PREDICTORS OF PSYCHIATRY RESIDENT PSYCHOTHERAPY COMPETENCE

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Submitted to the Faculty of the
Graduate College of
Oklahoma State University
in partial fulfillment of
the requirement for
the Degree of
DOCTOR OF EDUCATION
August, 2003

PREDICTORS OF PSYCHIATRY RESIDENT

PSYCHOTHERAPY COMPETENCE

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ACKNOWLEDGEMENTS

I owe thanks to so many people for helping make this dissertation a finished project. Unfortunately, I can only name a few in this acknowledgement section.

My advisor, Dr. Gary Conti, for his patience with my consistent generation of alternatives and for his expert guidance through this process with good humor.

My committee, Drs. Lynna Ausburn, Anne Ghost Bear, and Kouider Mokhtari for their unique perspectives that made my research viable.

My family, especially my husband Stephen and my sons, Brian and Jarod, for giving up time and resources to support my educational efforts. Without them I would not have believed that this degree was possible.

Dr. William Yates, Professor and Chair of the Department of Psychiatry at OUCM-T, for providing consultation and encouragement.

My work colleagues and antiquing buddies for encouraging me when I felt over-whelmed, and for always believing that this would come to pass.

My collegial pal, Mary Isaacson, for agreeing to room with me on retreats and for always impelling me by keeping one step ahead of me.

My friends, Stephen Forrest and Bud Turmen, for editing my first feeble drafts and still encouraging me to continue. Also, to all of my colleagues in the Adult Education Program and to MIS for supplying fellowship, patience, editing, and ideas to keep me moving.

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CHAPTER 1

INTRODUCTION

The field of medical resident education is forging a new era of both an increased focus on the outcomes of health care provision and an emphasis on medical resident physician competency. This increased focus on outcomes and competency has resulted in recent changes in the training requirements for medical resident physicians (Beresin & Mellman, 2002, pp. 185-186).

The Accreditation Council for Graduate Medical Education (ACGME) is responsible for the oversight and accreditation of medical education and resident training in the United States. The stated mission of the ACGME is to:

> Improve the quality of health care in the United States by ensuring and improving the quality of graduate medical education experiences for physicians in training [and] uses the most effective methods available to evaluate the quality of graduate medical education programs. It strives to improve evaluation methods and processes that are valid, fair, open, and ethical. (ACGME, 2002, p. 2)

To this end, the ACGME monitors, develops, and defines the scope of medical education provision. The ACGME monitors the educational effectiveness of medical training programs through regular review by the specialty-based Residency Review Committees (RRC). The RRC site-visits each accredited educational institution on a periodically

scheduled basis in order to ensure institutional and programmatic compliance with the ACGME guidelines.

The ACGME develops and defines education through administration of training program requirements. The ACGME's most recent oversight activities include the Outcome Project. The goal of the Outcome Project is to "base programs' accreditation status on how well they educate residents and prepare them for the practice of medicine" (ACGME Outcomes Project, 2000, para. 10). The Outcome Project developed a new plan to demarcate physician training and delineated six new general competencies in medical resident education. These general practice-based competencies include patient care, medical knowledge, interpersonal and communication skills, professionalism, practice-based learning and improvement, and systems-based practice (American Medical Association [AMA], 2002, pp. 309-322).

In addition to the six general competencies, each medical specialty is charged with additional specific resident training requirements. These requirements include the length and breadth of education, program configuration by training year, institutional requirements, faculty qualifications and responsibilities, program amenities and resources, and didactic requirements (AMA, 2002, pp. 309-

322). The RRC and the ACGME also require that training programs demonstrate that they have developed an effectual plan to evaluate the competency and performance of their resident physicians during and upon completion of the training process.

> This response to demands for accountability from public and private funding sources for health education and delivery, as well as clinical, administrative, and academic leaders in the field and national and regional organizations that oversee the practice of medicine, is having a significant impact on medical and postgraduate education. (Beresin & Mellman, 2002, p. 185)

Medical Education

The path to medical doctor education is a rigorous journey. Entrance into medical school is usually preceded by a minimum of 90 credit hours at an accredited undergraduate institution. These prerequisite hours must include two semesters of physics, four semesters of chemistry, and two or more semesters of biology (Association of American Medical Colleges [AAMC], 1995, p. 4). Most medical schools have additional requirements to the prerequisite hours such as English, mathematics, and humanities. Although the minimum prerequisite hours are set at 90, most applicants complete an undergraduate degree at an accredited university due to the science requirements that predominate medical school admission. Frequently,

students in the pre-medical field major in biological or physical sciences although a significant number of students complete undergraduate work in psychology, English, or other non-scientific disciplines.

> Students preparing to study medicine should acquire a broad education…general education that includes the social sciences, history, arts, and languages is increasingly important for the development of physician competencies outside of the scientific knowledge domain. (Liaison Committee on Medical Education [LCME], 2003, p. 17)

In addition to completing the prerequisite course work, students typically take the Medical College Admission Test (MCAT) in the calendar year they intend to enter medical school. The MCAT is a 5¾-hour test that is divided into three components: verbal reasoning, physical sciences, and biological sciences. The function of the MCAT is to identify medical school candidates who are well-rounded individuals and are able to synthesize the social sciences, the physical sciences, and the humanities (ACP, 1995, p. 1).

When medical students finish medical school, they can choose to complete a particular medical specialty or sub-specialty educational training program. This additional training is particularly essential if the physician wishes to become specialty board-certified and to be recognized as

an independent practitioner and expert in a given medical field. Typically, residency training extends the medical educational process another 3 to 7 years beyond the 4 years required for medical school. One of the specialty medical resident educational programs is the training of psychiatrists, a program of training that requires 4 years of instruction and practice for the general psychiatry program and 5 years of training for the dual Family Medicine-Psychiatry training program (AADPRT, AMSA, AACAP, SNMA, & APA, 1995, p. 2).

Psychiatry

The field of psychiatry treats those suffering from mental and emotional illness through psychopharmacology, which is the prescription of medication, and psychotherapy, which is the use of psychological talk therapy. Psychopharmacology and psychotherapy treatment strategies can be used singularly or in combination.

For psychiatry residents-in-training, the evaluation of proficiency in the ACGME six general medical competencies is required as well as five additional competencies in psychotherapeutic treatment, which is also referred to as psychological talk therapy. These required psychological talk therapy competencies include psychodynamic psychotherapy, cognitive behavioral

psychotherapy, supportive psychotherapy, combined psychotherapy and psychopharmacology, and an assortment of brief psychotherapy modalities.

Traditionally, the field of psychiatry taught new psychiatrists only one form of psychotherapy. That form of treatment is known traditionally as psychoanalytic, and more currently, as psychodynamic psychotherapy. While psychodynamic therapy techniques are exceedingly useful in treating mental illness, the need for additional brief therapy models has increased due to a variety of third-party payers' and medical insurance providers' parameters of coverage. Mental health coverage tends to be less extensive than regular medical illness coverage. "Managed care fee scales and referral policies almost mandate that psychiatrists do brief medication checks instead of integrated psychotherapy and medication management if they are to make a living" (Clemens, MacKenzie, Griffith, & Markowitz, 2001, p. 54). Insurance providers have limited the coverage for mental health care and have a tendency to focus upon brief management in mental health treatment rather than the long-term treatments typically utilized in traditional psychoanalytic psychotherapy (Jensen, Morrisey, Gaffney, & Liston, 1997, pp. 125-136).

Each talk therapy competency offers a distinctive theoretical approach to caring for patients from both a symptomatic and problem-focused treatment strategy. For example, psychodynamic psychotherapy is an insight-oriented therapy that guides patients through examination of their unconscious intra-psychic conflicts and/or deficits and the manifestation of the conflicts, or deficits, in developmental and current relationships (Gabbard, 1994, p. 5). Traditional psychodynamic psychotherapy typically takes several years of treatment as the goals of therapy are considerable as treatment aims at character change. Recent forms of psychodynamic therapy have been developed that are briefer in duration and are typically aimed at treating a specific mental disorder such as panic disorder.

In contrast, supportive therapy techniques involve the support of patients as they obtain increased and more functional coping skills and the enhancement of personal competency through a successful therapeutic relationship. A successful supportive therapeutic encounter can result in tangible successes in real-world relationships and productivity (Novalis, Rojcewicz, & Peele, 1993, p. 20).

Another competency model, cognitive behavioral therapy, takes yet another approach. Cognitive behavioral therapy is a brief therapy modality that teaches patients

to identify maladaptive thoughts, or cognitive distortions, and modify these thought errors through therapeutic thought restructuring techniques (Beck, Rush, Shaw, & Emery, 1979, p. 21).

"The act of knowing does not take place in air" (Paulo Freire cited in Jurmo, 1985, p. 11). Learning the required models of psychotherapy must occur before residents can practice techniques with patients. The training of psychiatry residents in the United States occurs in two venues. Resident training can take place in medical facilities or training hospitals. The Mayo Clinic in Minnesota and Griffith Psychiatric Hospital in Oklahoma are examples of this setting for training. However, most medical resident training occurs within medical degree granting universities.

