are discussed in this section.

Some of the inspiration for this study came from the work of Papadakis and colleagues (2004; 2005; 2008), who found that unprofessional behavior during medical

school and residency was strongly associated with unprofessional behavior in practice. As this study found that low reflection scores and low peer assessment scores were associated with professionalism lapses during medical school, it would be interesting to follow the students in this study to determine what impact these factors have on residency performance, as measured by PGY1 survey data obtained from program directors. Examination of survey data from residency program directors might also provide useful information about the effectiveness of remediation strategies currently in use at IUSM.

Another limitation of this study, not discussed above, is that students in the case group were not categorized based on the severity of infraction because the researcher was not privy to this information. Clearly infractions such as persistent tardiness or unexcused absences are far less severe than cheating or criminal offenses, yet this study considered all infractions equally. Gaining access to detailed descriptions of students' competency violations would enable the researcher to devise a rating scale to classify lapses from minor to severe. Such a rating scale could then be used to examine whether reflection scores or peer assessment scores predict or correlate with severity of infraction. It is also likely that the criteria for identifying a professionalism lapse varied from campus to campus and faculty member to faculty member. Thus, students whose behavior was judged to be unprofessional on one campus or rotation might not be judged the same way on other campuses or rotations, which likely resulted in a large number of false negatives among the medical student population.

While analysis of medical students' professionalism journals revealed that case group students demonstrated lower reflective ability than control group students, there are many other avenues for analysis that might lead to more meaningful differences between

students in the case group and students in the control group. Using computerized text analysis of speeches, emails, and even everyday conversations, Pennebaker (2011) has found that peoples' language style (e.g. their use of pronouns, articles, prepositions, etc.) reveals a great deal of information about their personalities, emotions, and connections with others. Analyzing the language style used in the professionalism journals might reveal some insights into students' personalities, and perhaps some general trends among students in the case group versus students in the control group or level III competency group.

Finally, this study found that peer assessments were strong predictors of unprofessional behavior at some point in the case groups' medical school careers. Further research should also be conducted on the peer assessment instrument to determine if any of the 18 items are better than others at predicting professionalism lapses, or discriminating between students who have been cited for professionalism lapses and those who have not. Lurie et al. (2007) found that only peer assessment items related to work habits (e.g., preparedness, initiative, responsibility, and self-directedness) were predictive of later residency performance, while assessment items related to interpersonal attributes such as respect, teamwork, sensitivity to others' views, honesty, and trustworthiness were not. Factor analysis could identify similar items on the peer assessment instrument in order to study which factors best predict professionalism lapses.

The peer assessment instrument also provides students with an opportunity to write open-ended comments about their peers. The director of assessment was unwilling to share these comments with the researcher in the interest of protecting the privacy and confidentiality of the students. Nonetheless, if permission could be obtained in the

future, a qualitative analysis of these comments from the peer assessments could provide meaningful insights about which particular attitudes or behaviors students observe among their peers that are more strongly associated with professionalism lapses.

Conclusions

The findings of this study should be used to guide the efforts of medical educators in teaching and assessing professionalism in undergraduate medical education. This study has provided empirical evidence that higher reflective ability is associated with a decreased risk for professionalism lapses; therefore steps should be taken to promote deeper reflection. Simple adjustments to reflection prompts and intentional feedback on students' reflections can achieve this goal. Low peer assessment scores also predicted professionalism lapses, which suggest that peer assessments should be taken into consideration when evaluating students whose professionalism is in question. Finally, this study has reinforced that physician role models strongly influence students' attitudes and behaviors and attention must be paid to the implicit messages that are conveyed when role models behave unprofessionally.