The University of Oklahoma. There are 180 accredited psychiatry-training programs throughout the United States. The University of Oklahoma is one of the accredited training institutions. The University of Oklahoma (OU) is a doctoral degree-granting research university created by the Oklahoma Territorial Legislature in 1890. The university is made up of campuses in Norman, Oklahoma City, and Tulsa. The University of Oklahoma College of Medicine, Tulsa (OUCM-T) became the first OU college to serve the

Tulsa community in 1972. OUCM-T provides clinical education each year to approximately 75 medical students and 160 medical residents. It is a community-based program that works closely with the major hospitals in the Tulsa area. The Department of Psychiatry at OUCM-T has trained psychiatrists in Tulsa for almost 30 years. The Psychiatry Department is charged with the selection, retention, and training of psychiatric physicians for the purpose of providing competent medical care for the mentally ill (The University of Oklahoma, 2002, para. 1). Within this psychiatry training program there is a focus upon the resident learners who are adults with particular requirements for learning and practice.

Adult Learning in Medical Education

The adult learner has unique needs when pursuing additional educational and learning activities. These needs generate philosophies about adult learners (Knowles, 1980, p. 43). Adult education researchers have identified the following needs of adult learners that include a focus upon the development of reflective practice. The development of reflective practice occurs in an environment that provides effective educational instructors who are focused upon facilitating and supporting the adult learner's efforts regarding learning how to learn,

promoting self-directed learning tasks, and developing the concept of life-long learning.

Development of Reflective Practice

The first 2 years of traditional medical student preclinical education involve a teacher-centered classroom and lecture mode of instruction. During this period, the educators determine the curriculum and evaluation methods to assess the students' learning in a given subject area. The learners' role in this mode of instruction is often passive (Knowles, 1980, p. 40). "One of the problems of the lecturer is that the student in a lecture is usually passive and sometimes asleep -- a condition not conducive to maximum learning" (McKeachie as cited in Whitman, 1999, p. 15). Typically, in teacher-centered learning environments, students respond to cues from instructors in order to successfully navigate the course material and pass the instructors' evaluation instruments (Andrew & Issacs, 1995, pp. 1-5). The second 2 years of medical school look very different for the future physician.

"The separation of the medical school curriculum into two disjunctive stages, the preclinical and the clinical, reflects the division between theory and practice" (Schön, 1983, p. 28). The remaining 2 years of medical school involve a more clinical, practice-based, hands-on mode of

instruction. This is a time where medical students gain clinical experience by seeing patients typically along with a teaching team. The team is normally comprised of a senior resident, a junior resident, and an attending physician. This phase of medical school allows students to put the knowledge gained in the first 2 years of classroom instruction to use (Schön, 1983, p. 28). The students have the opportunity to see a disease process in a living human being with all of the physical and social implications. "There is no cement like interest, no stimulus like the hint of a coming practical application" (Flexner, 1910, p. 59). This real-life experience allows medical students to approach patients from a cohesive plan for care, but students are still dependent upon the more senior and experienced physician clinicians to synthesize the patient's unique information into a comprehensive plan for treatment and follow-up.

Upon the completion of medical school and throughout the specialty training, the medical resident must develop into a self-directed, reflective practioner in order to become a successful independent medical provider. Reflective practice occurs when professionals use "reflection on their patterns of action, on the situations in which they are performing, and on the know-how implicit

in their performance" (Schön, 1983, p. 55). The ability to reflect upon previous medical knowledge attained and the current needs of a unique and individual patient is paramount in the successful practice of psychiatric medicine.

> Through reflection, he [the learner] can surface and criticize the tacit understandings that have grown up around repetitive experiences of a specialized practice, and can make sense of the situations of uncertainty or uniqueness which he [the learner] may allow himself to experience. (Schön, 1983, p. 61)

The ability to reflect upon unique patient information is especially crucial for psychiatry physicians when compared with some of the other more procedural fields of medicine. For example, general surgeons have specific approaches to stitching a patient's wound that can be repeated patient after patient. However, in psychiatry, human behavior is far too complex to provide a one-size-fits-all approach to treatment even when dealing with patients with the same type of mental illness or disorder (Andreasen, 2001, p. 339; Humes, 1987, p. 63).

While many medications can be used and psychotherapy techniques can be taught and utilized to treat specific mental illnesses, the psychotherapist must frequently reflect upon the patient's unique experiences between therapy sessions. This reflection upon knowledge gained

and practical experience results in tailored treatment strategies and specialized care for the distinctive individuals being treated. For residents in training, an essential component of training is the ability to look at patients from an all-encompassing perspective.

> In addition to learning and using diagnostic criteria, young psychiatrists must be taught to think first about the whole person and to appreciate that each one is interesting and unique, not simply a composite of symptoms that are used to make a DSM diagnosis and provide treatment according to a standard algorithm. (Andreasen, 2001, p. 339)

In addition to the curriculum plan for education and practice experience, the institution that provides training has a responsibility to teach the learner how to learn outside the structure of the formal educational venue (Brookfield, 1986, p. 64).

Facilitation of Learning How to Learn

Learning how to learn is a key strategy for the adult learner. Effective learning interactions provide the basis for developing this skill. A facet of learning how to learn is managing copious amounts of information and organizing, evaluating, and analyzing it (Smith, 1982, pp. 95, 103). Medical students and residents are known to be avid readers as the amount of information they must process during their training is enormous. Most of this reading

and studying is done on the resident's or student's personal time without the benefit of instructors or colleagues.

The adult learner making the transition from classroom settings to real-world learning environments may require guidance from an instructor to facilitate the development of the independent learning process. Effective educators in adult education must meet the challenge of empowering their adult learners by providing a focus on the process of learning and allowing the learner to be creative in the learning direction (Smith, 1982, pp. 151-152). The function of the effective adult educator is to ensure that the learner has the opportunity to gain new knowledge of a learning topic as well as instilling a desire within the student for continued learning (Houle, 1980, p. 125).

Another role of the effective adult educator is to inspire learners in the evaluation of their personal process of learning. Many students are not aware that in order for learning to be successful, they must understand how learning occurs for them personally. Evaluating personal learning while in the learning process is known as metacognition. More specifically, metacognition has been defined as thinking about thinking or "knowledge and

cognition about cognitive phenomena" (Flavell, 1979, p. 906).

"Metacognitive difficulties are the problem of the novice, regardless of age. Ignorance is not necessarily age related; rather it is more a function of inexperience in new and difficult problem situations" (Brown, 1978, p. 475). Learners in the medical education field must evaluate the process of learning while in learning situations to ensure that they are utilizing all resources for learning such as professional literature, more experienced clinicians, and even the patients being treated. In addition, research in metacognition suggests that learners must be trained in the strategies of metacognition for a beneficial "effect on their use of metacognitive processes or activities required in self-directed learning" (Kincannon, Gleber, & Kim, 1999, p. 171).

Training in understanding how one learns allows learners to follow a pattern or procedure that works best for their individual learning process. This requires thinking about how best to approach a new learning activity. Best approaches typically require that learners have a specific method for learning as well as a plan to evaluate the process and modify their approach while in the

process of learning. Oftentimes, this process occurs when the learning experience was unsuccessful and the learner attempts to find a solution for what went wrong (Roberts & Erdos, 1993, p. 262).

Frequently, successful learning of difficult information occurs when the learner becomes the teacher for others in real-life learning situations. Typically, in medical training programs, residents become teachers for the medical students and many report that they are able to better process a difficult subject when they have to teach it to others.

> Another aspect of being a good physician comes from the term doctor, from the Latin docer, meaning teacher. A good physician has a lifelong commitment to learning, and teachers are lifelong students. Teaching is integral to all residency programs, reflecting that the best way to learn is teaching. (Miller as cited in Schwenk & Whitman, 1993, p. 2)

Real-life learning for physicians encompasses a core component of thinking on one's feet while staying in the moment with the patient. This is a skill that comes with real-life experience over time. Simple knowledge about illnesses and their diagnostic criteria is not enough to be an ethical and competent physician. The ability to search through various reliable sources of information and synthesize the information into a treatment plan is vital.

Professional training programs must encourage learners to reflect while in practice to ensure an accurate perception of the process for attaining personal understanding and competence (Schön, 1987, p. 44).

Input from experts in the field of psychotherapy is an important facet of learning. However, expert input is only one essential component for continued growth and development (Smith, 1982, pp. 58-59). There are five identifiable stages to learning new information and implementing the new knowledge into practice. These are the:

> Need to solve a problem, observing similar phenomena and developing a prototype model, continuous refinement and practice with the model, perfection of skills and product, and receiving recognition for the product of their learning efforts. (Cavaliere, 1992, p. 53)

These identifiable stages enable the new medical physician and the training program to focus upon individual trainee's programmatic needs for learning, application, and evaluation of the newly acquired skills and knowledge. For example, in response to the ACGME's edict for the measurement of resident physician competency, the Department of Psychiatry at the OUCM-T evaluated curricular offerings to ensure adequate exposure and opportunities for learning and practice of the five psychotherapy

competencies. Implicit within the OUCM-T psychiatry training program's mission is an awareness that the psychiatry residents do not need to become experts in the provision of psychotherapeutic treatment and practice within the confines of the 4 years (5 years for psychiatry-family medicine residents) required for training. Rather, the expectation is that the resident will learn the required psychotherapy theories and demonstrate competency in the practice of the theory and techniques with their patients.

> While residents cannot be expected to achieve the highest possible degree of expertise in all of the diagnostic and treatment procedures used in psychiatry in four years of training, those individuals who satisfactorily complete residency programs in psychiatry must be competent to render effective professional care to patients. (American Medical Association (AMA), 2002, p. 309)

The definition of the stages of learning and skills in relation to the definition of competency may further clarify the learning sequence. For example, a professor of philosophy and a professor of engineering developed a model of the development of skills and knowledge of pilots outlined in five illustrative stages (Batalden, Leach, Swing, Dreyfus, & Dreyfus, 2002, p. 106). These stages break the acquisition of new knowledge and skills into components or descriptions of the learner's abilities at

each level of incorporation of expertise with new learning material. Although these stages were developed for the U.S. Air Force to describe the learning of airplane pilots, they also succinctly describe the learning attitudes and behaviors that occur within the medical education environment.

These practice-based learning stages begin with the novice who has a basic familiarity of the premise of a new learning subject and little capacity to put the theme into practice. This stage would typify medical students early in training.

The second stage is the advanced beginner who demonstrates a satisfactory performance after practicing in a real encounter. In addition, the advanced beginner has developed knowledge of further assets needed to improve implementation and skills. This second stage would typify a first year resident-in-training.

The third stage identified is competent. The competent learner internalizes new areas of the subject matter to draw conclusions and to make inferences regarding additional applications of the newly gained knowledge and skills. The competent learner is able to adapt new learning to a host of conditions by analyzing the differences in the circumstances and modifying the response

through selection of viable alternative solutions. This working definition of a competent learner succinctly describes a competent resident physician upon the successful completion of residency training.

The fourth identified stage of learning is proficient. Individuals at the proficient stage have a varied number of learning experiences with an increased internalized ability to surpass previous boundaries of application.

The fifth and final stage is the expert who has fully integrated many learning experiences and often acts intuitively to synthesize learning new experiences (Batalden, Leach, Swing, Dreyfus, & Dreyfus, 2002, pp. 106-107; Five Learning Strategies, 2002, para. 1-6). The final two stages of learning and practice may illustrate physicians who have been in independent practice for an extended period of time with numerous experiences treating difficult patients. These descriptions also provide another way to clarify what is meant by competence.

> The state or quality of being capable of adequate performance. Individuals are described as competent if they can meet or surpass the prevailing standard of adequacy for a particular activity. While competence does not equate with excellence, it does imply a level of proficiency that has been judged to be sufficient for the activity in question. (Trivett, 1975, para. 7)

To develop tools and models for assessing resident competency in the ACGME mandated forms of psychotherapy, the training program in psychiatry at the OUCM-T examined the residents' receptiveness to learning the required psychotherapy competencies and the subsequent implementation of a variety of psychotherapeutic modes with patients. In the past, the training program has introduced various forms of psychotherapeutic approaches to patients with inconsequential acceptance by the psychiatry residents-in-training.

Like most psychiatry training programs, the previous approach to teaching and implementing psychotherapeutic interventions was immersed in psychoanalytic and psychodynamic theory and practice. The introduction of core-competency brief modalities, such as cognitive behavioral therapy, was received with little enthusiasm by the residents even when it was presented with research-based evidence of efficacy. To reduce psychiatry resident physician resistance to learning and implementing the newly required forms of psychotherapy, the training program responded by evaluating the learning strategies of the residents. A learning strategy is the approach a learner uses to process new information. Typically, a learner will use a similar approach to learning with specific strategies

and techniques that result in successful learning interactions (Fellenz & Conti, 1989, p. 7). This learning strategy evaluation was undertaken based upon the knowledge that educators and learners benefit from understanding the specific strategy used for learning and processing new information (Smith, 1982, pp. 58-59).

The residents-in-training were asked to self-assess their approach to learning new information using the Assessment of Learning Strategies of AdultS (ATLAS), a valid and reliable appraisal instrument (Conti & Kolody, 1998, pp. 109-114; 1999, pp. 16-20). The ATLAS was designed to investigate specific adult learning strategy distinctions. This easy and quick to administer assessment tool was rooted in the concept that in order for learning to be effective, adult learners should ascertain their approach to processing new instructive material based upon their learning attitudes, patterns, and behaviors in approaching the learning process (Conti & Kolody, 1999, p. 16).

While individual adult learning differences exist and should be valued, the ATLAS assessment tool provides recognition and awareness of commonalties of adult learning strategies. This assessment tool divides learners into

three groups based on learning strategy preferences: Navigators, Problem Solvers, and Engagers.

When approaching a new learning situation, Navigators tend to focus quickly upon resources needed and keep the end goals in mind. Navigators have a preference for structure in learning situations along with understandable objectives for the learning process (Conti & Kolody, 1999, p. 11). Whereas, Problem Solvers approach new learning by looking for an array of solutions and options for solving the learning problem. They seek interaction with others when in learning situations and tend to drift when presented with a lecture format for learning (p. 12). Engagers tend to approach learning new material from an affective domain and are zealous learners who learn more readily when engaged by a focus on personal investigation and interpersonal relations with others (p. 15). Based upon an analysis of data from 17 studies, researchers found a typical distribution of learners to be nearly equal between the modalities of learning strategy (p. 18).

In spite of this expected distribution, the result of the ATLAS assessment of the residents in the OUCM-T psychiatry-training program found that the majority (59%) approach learning from an Engager perspective. Specifically, of the 17 residents in the OUCM-T training

program that completed the ATLAS in September, 2001, 5 residents identified their learning strategy from a Navigator perspective, 2 from a Problem Solver perspective, and the 10 remaining psychiatry residents in-training from an Engager perspective.

While the OUCM-T educational program is cognizant of attending to the needs of all of the resident learners, the Psychiatry Department began to use some of the techniques and suggestions offered by Conti and Kolody (1999) for teaching the residents in order to get resident acceptance and subsequent use of the required psychotherapy competency models with their patient population (pp. 11-12, 15). The Psychiatry Department at OUCM-T agreed with these adult-learning researchers posit that effective learning will not take place until these needs are met. The OUCM-T psychiatry department decided to provide the residents with a learning activity that could potentially be appealing to all of the learning strategy groups. A learning activity was chosen that (a) had an end goal in mind for the Navigators, (b) included developing alternative teaching methods and involved interaction with others for the Problem Solvers, and (c) offered the opportunity to present the new learning information in a unique and potentially entertaining manner for the Engagers.

The OUCM-T psychiatry department began the process of engaging the resident learners in implementing the psychotherapy competency models by separating the residents into learning and teaching teams lead by a senior resident. Each team was divided evenly among the various levels of post-graduate training year. Each learning and teaching team was given the task of studying one of the five psychotherapy competency models: psychodynamic therapy, supportive therapy, cognitive behavioral therapy, combined psychopharmacology and psychotherapy, and brief psychotherapy. The goal of the team's study of the psychotherapy model was to present the assigned model's key concepts to the other teams. The teams were instructed to present and teach the talk therapy competency philosophy from whatever format they thought would most effectively convey the theory and applications of the psychotherapy model. Following the presentations, the residents met again as a group to evaluate the usefulness of the psychotherapy models with patients and to troubleshoot any difficulties the group may have encountered. Reviewing the application of learning and discussing differences of opinion are key factors of learning how to learn (Smith, 1982, p. 117).

The residents agreed that the learning and teaching teams accomplished a great deal of learning about the required competency modalities. One resident stated that it was the first time he truly understood the effectiveness of the model his group studied for presentation purposes. Another resident stated that it enhanced her ability to understand and treat a patient using the model's key concepts and techniques.

From this programmatic change in curriculum and teaching methodology, the residents became more receptive to implementing the newly compulsory psychotherapy competencies, thus increasing the department's adherence to the recent ACGME requisites for competency and training criterion. This adherence to competency implementation and evaluation may produce psychiatric physicians who meet the highest standards of patient care, therefore accomplishing the Outcome Project goals as set forth by the American College of Graduate Education. Additionally, this focus upon the learner's needs resulted in additional implications for the adult learning process within this institution of higher education. Resident physicians must participate in learning that is self-directed in order to provide for patients' needs for personalized treatment. Learners have to focus beyond the scope of the formal

curriculum through self-directed plans for learning of information unique to particular real life situations (Knowles, 1980, p. 57).

Implementation of Self-Directed Learning

Renowned adult education researcher, Malcolm Knowles (1975) found that self-directed learning is a fundamental aptitude of an adult learner (p. 17). In addition, Knowles (1980) held an adult learner's life experience in absolute favor and viewed an adult's experience as the foundation for integration of real-life experience and formal instruction (p. 56). Knowles asserted that adults' needs in the learning process are very different from the needs of children. He defined the teaching of adult learners as an art and a science and used the term androgogy to further illustrate the differences of educating children or pedagogy (Knowles, 1970, pp. 42-43).