Based on the findings of this study, one might be tempted to construct a profile of the "typical" student who is at risk for professionalism lapses during medical school. The student may be either male or female, although males are much more likely to have demonstrated multiple lapses. The student shows a low ability to reflect, as indicated by a failure to identify lessons learned from an experience, the tendency to vent, and limited attention to emotions. The student also receives lower than average peer ratings, but seems resistant to use this feedback to improve their performance. This profile paints a fairly straight-forward picture of the type of student who is at risk of unprofessional

behavior, but what I learned from reading and analyzing the students' professionalism narratives is that there is no "typical" student who demonstrates professionalism lapses. Even among students in the case group, there were many "negative cases" in which students reflected very deeply on their experience and clearly articulated the profound lessons that they learned and planned to incorporate into their own practice. Most of the students revealed in their professionalism journals that they just wanted to become a good doctor, and provide their patients with the best care possible. More than that, they wanted to see what being a "good doctor" looked like. They wanted to observe the way positive role models embodied professionalism in their attitudes and interactions, and expressed sadness and disappointment when they witnessed unprofessional behavior. By reading students' professionalism journals, I came to realize that, while professionalism is often described as black and white, there are many shades of gray in which the "right" answer is not always obvious. I believe that many of the instances of unprofessional behavior likely resulted from students feeling conflicted and/or inexperienced about how to handle a particular situation. Furthermore, many of these conflicts are a consequence of the "do as I say, not as I do" messages that are conveyed by the informal and hidden curriculum.

What I have taken away from doing this research is that reflection is not a destination; it is a journey. Reflecting upon my own values and goals during my years in graduate school has helped me to find a balance between my educational and career aspirations and my personal goals and priorities. Looking back on my own educational experiences and the teachers who have had the greatest impact on my personal and professional development has helped me to identify the qualities that I would like to

embody as I embark on a career in medical education. I hope to be a role model for my students, not just academically, but personally as well. Throughout graduate school, I appreciated the support of professors whom I felt genuinely cared about me, and took an interest in my goals and overall well-being. I hope to provide the same kind of support and encouragement to my future students as they navigate the stressful and often overwhelming waters of medical school.

Appendix A: Reflective Ability Rubric

Level	Reflection Performance	Scoring Guidelines	Elaborated Guidelines	Examples
0	Does not respond to assignment	Narrative is submitted but is not responsive to the topic or assignment.	Venting without description of a specific situation. Describing an encounter unrelated to the topic.	"Patients in this hospital are challenging to care for."
1	Describes procedure/case/setting without mention of lessons learned	Narrative description of encounter but no evidence of reflection on action.	Very detailed story with some insight into behavior in the moment but no further discussion of behavior in retrospect.	"We took care of a patient, considered their needs, addressed their concerns and challenges, and did a good job."
2	States opinions about lessons learned unsupported by examples	States that lessons were learned but without explicit linkage to performance.	Vague reference to lessons learned without elaboration. List of lessons learned without linkage to evidence. General platitudes about optimal care without specific linkage to scenario.	"I took care of a Cuban patient and became aware that it is important to consider the patient's cultural background."
3	Superficial justification of lessons learned citing only one's own perspective	Relies on personal assessment of lessons learned.	Personal opinion about lessons learned predominates. Little or no inclusion of external evidence as defined below.	"I felt more confident about my skills and I expect the patient will check her blood sugars more frequently and return for her appointments."
4	Reasoned discussion well-supported with examples regarding lessons learned and includes obtaining feedback from others or other sources	Includes external evidence of lessons learned.	External evidence includes detailed feedback from patients or professional associates, objective data on outcomes, and/or use of the literature.	"I followed up and found out that the patient had returned to the clinic, brought her glucose records, and had better glycemic control."
5	Analyzes the influence of past experience on current behavior	Explicitly refers to prior experiences and describes how they inform own behavior in current situation.	Reference to how prior experience can reinforce successful practice or inform a change in practice. Must meet criteria for level 4.	"In the past I have approached similar patients by providing them with a monitoring sheet and not evaluating their literacy level. In this case, I established that the patient had some English proficiency and used level-appropriate materials with him."
6	Integrates all of the above to draw conclusions about learning, provides strategies for the future learning or behavior and indicates evidence for determining effectiveness of those strategies	Analysis including external evidence of lessons learned, relation to prior experience, and implications for the future.	Must meet criteria for level 5 and also include a specific plan for the future including how success will be monitored.	"I will: assess English health literacy in all my Latino patients; request low literacy education materials for our clinic; determine success by tracking Latino patients screened and literacy forms in clinic in 3 months."