Knowles laid the foundation for understanding the differences from educating adults and children by outlining six assumptions of adult learners (Knowles, Holton, & Swanson, 1998, pp. 64-68). His third assumption clearly illustrates the difference between first-year medical students and residents-in-training. This third assumption asserts "adults come into an educational activity with both

a greater volume and a different quality of experience from youths" (p. 65).

Adult learners must be able to use previous personal experiences or previous learning circumstances to assist problem solving in current practice. The use of prior experiences and knowledge can allow the learner to make sense of situations that are novel (Cervero, 1988, p. 44). For medical residents-in-training, the ability to search out the latest medical information coupled with the use of sound clinical judgment and past experience can allow new deductions for different patients and response to new learning circumstances in the future. As professionals, the learning cycle for medical residents is infinite.

Practice of Lifelong Learning

Lifelong learning is a process of education that occurs throughout an adult's life and adapts to the learner's needs at different phases of development (Darkenwald & Merriam, 1982, p. 2). Over time, adult learners are faced with an ever-increasing quantity of information to process into new knowledge and skills (Brookfield, 1986, pp. 15-16). The medical resident learner's search for the latest information brings forth the need for lifelong learning because of the almost daily changes in medical information available. For instance,

the rate of innovation in biological technology (biotechnology) is tracked by the patent and trademark office, and this area substantially outpaces other patent categories. To further illustrate this growth, in the 20-year period from 1977 to 1997, "the incremental additions to the stock of knowledge have increased sevenfold" (Oliver, 2000, p. 55). This rate of innovation in the biological field has a remarkable effect on the medical field. In order to be effective medical practitioners, physicians must stay abreast of the latest information in order to serve patients with the most up-to-date new technology, medicines, and medical procedures.

Problem Statement

The ACGME has outlined specific competency-based outcomes for residency education. A training program's accreditation is based upon its response to these competency requirements. To remain an accredited training program, each psychiatry residency educational program must develop a plan. The plan must effectively teach the six general medical competencies as well as the five required psychotherapy competency modalities: psychodynamic therapy, supportive therapy, cognitive behavioral therapy, combined psychopharmacology and psychotherapy, and brief psychotherapy models. In addition, the plan must provide

an explicit approach for evaluating resident physician competence in delivering these general and psychotherapy modalities of treatment. The plan must also provide regular and timely feedback to the residents, and it must develop remedial training strategies for residents where needed (AMA, 2002, pp. 309-322).

Before the ACGME announcement of the new competencies that went into effect in July of 2002, psychiatry residents were allowed to practice the specialty of psychiatry independently when they met three criteria. First, they must have successfully completed their residency training program requirements. Second, they must have successfully completed state medical licensing requirements. Third, they must have passed the written and oral portions of the licensing board examinations to become board-certified specialists.

These requirements were the only forms of evaluating competency for beginning psychiatric and other medical specialists prior to the ACGME's additional competency criterion:

> Traditionally, a resident's competency has been measured by the certifying opinion of the program director that the trainee is ready to practice independently, after a specified number of years in training. This opinion may be supplemented by required examinations during training, and is expected to be supported by successful completion

> of a specialist board examination. (Long, 2000, p. 1178)

All other resident physician evaluation measures were done on a case-by-case basis, and every training program used particular methods of appraisal. Because of these factors, no standardization currently exists for evaluating resident physician aptness or competency (Long, 2000, p. 1178). Measuring resident physician competence is a difficult and challenging task and creates many debatable issues. The use of outcome measures to facilitate the evaluation of residents' competencies can be valuable to the assessment process.

Two important factors of determining competence must be addressed. The first is to delimit the acceptable variations in knowledge, skills, and attitudes for the resident's level of training, and the second is standardizing these levels of competency across psychiatry training programs (Beresin & Mellman, 2002, pp. 185-186). Proficiency indicators and outcome measures will most likely be used to assist psychiatry resident training programs in defining resident competence. Competency outcome measures can be used for evaluation of training experiences as well as for curriculum planning. Evaluation of training program components and resident training needs

may determine the use of standard training methods versus the need for specialized additional training methods for resident physicians who require remediation.

The standard resident training process is an expensive, and a labor-intensive and time-intensive endeavor (Anderson, 1996, pp. 164-169; Casey, Gillanders, Oprandi, Gilchrist, & Iverson, 1995, pp. 424-430; Franzini & Berry, 1999, pp. 257-268; Franzini, Monteiro, Fowler, & Low, 1999, pp. 159-170). Additionally, the majority of resident physicians finish medical school with tremendous debt. "Some residents are in debt well over $100,000" (Cummings, 1999, p. 825). Because of the high costs of training residents and the need for the majority of residents to repay substantial medical school loans, residency training programs must utilize all means available to select physicians who will benefit from a standard training program. Additionally, training programs must select those physicians who will complete the training program requirements in a timely manner in order for residents to expeditiously begin their independent practice of medicine. Moreover, the medical field has pledged to provide a standard of care from physicians that is above reproach along with the expectation of protecting the public's trust of competent treatment (Beresin & Mellman,

2002, p. 185; Redman, Lenberg, & Walker, 1999, p. 1). To this end, medical residency-training programs must be committed to selecting physicians who will benefit from specialty-specific training and who in turn will provide competent care for those patients seeking treatment during and upon the completion of residency training.

Medical training programs gather copious amounts of information regarding medical students and medical residents before, during, and after the medical education and training process. However, little research has been done to relate this vast amount of information for use to predict psychiatry resident psychotherapy competence. The ability to predict which residents will benefit from a program's regular psychotherapy curriculum and practice experience can enable resident training programs to select those candidates most likely to successfully complete a standard psychotherapy training program. In addition, the ability to predict potential for the residents' competent learning in a standard training timeframe may save residents lost revenue. This will occur by not delaying the beginning of physician independent practice due to the need for supplementary training experiences required beyond the regular residency-training period to reach competence. Furthermore, the ability to predict resident psychotherapy

competence may avert the need for more costly individualized and special preparation requirements for remediation of incompetent resident physicians in specialty medical education programs already stretched thin to cover the costs of standard training requirements (Diamond, Fitzgerald, & Day, 1993, pp. 614-618).

In addition to enhancing the resident selection process identifying potential training problems requiring special training needs, and saving both the resident and the training program valuable time and resources, the ability to predict potential resident competency offers further benefits. Potential benefits of competency prediction may include the enhancement of training program planning for budgetary issues such as additional teaching resources for new faculty and state-of-the-art technology to keep the latest information at the fingertips of the learners. Moreover, prediction research may influence the decision-making and educational plan of teaching facilities by influencing the provision of monetary and political support. Finally, the ability to predict outcome assists training programs in the task of program evaluation and for anticipating and planning for future training needs.

Purpose Statement

The purpose of this study was to measure and relate potential predictor variables to the rank order competence of the resident physicians in a psychiatry resident training program. This study described the relationship of the predictor variables to the demonstrated knowledge, skills, and attitudes of psychiatry resident physicians as evaluated by psychotherapy expert faculty. The evaluation by the expert psychotherapy faculty will be evidenced by the resident's number placement on a competency rank order listing of the residents from most competence to least competent in the implementation of the ACGME required five psychotherapy competencies.

Research Questions

The following research questions were used to accomplish these research goals:

1. What is the relationship between rank order and group order competency and:
   a. Demographic variables of age, gender, and ethnicity.
   b. Early premedical and medical training variables such as undergraduate major; undergraduate grade point average; allopathic versus osteopathic training; U.S. versus International medical school; medical grade point average; medical school percentile rank; traditional versus nontraditional resident; and specialty of the residents' first year of residency training.
   c. External standardized training examination variables such the Medical College Admission Test (MCAT); United States Medical Licensing

Examination (USMLE); and the Psychiatry Resident In-Training Examination (PRITE).

d. Early residency training variables such as the global resident interview score and the program year 1 global neurology score.
e. Training program competency variables such as mock oral boards (MOB) and global scores received on the resident's psychotherapy Grand Rounds presentation.
f. Training program monitoring variables such as documented hours of psychotherapy patient care hours, documented hours of psychotherapy supervision, and the number of live faculty supervised psychotherapy sessions.

2. What is the relationship between the resident's self-assessment of psychotherapy competency and the expert rank order evaluation of resident competency?
3. What knowledge variables can be used to predict psychiatry resident psychotherapy competency?

Several statistical procedures were used to analyze the data in order to answer the research questions. Descriptive statistics were used to construct a profile of the residents on their demographic, achievement, program, and training variables. Correlations were used to investigate the relationship between the competency ranking and the variables that were measured on a continuous scale. Chi square was used for those variables that were categorical. Multiple regression was used to explore the interaction of the variables with the competency ranking; because of the small number of cases in these analyses, the focus was on identifying variables for further analysis rather than on the accuracy of the prediction of the

regression equations. Finally, discriminant analysis was used to identify the variables and their magnitude that could be used for correctly placing the participants in either the top third or the bottom third of their residency peer group.

Definitions

Accreditation Council for Graduate Medical Education (ACGME) - a private, professional accreditation body that is responsible for evaluating and accrediting U.S. medical residency education programs (ACGME, 2002).

Assessing the Learning Strategies of Adults (ATLAS) - an easy to administer valid and reliable assessment tool of adult learning strategies (Conti & Kolody, 1998, p. 109).

Brief Psychotherapy - a therapy that explores a patient's mental, emotional, or interpersonal dilemmas in a time and problem-limited fashion (Tomb, 1995, pp. 202-203).

Cognitive-Behavioral Psychotherapy - a collaborative therapy that assists patients in correcting faulty information processing that create maladaptive behaviors and emotions (Beck & Weishaar, 1989, p. 28).

Institution - an organization having the primary purpose of providing educational or health care services (ACGME, 2002).

Non-traditional medical resident - for the purpose of this study is defined as a resident who enters specialty training later in life.

Psychodynamic Psychotherapy - an approach to diagnosis and treatment characterized by a way of thinking about both the patient and the clinician that includes unconscious conflict, deficits and distortions of intrapsychic structures, and internal object relations (Gabbard, 1994, p. 5).

Resident Education - the period of clinical education in a medical specialty that follows graduation from medical school, and prepares physicians for the independent practice of medicine (ACGME, 2002).

Residency Review Committee (RRC) - medical specialty committee responsible for revising training standards and for the review of accredited training programs (ACGME, 2002).

Supportive Psychotherapy - a therapy model where the therapist plays an active and directive role to improve a patient's interpersonal functioning and coping skills (Novalis, Rojcewicz, and Peele, 1993, pp. 4-5).

Traditional resident - for the purpose of this study is defined as a resident who enters residency training immediately upon finishing medical school.

CHAPTER 2

REVIEW OF THE LITERATURE

Medical Education and Training in the United States

To appreciate the import and significance of the impact of the American College of Graduate Education's (ACGME) new competency requirements for current medical resident education, one must be familiar with the historical foundations for medical education in the United States. Furthermore, a historical perspective of the sub-specialty field of psychiatry as a medical profession and the practice of psychotherapy within this medical specialty may provide additional clarity regarding the research of potential predictors of psychotherapy competence.

The History of Medical Education in the United States

The discipline of medical education may be conceptualized as a continuum of social and cultural experiences influencing individuals within the learning process and the society that will receive the services provided (Coggeshall, 1965, pp. 38-40). The learner's pre-medical education experiences influence the learner's medical school experiences. Subsequently, the medical student's experiences will surely influence the graduate medical physician who in turn influences society through the care and treatment of patients. Finally, all medical

trainees most likely will influence the training institutions that provide their educational opportunities (Mayer, 1973, p. 1). This cyclical and reciprocal nature of interaction and influence is evident in the evolution of medical education in the United States.

Historical Foundations of Medical Education

Medical education has made an extensive metamorphosis in the United States since its inception. During colonial times, physicians received medical training through apprenticeships with medical practioners who received their training through apprenticeships. There was virtually no orderly system for disseminating medical knowledge to trainees (Richards, 1978, p. 3). During the 1800s, there was a vast growth of commercial medical schools known as proprietary schools. A profit margin was the proprietary schools' student recruitment focus. The payment of the required fees was the only entrance requirement for new medical trainees. Virtually no scholastic aptitude was measured, or required, to gain admission. In these commercial medical schools, "no general standards for medical curricula, for resident or faculty selection, or for license to practice existed" (Richards, 1978, p. 5).

During this era, only a few university-based medical schools were in existence in the United States. It was not

until the 1860s that medical training was offered systematically in medical schools in the United States. For example, in 1800 there were three medical schools in existence; by 1840 there were 29 medical training programs; and by 1876 there were 50 medical training schools in the United States (Ludmerer, 1985, p. 11).

However, the change from apprenticeships to medical education in proprietary schools did not guarantee the graduation of skilled medical practioners. During the middle of the 19th century, structured medical education in proprietary schools offered only 8 months of lecture instruction, and even that was a 4-month series of lectures that repeated (Ludmerer, 1985, p. 12). The public's view of the medical practioner was not one of high esteem. In fact, the practice of medicine was not seen as an honorable profession. Those individuals who excelled in undergraduate education typically chose careers in law, in education, or in the religious community rather than in medical disciplines (Ludmerer, 1985, p. 13). Not even literacy was a prerequisite to becoming a physician during this period of American medical instruction. The president of Harvard Medical School stated in his 1879 address to the medical community:

> An American physician or surgeon may be, and often is, a coarse and uncultivated person, devoid of intellectual interests outside of his calling, and quite unable to either speak or write his mother tongue with accuracy. (Eliot, cited in Ludmerer, 1985, p. 13)

Fortunately, during the latter phase of this period of medical education, additional avenues for medical instruction were developed. Select physicians could further their education after the completion of medical school by working in hospitals as in-resident physicians. This designation was used as the physician resided in the hospital and managed patient care tasks, thus creating the term of resident physician in current medical training nomenclature (Ludmerer, 1985, p. 17). This real-life training experience could also be supplemented by continuing medical education lectures that usually meant travel to Europe. "Between 1820 and 1861, seven hundred Americans studied medicine in Paris" (Ludmerer, 1985, p. 18). Unfortunately, there were a significant number of medical graduates without the funds to train in Europe and there were medical school graduates who were not chosen to become in-resident trainees (Ludmerer, 1985, p. 19). For those individuals, 8 months of lecture schooling was all these physicians had before beginning their individual medical practice with patients.

The Development of Regulations for Medical Education

In the mid 1800s, leaders of the American medical profession expressed concerns regarding the growth of the commercial medical schools in the United States (Carraccio, Wolfsthal, Englander, Ferentz, & Martin, 2002, p. 361). They viewed graduates of proprietary schools as inadequately prepared to practice medicine competently and autonomously because of the poor training they received in schools only interested in collecting admission fees. These leaders moved to establish admission and educational standards for all medical education institutions (Flexner, 1910, p. 10). These leaders joined together to form the American Medical Association (AMA) in 1847. The AMA proposed elevated standards for medical graduates to be demonstrated by outcome measures such as state and national licensing examinations. The consensus of the AMA was that these outcome restrictions would impose pressure upon the proprietary educational schools to increase the duration of medical training as well as to enrich the curriculum they offered.

In 1910, the Carnegie Foundation published the Flexner report, which highly influenced the future of U.S. medical education. The Flexner Report evaluated the condition of medical education in the United States and underscored the

importance of medical education taking place only in accredited universities (Richards, 1978, p. 10). The report also proposed the requirement of clinical practice with patients along with expert supervision before allowing the independent practice of medicine by physicians (Richards, 1978, p. 6).

This report's findings led to the dramatic decline in commercial medical educational institutions as they could not meet these higher standards without a university affiliation. "Such a rattling of dead bones has never been heard in this country before or since. Schools collapsed to the right and left, usually without a murmur" (Flexner, 1960, p. 87). Because of these higher standards for admission and more stringent requirements for medical training, the number of medical schools in the United States reduced from 162 in 1906 to 95 medical schools in 1915 (Richards, 1978, p. 7).

Increased Standards for Medical Education

Universities responded to this focus on standards and outcomes by adding scientists to their faculty, which added an increased biological and scientific approach to medical training. University hospitals were created in order for medical students to practice diagnostic and procedural skills and to provide care for patients. The changes in

medical education can be couched in terms of transformation:

> Medical schools now flourishing in the United States are not the slow outcome of evolution: They represent an unprecedented leap in the dark, without the gradual intervening states characteristic of evolutionary change. (Flexner, 1960, p. 87)

The era of medical education following the Flexner report reflected relatively consistent educational training requirements. As result of these requirements and accreditation standards, physicians were promoted to professional status by endorsement through public opinion surveys. This new appreciation for the profession elevated physicians to the top of all occupational groups (Richards, 1978, p. 16).

More importantly, this focus upon the physician as a professional with respected status led to further changes in medical student training. These changes played out in terms of setting progressive standards for medical school entrance requirements, medical training subject matter, and the length of training. Further changes include the addition of laboratory facilities; the requirement of university associations with training hospitals; the requirement for highly trained, scientific instructors; and

licensing requirements that endure in modern medicine to this day.

Abraham Flexner's report was a powerful force for change in medical education institutions. His educational philosophy was aligned with the educational views of John Dewey regarding the need for the learner to observe a skill and then practice the skill by doing (Ebert, 1992, pp. 737-738). In fact, there is an axiom in medical education that calls for a "see one, do one, teach one" approach to learning that requires inexperienced medical trainees to work in teaching teams with attending expert physician clinicians (Schwenk & Whitman, 1993, p. 60). This observational practice philosophy created an impetus for the need to practice medicine with living patients before graduation (Schön, 1983, p. 28).

Medical education institutions and trainees were also influenced by the new requirements calling for skilled instructors. The addition of instructors with credentials in science along with new laboratory facilities in universities led to the adoption of the medical model approach to the treatment of patients and educational focus for physicians-in training. "No development carried more force than the germ theory of disease and the emergence of modern bacteriology" (Ludmerer, 1985, p. 76). The early

20th century was a time in American history noted for reliance upon scientific developments, upon the scientist as an expert, and upon the belief that one must look to an expert for the answers to societal problems including disease (Schön, 1983, p. 39). "Such attitudes underlay the rising prestige of the medical profession [and] helped philanthropists and state legislatures to begin providing funds for medical education and research" (Ludmerer, 1985, p. 79).