Source: "Reflective ability rubric and user guide," by P.S. O'Sullivan, L. Aronson, E. Chittenden, B. Niehaus, and L. A. Learman, 2010, *MedEdPORTAL*. Retrieved from: <https://www.mededportal.org/publication/8133>

Appendix B: IUSM Self- and Peer Assessment Instrument

Instructions to student: Complete the following assessment on **yourself**, as you see yourself at this particular point in your medical education.

Rating Scale:

Unsatisfactory			Satisfactory			Exceptional		
1	2	3	4	5	6	7	8	9

	Unsatisfactory	Score	Exceptional
1.	Consistently unprepared for sessions; present minimal amount of material; seldom support statements with appropriate references.		Consistently well-prepared for sessions; present extra material; support statements with appropriate references.
2.	Overlook important data and fail to identify or solve problems correctly.		Identify and solve problems using intelligent interpretation of data.
3.	Unable to explain clearly my reasoning process with regard to solving a problem, basic mechanisms, concepts, etc.		Able to explain clearly my reasoning process with regard to solving problems, basic mechanisms, concepts, etc.
4.	Lack appropriate respect, compassion and empathy.		Always demonstrate respect, compassion and empathy.
5.	Display insensitivity and lack of understanding for others' views.		Seek to understand others' views.
6.	Lack initiative or leadership qualities.		Take initiative and provide leadership.
7.	Do not share information or resources: impatient when others are slow to learn; hinder group process; tend to dominate the group.		Share information or resources; truly help others learn; contribute to the group process; able to defer to the group's needs.
8.	Only assume responsibility when forced to or stimulated for personal reasons; fail to follow through consistently.		Seek appropriate responsibility. Consistently identify tasks and complete them efficiently and thoroughly.
9.	Do not seek feedback; defensive or fail to respond to feedback.		Ask classmates and professors for feedback and then put suggestions to good use.

10.	Please superiors while undermining peers; untrustworthy.		Present myself consistently to superiors and peers; trustworthy.
11.	Hide my own mistakes; deceptive.		Admit and correct my own mistakes; truthful.
12.	Dress and appearance are often inappropriate for the situation.		Dress and appearance are always appropriate for the situation.
13.	Behavior is frequently inappropriate.		Behavior is always appropriate.
14.	Dependent upon others for direction with regard to my learning agenda.		Direct my own learning agenda; able to think and work independently.
15.	Not very expressive, do not show emotions.		Very expressive, show emotions easily.
16.	Do not respond sensitively to others' feelings.		Respond very sensitively to others' feelings.
17.	Do not seem very attuned to others' feelings and nonverbal cues.		Very attuned to others' feelings and nonverbal cues.
18.	I have concerns for my future patients.		I feel confident that I will be the kind of physician that I would refer my own family or patients to or that I would want as my own doctor.

Source: <http://medicine.iu.edu/ume/curriculum/competencies/self-awareness-self-care-and-personal-growth/a/>

Note: The self-assessment instrument is shown above. The items on the peer assessment form are identical, but students are asked to rate one of their fellow students based on their personal knowledge of the student and their interactions with him/her. There is an "Unable to assess" option if the assessor feels that he/she has not had sufficient contact with the student to evaluate him/her on a particular characteristic.