The Development of the Medical Model

This focus upon the germ theory of disease and upon how disease spreads brought about significant changes in the medical profession's ability to influence public health. Physicians were able to prevent the spread of disease from patient to patient simply by washing their hands before treating the next patient. The ability to understand the disease model of illness along with the ability to categorize and diagnose the disease process became paramount to the practice of medicine and to the development of a medical model to approach treatment.

The medical model can be simply stated as a contrast between wellness and disease. The medical model is a disease model and is built upon the following fundamental components. It begins with an evaluation of the patient's

complaints or symptoms. Next, a diagnosis of the disease causing the symptoms is identified followed by the recommendation of a treatment to alleviate the symptoms or cure the underlying medical disease. Finally, the physician provides the prognosis, or prediction, of the patient's potential for survival. The ability to predict the disease course in individuals led to the physician scientist's interest in an ability to predict a disease course in a larger setting such as a community or population.

The Statistics of Medicine -- Epidemiology

The call for medical physician scientists to predict the course of disease in a population was based upon a desire for the prevention of illness, suffering, and potential deaths in a larger venue for intervention. If disease prevention was unobtainable, an early diagnosis and a plan for intervention to stop the spread of the disease was the goal. This aspiration for prediction research in population disease course led to medical statistical study called epidemiology. "Clinical epidemiology deals with the concept of probability" (Cimmino & Hazes, 2002, p. viii).

Epidemiology is the application of statistics to medicine (Epidemiology, 2002, para. 3). More specifically, epidemiology is "the study of the distribution and

determinants of health-related states or events in specified populations and the application of this study to the control of health problems" (Last, 1995. p. 85). Epidemiology uses the observation of disease processes in communities to predict disease risk factors through a statistical association between causes and outcomes. The ability to predict disease allows proactive interventions in a given population and may create the potential for a change in outcomes (Campbell, 1989, p. 254). In other words, the ability to predict future difficulties may allow for potential modifiable factors to be changed and may lead to modified outcomes. This focus on predicting outcomes is an integral part of the current medical field as evidenced by data driven decision-making and scientifically based research by the medical community (Doyle, 2002, p. 1).

The development of this complicated medical model approach to diagnosis and treatment changed the breadth and depth of medical student training and created a potential for graduate medical education. Flexner's report highlighted flaws in medical training beyond medical school along with his recommendations for improvements in medical student education.

Medical Specialty Practice Development

One of the most controversial changes in training after medical school was the increase in physicians who desired to specialize in different forms of medical practice (Richards, 1978, p. 15). Flexner's report on medical education and the AMA focused only upon pre-physician education and the accreditation for the training of medical students. This gap in oversight for graduate medical education created a need for new governing bodies for those physicians who wished to specialize their practice (Ludmerer, 1985, pp. 236-237).

The AMA council reacted to the challenge of specialized training needs for graduate physicians by creating 11 clinical and 4 basic science subjects to organize the essentials needed for expertise in each type of medical practice (Nunemaker, 1967, p. 406). "Post-M.D. training in a specialty became a necessity, and the faculty of medical schools divided themselves into specialty areas capable of dealing with the expansive knowledge base within a defined area" (Samph & Templeton, 1979, p. 12). Following the organization of the quality of specialty education, specialty boards were developed. These specialty boards represented the professional medical community. An important aspect of professional development

groups is "to establish its collective identity by building systems and structures that foster and maintain conceptual and competency characteristics" (Houle, 1980, p. 49).

The medical specialty boards accomplished this professional commission by defining the acceptable length of resident physician training as well as the content of the specialty curriculum offered. Upon completion of the structure for enhanced specialized medical training, the specialty boards set qualifying examinations and the subsequent certification of the specialty physician (Richards, 1978, p. 19). Further functions of the specialty boards can be described as follows:

> To assist in improving the quality of graduate education in that field; to establish minimal educational and training standards in the specialty in conforming with the general provision of the essentials; to determine whether the candidates have received adequate preparation as defined by the Board; to provide comprehensive examinations to determine the ability and fitness of such candidates; and to certify the competency of those physicians who have satisfied the requirements of the Board as a protection to the public and the profession. (Nunemaker, 1967, p. 29)

The first board, The American Board of Ophthalmic Examinations, legitimized ophthalmology specialists and differentiated them from those who did not receive specialized training. This was accomplished by requiring 2 years of graduate medical education before allowing the

trainee to take the board examination. This very first board established the original stipulations for specialty training and practice beyond medical school. Many other specialized medical boards were created following ophthalmology's lead including the specialty field of psychiatry.

Development of the Psychiatry Specialty

In 1933, The American Board of Psychiatry and Neurology was formed with the intent to enhance the field of psychiatry and neurology training and to establish training requirements (Scheiber, 2000, p. 3246). In 1934, requirements for training were specified as follows:

> The applicant needed to graduate from an approved medical school and possess a license to practice medicine; basic training would include three years of study of psychiatry after the internship with at least 18 months in a clinical setting in an approved hospital, clinic, or laboratory; 2 years of practice in a hospital or 1 year largely limited to psychiatry would be required. (p. 3246)

The specialty of psychiatry was established for the treatment of mental and emotional illness. Historical writers have documented an awareness of mental disorders for thousands of years (Andreasen, 2001, p. 163). The oldest written medical sources attributed mental disorders to the individual being possessed by demons or gods (Colp, 2000, p. 3301). In contrast, by the mid-19th century,

individuals with mental illness were recognized as having diseases of the brain. A German physician, Wilhelm Griesinger, began to insist that persons with madness or mental illness should be treated by a physician and not by the religious community performing an exorcism. He asserted that:

> Insanity being a disease, and that disease being an affliction of the brain, it can therefore only be studied in a proper manner from the medical point of view. The anatomy, physiology, and pathology of the nervous system and the whole range of special pathology and therapeutics, constitute a preliminary knowledge most essential to the medical psychologist. All non-medical…all practical and ideal conceptions of insanity are as regards its study of the smallest value. (Griesinger cited in Mora, 1997, p. 131)

Psychotherapy versus Psychopharmacology

Later, psychiatry became a field embattled between those who thought of mental illness as a biological disease and those who endorsed a psychological cause for mental illness. Adolf Meyer, a dominant figure in American psychiatry, developed the proposition that while psychiatric conditions are biological, the patient is also influenced psychologically by environmental and societal stimuli (Colp, 2000, p. 3307). Other medical scholars and medical practioners pointed to the fruitlessness of focusing upon the differences between the brain as a

biological organ versus the mind as the human's ability to think as a useless diatribe:

> Abandoning these false dichotomies gives us a much better grasp on how life actually works, if we can handle the more complex way of thinking that arises when the world consists of continuities without arbitrary dividing boundaries. It is a more richly textured and colored world than the black-and-white dichotomies of mind versus brain and genes versus environment. (Andreasen, 2001, p. 35)

A combined approach to understanding mental disorders created a "broadening perception of significant reality for understanding pathological human nature" (Colp, 2000, p. 3007). This new perception expanded the psychiatrist's approach for the treatment of mentally ill patients:

> For practical understanding of the human being, sometimes it is the language of psychology and sometimes, the language of physiology and biochemistry that is more apposite; and when we are lucky, we occasionally catch a glimpse of the complex interactions between these modes of discourse. (Nemiah cited in Gabbard, 1994, p. 15)

Combined Approach to Psychiatric Treatment

Psychiatric physicians began treating patients with an emphasis on biological treatment using medications known as psychopharmacology along with the use of psychological talk therapy commonly referred to as psychotherapy (Gabbard, 2000, p. 2225). Psychotherapy has also been referred to as the talking cure for mental and emotional illness (Ursano & Silberman, 1988, p. 255). Typically, the psychotherapist's

choice of talk therapy treatment is based upon the individual's mental illness and the unique qualities of the patient.

Therefore, the history and development of psychotherapy approaches to treatment and techniques is extensive with great diversity in theory and practice. The discussion of the historical underpinnings of psychotherapeutic treatment involves the required competencies for contemporary psychiatric residents which are psychodynamic psychotherapy; cognitive behavioral psychotherapy; supportive psychotherapy; brief therapy modalities; and the combination of treatment using psychotherapy and psychopharmacology.

Historical Tenets of Psychotherapy

In the civilizations of Greece and Rome, psychological or psychotherapy treatment consisted of:

> Methods of inducing sleep, interpreting dreams (often performed by priests in temples, notably those of Aesculapius, the god of healing), and using words to encourage, console, and gain knowledge of an illness. (Colp, 2000, p. 3301)

All of these same methods of psychotherapeutic treatment are still used to treat patients although now packaged in a modern form and organization. For example, in the 1890s, Sigmund Freud used patients' dreams to interpret their psychic conflicts and used hypnosis to

enable patients to uncover developmental conflicts that caused mental and emotional suffering (Colp, 2000, p. 3306). Psychotherapy is an integral form of mental health treatment, and as "much of medicine is devoted to treating patients whose illnesses remain with them throughout life; psychotherapy can do no less" (Werman, 1985, p. 383).

Psychodynamic Psychotherapy. One cannot discuss the history of psychodynamic psychotherapy without mentioning Sigmund Freud's contribution to the field. Sigmund Freud was a Viennese physician who coined the term psychoanalysis in 1886 to describe his therapeutic technique of using dreams to work through unconscious processes and by allowing patients to speak freely about developmental experiences also known as free association. Freud proposed that patients' mental illnesses were a result of traumatic events that occurred during their developmental years and the memory of the events were repressed into patients' unconscious psyche (Colp, 2000, p. 3306). Freud further proposed that there are structures of the mind that have different functions. He labeled these structures as the ego, the id, and the superego. He asserted that these structures of the mind have different drives that often came into conflict with each other and cause patients difficulty and symptoms of anxiety or depression (Gabbard,

1994, p. 4). His ideas about the human psyche have persisted in some form or fashion in the modern practice of psychoanalysis and its derivative, psychodynamic psychotherapy.

The term psychodynamic psychotherapy can be traced back as early as the late 1800s (Gabbard, 1994, p. 3). The term was coined to denote that this therapy was a progressive and an ever-changing form of psychotherapy as opposed to a fixed treatment. Psychodynamic psychotherapy has been the predominant form of therapy used in psychiatry. However, other forms of psychotherapy came into play as psychiatrists continued working with patients and testing Freud's theories for the treatment for mental illness.

Cognitive Behavioral Psychotherapy. In the 1960s, Dr. Aaron Beck, an American psychiatrist, began a study of dreams of patients with the disease of depression. Beck expected to validate Freud's theory of anger and hostility in his patients' dreams. Instead, he found that the patients' dreams were more focused around loss and defeat (Weishaar, 1996, pp. 188-189). Through his scientific research, Beck went on to identify that depressed patients seem to have a shift in their cognitive abilities, a shift toward negative cognitions. "Beck also observed a number

of logical errors in depressive thinking which he termed cognitive distortions" (Weishaar, 1996, p. 189). Beck went on to assert that individuals do not follow Freud's classic analytic classifications of mental illness. Rather, he found that patients tend to make sense of situations based upon the rules and expectations they learned while children.

Beck (1972) outlines seven steps to the provision of cognitive therapy by the psychotherapist:

> 1.) pinpoint depressive cognitions; 2.) identify their idiosyncratic content; 3.) recognize the characteristics of these cognitions; 4.) distinguish ideas from facts; 5.) check one's conclusions by re-examining the evidence; 6.) respond to depressive cognitions by stating the reasons why they are erroneous; and 7.) identify the cognitive distortions operating. (p. 58)

Beck's ideas about the treatment of depression were readily accepted by mental health fields as he was able to manualize his therapeutic techniques and document through research the efficacy of his model of talk therapy known as cognitive behavioral therapy. Following Beck's lead, other psychotherapy providers identified therapy models that were designed to help the unique individual in question.

Supportive Psychotherapy and Combined Treatment. Another ACGME required competency model, supportive therapy, seeks to assist patients with coping with day-to-

day difficulties as well increasing their coping ability for crisis situations such as loss of a defined role or an exacerbation of illness requiring a hospitalization.

There was time period in the history of mental illness when the mentally ill were treated as criminals and locked away in prison-like facilities (Novalis, Rojcewicz, & Peele, 1993, pp. 9-10). The historical tenets of supportive therapy were developed as a more humane way of treating the mentally ill. Supportive therapy treatment techniques have been used to help the mentally ill since ancient times, and "the first systematic organization of these [supportive] principles as part of the overall field of medicine was due to the German physician Johann Christian Reil (1759-1813), who was also the first to use the word psychiatry" (p. 11). Benjamin Rush, a major figure in U.S. medicine, promoted many of the supportive therapy strategies used in current psychiatric practice today: "direct advice, educational efforts, health employment or productive activities, and temperance" (p. 11).

Supportive psychotherapy is frequently used along with medication management, also known as combined therapy, to reinforce the positive benefits of compliance for medication taking and for exploration of what the

implications of taking a psychiatric medication are for the patient (Novalis, Rojcewicz, & Peele, 1993, pp. 146-151). The ability to combine treatment strategies for the treatment of mentally ill patients is a forte of capable psychiatric clinicians and is one of the ACGME five required competencies (Cummings, 2000, p. 414).

Brief Psychotherapy Modalities. Brief Psychotherapy is a time-limited and focused form of psychotherapy that utilizes a variety of theoretical approaches. Many of the brief approaches to therapy focus on the patient's strengths and maximizing the areas of the patient's life that are working well (DeJong & Kim-Berg, 1998, p. 98; O'Hanlon, 1999, pp. 43-46). Typically, brief psychotherapy modalities are chosen because they address the presenting problems and goals for treatment of the patient in an expedient fashion. Brief therapy methods are also chosen for other reasons such as limited insurance coverage issues. Because of the focused nature of brief therapy, the goals for therapy must be concretely and clearly identified and agreed upon between the patient and the therapist (DeJong & Kim-Berg, 1998, p. 74). The therapist and the patient must continuously monitor the progress of therapy to ensure the patient's symptoms and concerns are addressed and to negotiate for the need for continued

therapy beyond the brief treatment goals if the patient's symptoms persist. Usually, the aim of brief therapy is an amelioration of patient's distressing symptoms. For example, brief therapy has been used successfully with symptoms of moderate anxiety, mild to moderate depression, substance use such as cigarette smoking or alcohol abuse/addiction, or a specific emotional stressor the patient is experiencing (Dunn, Deroo, & Rivara, 2001, pp. 1726-1727; Guthrie, et al., 2001, pp. 3-4; King, et al., 2002, p. 1; Shefler, 2000, p. 91). Generally in brief therapy, the psychotherapist takes an active and directive role in order to keep therapy on track toward the goals for relief of symptoms (AADPRT Brief Therapy Competencies, 2001, p. 1).

Outcomes research in brief therapy has identified six common fundamentals for brief therapy interactions. "These are summarized in the acronym FRAMES: feedback, responsibility, advice, menu, empathy, self-efficacy" (Miller & Rollnick, 1991, pp. 32-34). After completion of the initial assessment of the patient, effective clinicians provide "feedback" to the patient regarding the brief therapist's observations of the patient's presenting complaints. The effective clinician must then discuss with the patient the boundaries of therapy and the

"responsibility" of the patient to make decisions regarding the changes the patient is willing to undertake to work on the presented problems. The third way an effective brief therapist intervenes is by providing sound clinical "advice" as to the best strategies to work through the patient's problems. Effective brief therapists couch their professional advice with a "menu" of different measures to approach setting goals and reaching the defined goals. The effective psychotherapist presents all of these components in an "empathic" manner in order to allow the patient to feel understood and supported. The final element of the brief encounter is the therapist's provision of a hopeful and optimistic viewpoint that patients will be able to navigate the pathways toward improved mental health by depending on their own resources known as "self-efficacy" (Miller & Rollnick, 1991, pp. 32-35).

The common thread among all of the forms of treatment for mental illness is human discourse. Psychotherapeutic and psychopharmacology treatments require an empathic and skilled professional ability to communicate the diagnosis, the goals for treatment, and prognostic news to patients (Lee, Back, Block, & Stewart, 2002, p. 464). Skilled and intentional communication is key to effective treatment. In addition to communicating effectively with patients,

psychiatrists need a means to communicate to other mental health professionals using a standard, cohesive, and methodical language.

Communication in the Psychiatric Community

One of the most pivotal aspects of the treatment of any illness is a common language for physicians to use when discussing a disease process. The field of psychiatry uses a systematic classification system entitled the Diagnostic and Statistical Manual of Mental Disorders (DSM) to categorize mental illness. Originally, the DSM was created because of a "need to collect statistical information" (American Psychiatric Association [APA], 1994, p. xvii).

Later, the DSM was used by mental health providers and researchers in clinical settings. The DSM provided the explicit definitions of mental illnesses in order to promote accurate and systematic means of diagnosis. A common misperception of this classification system is that it labels individuals with mental illness. In actuality, it simply classifies the mental disorders that people have. This diagnostic classification system allows the mental health community to speak a common language with psychiatrists and allows for a systematic method of diagnosing and treating mental disorders following the medical model.

Predictors of Successful Medical Training Programs

All of the above noted substantive changes in medical education as well as the learning required for the particular forms of medical treatment called for predictable changes in the trainees and the institutions in which they train. Overtime, the study of medicine has become exceedingly complicated and multifaceted (Fishbein, 2001, p. 426). Medical training and patient care began to follow a common scientific pathway. The path to treatment of patients begins with the identification and definition of a disease including its signs and symptoms using a systematic classification system. This was followed by discernment of the cause of the disease generally referred to as etiology, which is followed by epidemiology information, and which finally ends with a recommended treatment and follow-up (Winokur & Clayton, 1986, p. ix).

Complications to this scientific approach of treatment can occur when patients present for medical care suffering from more than one illness or when the patient's pattern of symptoms reported or observed that do not follow the diagnostic criteria outlined in the medical literature (APA, 1994, p. xxii). Additionally, the fact that diseases are found within human beings with a plethora of needs in addition to the treatment of the identified illness

complicates medical training issues immensely. The component of human need along with the unpredictable nature of human interaction requires "that professionals construct the problem from the situation [as] problems do not present themselves as well formed unambiguous structures" (Cervero & Azzaretto, 1990, pp. 162-163). The ability to work within this frequently ambiguous practice setting requires educational programs that respond with training opportunities that allow the learner to explore these nebulous issues in a safe and supervised environment.