Appendix C: Qualitative Analysis Codebook

Point of View	1 = Student participated in (un)professionalism 2 = Student observed the (un)professionalism
Valence	1 = Positive story 2 = Negative story 3 = Story contained both positive and negative examples
Actors	List person(s) involved in professionalism (e.g. attendings, residents, students, patients, families)
Actors Context	1 = Interprofessionalism: professionalism occurred between two providers/staff members. 2. = Non-Interprofessionalism: professionalism occurred between provider and patient/family
General Context	General setting of the story: 1 = Quality of care 2 = Discussion: information sharing 3 = Prognostic disclosure 4 = Decision making: helping patients/family make decisions 5 = System: anything that doesn't deal with patient care
Emotion	List emotions present in story 1 = emotion explicitly stated 2 = emotion inferred
Lesson Learned	Explicitly stated lesson learned i.e. 'I learned...' 'I realized...' 'I hope to...' 'I believe...' 'I will never...' 'One should/must...'
Professionalism Theme	1 = Altruism 2 = Empathy 3 = Equality 4 = Ethics/integrity 5 = Truthfulness 6 = Equanimity 7 = Patient autonomy 8 = Respect

Source: M. T. Hoffmann. Used with permission.

Appendix D: Professionalism Theme Definitions

Theme	Interpretation	Example
Altruism	<ul style="list-style-type: none"> • Going above and beyond • Exemplary physician • Taking time with patients • Patience • Dedication • Activity based 	e.g. Physician doing everything he can to keep patient alive until family arrives
Empathy	<ul style="list-style-type: none"> • Compassion • Emotion based 	Anytime “compassionate care” or “compassion” used
Equality	<ul style="list-style-type: none"> • Treating all patients equal • Prisoner stories • Difficult patient 	e.g. The prisoner was treated the same as any other pt.
Ethics/Integrity	<ul style="list-style-type: none"> • Ethical dilemma • System breakdown • Doing the right thing • Moral uprightness • Do no harm • Being honest in the face of wrongness 	e.g. Staff pushing pain meds on difficult patient to sedate him against his wishes e.g. O2 tank empty when patient coded, resident told family the truth
Honesty	<ul style="list-style-type: none"> • Open and honest communication 	Physician telling patient/family the ‘hard truths’ of diagnosis/prognosis
Equanimity	<ul style="list-style-type: none"> • Managing emotions • Remaining calm in frustrating situation 	e.g. Nurse yelling at transporter in front of everyone
Patient Autonomy	<ul style="list-style-type: none"> • Respecting patients’ will in decision making • Staff informing patients of their rights 	e.g. Give patient chance to be autonomous in decision making
Respect	<ul style="list-style-type: none"> • Collegial respect • Quality of interaction • Respectful communication 	“It felt wrong to be making fun of a patient when anyone could overhear”

Source: M. T. Hoffmann. Used with permission.

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CURRICULUM VITAE

Leslie Ann Hoffman

EDUCATION

- Doctor of Philosophy**, Anatomy and Cell Biology July, 2014
Minor: Education
Indiana University, Indianapolis, Indiana
Dissertation: An Exploration of Reflective Writing and Self-Assessments to Explain Professionalism Lapses Among Medical Students
- Master of Science**, Anatomy 2005
The Ohio State University, Columbus Ohio
- Bachelor of Science**, Biology 2003
Cum Laude
The Ohio State University, Columbus, Ohio

ACADEMIC APPOINTMENTS

- Lecturer** - Department of Anatomy and Neurobiology 2006-2009
University of Vermont College of Medicine, Burlington, Vermont
- Instructed medical and graduate students in gross anatomy laboratory courses
 - Instructed laboratory sections for undergraduate anatomy and physiology course
 - Presented laboratory demonstrations to medical and graduate students in neural science course
 - Prepared and instructed laboratory sessions for undergraduate neuroanatomy course
 - Maintained collections of anatomical specimens and models to be used as teaching tools
 - Accepted donations for the Anatomical Gift Program
 - Prepared and packaged human cadavers for use in undergraduate/medical courses

GRADUATE SCHOOL TEACHING EXPERIENCE

- Graduate Student Lecturer – Medical Gross Anatomy Fall 2013
Indiana University School of Medicine, Indianapolis
- Presented block of lectures on thoracic anatomy to medical and physical therapy students
- Laboratory Teaching Assistant – Medical Gross Anatomy Fall 2013
Marian University College of Osteopathic Medicine, Indianapolis
- Assisted with dissection and teaching in the gross anatomy laboratory for medical students

Laboratory Teaching Assistant – Medical Gross Anatomy Fall 2013
Indiana University School of Medicine, Muncie

- Assisted with dissection and teaching in the gross anatomy laboratory at IUSM-Muncie campus

Laboratory Instructor for Human Anatomy – Department of Biology 2011-2012
IUPUI

- Instructed undergraduate students on human systemic anatomy, including gross and microscopic anatomy

Graduate Student Lecturer – Neuroscience and Clinical Neurology Fall 2011
Indiana University School of Medicine, Indianapolis

- Presented spinal cord problem set and brainstem atlas neuroanatomy to medical and physical therapy students

Laboratory Teaching Assistant – Graduate Neuroanatomy Spring 2011
Indiana University School of Medicine, Indianapolis

- Assisted with teaching in the neuroanatomy laboratory for graduate students
- Presented lecture on brainstem neuroanatomy

Laboratory Teaching Assistant – Graduate Histology Fall 2010
Indiana University School of Medicine, Indianapolis

- Assisted with teaching in the histology laboratory for graduate students
- Developed and delivered a team-based learning (TBL) module on blood and myeloid tissue

Laboratory Teaching Assistant – Neuroscience and Clinical Neurology Spring 2010
Indiana University School of Medicine, Indianapolis

- Assisted with teaching in the neuroanatomy laboratory for medical and physical therapy students

Graduate Student Lecturer – Graduate Gross Anatomy Spring 2010
Indiana University School of Medicine, Indianapolis

- Presented lecture on the thoracic wall, pleural cavity and lungs to graduate students

Laboratory Teaching Assistant – Medical Gross Anatomy Fall 2009
Indiana University School of Medicine, Indianapolis

- Assisted with dissection and teaching in the gross anatomy laboratory for medical and physical therapy students

PROFESSIONAL MEMBERSHIPS

- American Association of Anatomists 2010 – present
American Association of Clinical Anatomists 2011 – present
- 2011-2012 – Served on AACA Strategic Planning Committee

POSTERS/PRESENTATIONS AT PROFESSIONAL MEETINGS

Hoffman, L. A., Shew, R. L., Pike, G. R., and Frankel, R. M. Lower reflection scores are associated with professionalism lapses in undergraduate medical education. *Central Group on Educational Affairs Spring Meeting*, Cleveland, Ohio, March 2014.

Traser, C.J., **Hoffman, L.A.**, Seifert, M.F., and Wilson, A.B. Prospecting the use of quick response codes in the gross anatomy laboratory. *American Association of Anatomists Annual Meeting*, San Diego, April 2014.

Hoffman, L. and Seifert, M. The Evolution of Curricular Change in U.S. Medical Schools: An Anatomist's Primer. *American Association of Clinical Anatomists Annual Meeting*, Columbus, Ohio, July 2011.

OTHER EDUCATIONAL/SERVICE ACTIVITIES

- Academy of Teaching Scholars 2010 - present
Indiana University School of Medicine
- Member of the Academy: Tier 1 completed
 - Tier 1 requires participation in workshops in each of the following categories:
 - Instructional Technology
 - Assessment of Learners
 - Learning Theory
 - Instructional Strategies
 - Curriculum Development

Participated in outreach visit for Avon High School to introduce students to careers in the anatomical and life sciences. April 2012

Provided content expertise and voice recording for anatomical videos and animations in collaboration with a medical illustrator/graphic designer. Example projects can be viewed at the following URLs:

https://www.youtube.com/watch?v=P5RS4_5Gsgw

<https://www.youtube.com/watch?v=Qp7V9hz1LiY>

http://corporismedical.com/images/pelvic_bone/pelvic_bone.htm