These obstacles necessitate that medical residency training programs plan for numerous areas of instruction including supervised opportunities for practice experiences as well as formal learning avenues for graduate physicians. For example, programs must plan for instruction in the science of medicine that is ever multiplying and transforming. "Psychiatric knowledge has been growing at a staggering rate" (Goldberg, 2001, p. 1).

Educational programs must also plan resident training for the care of patients who present with symptoms that are not neatly outlined in the medical literature or diagnostic classification systems. The training of residents in this area requires instruction and practice in the development of problem-solving skills. "Because professionals often

make choices about what problems to solve as well as how to solve them, this approach stresses the need to be critically aware of these choices and their implications" (Cervero & Azzaretto, 1990, p. 162). This requires enhancing the residents' ability to adapt standard treatment strategies with sound clinical judgment for problems not seen before. "In the world of education, knowledge-based decision-making is, of necessity, a blend of data driven decision-making and professional judgment" (Doyle, 2002, p. 3). Medical residency training programs must address this human factor of medicine for both the healer and the patient. This is an immensely complicated task as all humans are distinctive with unique approaches and unique needs (Schön, 1983, p. 296).

This human factor becomes the practice of the art of medicine. "The central principle of medical education advocated by Flexner was mastery of the scientific methods and its application to all dimensions of medicine, whether the bench laboratory, the bedside, or the social arena" (Engel, 1978, p. 390). Competent physicians must be skilled in the science of identifying disease, finding the appropriate treatment for the disease, knowing when to intervene in the disease process, and the artful style of sharing this information with the patient in a caring and

compassionate manner. Thus, all medical training programs must teach physicians-in-training the basic knowledge and skills of scientific methodology of medicine along with analytical thinking or reflective practice for novel presentations of medical problems. The ability to reflect upon the learning process in the moment is a skill that must be developed through strengthening of "perceptual and visionary skills" (Merriam & Caffarela, 1999, pp. 237). The resourceful training program will provide resident trainees with awareness that a combination of artful practice along with the knowledge of scientific methodology will produce a competent practice of caring for patients holistically. Effective training programs will not favor one form of efficacious treatment and practice over another.

> As medical science progresses, a tension has developed between the art of medicine, which deals with patients as individual persons, and the science itself, which focuses on objective pathology. This tension is furthered as medicine identifies itself increasingly with science. (Majeres, 2002, p. 579)

Additionally, medical education programs must teach and require the crucial professional attitudes for the successful practice of the art of medicine. The resident in training is a professional. Professionals understand that there is a base of knowledge that must be learned in

order to implement the professional knowledge into practice. Professionals must hone their skills in the art of practicing their professional field (Cervero, 1998, p. 43). Successful training programs understand that the combination of art and science play an integral role of creating a knowledgeable as well as a competent and ethical medical practioner.

> Medical education is usually considered a continuum of several overlapping processes. The first part involves mastery of the academic foundation (the science); the second involves the mastery of the mechanics (the skills); and the final process involves the integration of the first two parts and the mastery of the art of practicing medicine. (Martin, Harris, & Karg, 1985, p. 919)

The effective medical training program should model for the resident physician the art of implementing the skills and knowledge of medicine into the artful practice of medicine. Professionals must take the specific knowledge learned in their training and personalize this knowledge by the unique way they interact with patients and colleagues. This interaction becomes the art of competent professional practice (Schön, 1987, p. 13).

Assessing and measuring the competency of the graduate resident physician is an important aspect of the outcome of medical education. The assessment and measurement of

competency carries a historical origin in psychology and the behavioral sciences (Corey, 1996, p. 283).

Competency Measurement Issues

The concept of competency-based evaluation and testing incorporates a behaviorist point of reference with respect to teaching and learning. Behaviorism in its basic form lies in the capacity to observe the behavior of a life form (Carson, 1985, p. 385). The early proponents of behaviorism proposed that an animal's or a human's response to situations or events is a result of learned behavior from environmental press. In other words, the living thing is influenced by external pressure as opposed to internal pressure for action or reaction (Elias & Merriam, 1995, p. 79). Behaviorism is psychologically-based and philosophically-based upon components of Freud's ideas about determinism, Hobbes' ideas about mechanism, Bacon's ideas about empiricism, and Comte's ideas about positivism (Colp, 2000, p. 3306; Elias & Merriam, 1995, p. 80; Merriam & Caffarella, 1999, pp. 251-253; Newell, 1996, pp. 167-170). These psychological and philosophical underpinnings endorse the premise that behavior can be observed and measured scientifically and accurately in a reality-based fashion. Early behaviorists focused on the idea that psychology should only be concerned with "the objective

data of behavior, since we can't know what's going on in the mind" (Behaviorism, 2001, p. 2).

Behaviorism in Education

B. F. Skinner was a behavioral researcher who developed the principle of operant conditioning in the 1930s. His theory was developed based upon an animal learning model of reward for desired behaviors as an inducement to further learning. Skinner asserted that when the consequence of a behavior is rewarding, the behavior is reinforced and will be repeated. In the 1950s, Skinner's stance regarding reinforcing desirable behaviors was used in the educational system in the form of the Programmed Instruction Movement (Skinner, 2001, p. 1). Skinner proposed that learner behaviors could be reinforced through control of rewards and inducements to achieve desired learning behaviors (Merriam & Caffarella, 1999, p. 253). Programmed instruction is characterized by clearly defined objectives for learning with active student participation through self-paced learning. The process of programmed instruction, or self-paced learning, is straightforward. It begins with the learner, along with the instructor, defining the particular learning objectives to be accomplished. Upon completion of the learning material objective, learners then respond to teacher-initiated

queries over the information covered. Learners are provided with immediate feedback regarding the accuracy of their answers to the instructor's questions. The instructor feedback creates the behavioral reinforcement component for the learners through the provision of new knowledge regarding accurate responses (Alternative Learning Methods, 2001, p. 3).

Self-paced learning requires a great deal of instructor time and focus as frequent reinforcement is required, the learning objectives are unique to each learner, and the pace may vary from learner to learner. However, this means of instruction has had a significant effect on adult education under the auspices of competency-based education. In addition, competency-based evaluation methods have been utilized extensively to measure the outcome of self-paced learning.

Competency-Based Education

The United States Office of Education funded an adult literacy inquiry that began in 1971 entitled the Adult Performance Level (APL) study. The APL study introduced the concept of competency-based education to the field of adult basic education. The term competency-based meant that education was to be focused on achieving measurable outcomes (Elias & Merriam, 1995, p. 99). By the conclusion

of the study in 1977, approximately two thirds of the states in the United States had implemented some form of competency-based adult basic education.

The APL study identified competent adult performance levels. The first level is identified as the stage where adults "identify the capability that they should possess"; the second level identifies the "objectives derived from the goal which must be mastered"; and the final level is the "specific tasks which need to be performed as evidence that the objective has been mastered" (Elias & Merriam, 1995, p. 98). Competency-based instruction arranges learning around skills or behaviors that are characterized as necessary for successful performance. The competency elements are based upon what the learner should know and should be able to perform effectively in the evaluated topic of training. "The emphases in competency-based education are on the outcomes rather than the process of learning, on exit rather than entrance requirements, and on criterion-referenced evaluation rather than norm-referenced evaluation" (p. 94).

Typically, norm-referenced tests are used to classify students and to underscore differences among students to produce a reliable rank order range from high performers to low performers (Bond, 1996, p. 1). Whereas, in criterion-

based evaluation, the learner's performance is compared to a predetermined benchmark (Elias & Merriam, 1995, p. 94). Proponents of competency-based education posit that criterion-referenced evaluation is valuable as it promotes a sense of cooperative learning because learners can focus upon the learning objectives rather than competition for a position on a standards continuum (Anastasi, 1988, p. 102). The selection of test content and test structure is different for these two types of competency evaluation.

Competency-Based Test Construction

In norm-referenced evaluation, the test questions are selected according to how well they differentiate between the test-takers. In criterion-referenced testing, questions are chosen based upon the desired learning outcomes:

> Criterion-referenced tests include items that are directly relevant to the learning outcomes measured, without regard to whether the items can be used to discriminate among students. The goal of the criterion-referenced test is to obtain a description of the specific knowledge and skills each student can demonstrate. This information is useful for planning both group and individual instruction. (Linn & Gronlund, 2000, p. 43)

Instructional evaluators and professors of instructional technology, Shrock and Coscarelli (1998) take an analytical approach to criterion-referenced test development (pp. 275-293). They encourage employers to

develop tests that match the actual skills and competencies required to perform a specific trade task. This process will create a standardized procedure to create useful tests that evaluate the learner's ability to perform an identifiable job and begins with documentation of the test creation process to provide the legal foundation for performance evaluation. The core tasks of the job should be reviewed to ensure that the tasks mirror the actual gist of the job requirements. This list of core tasks can be used to write test questions based upon each objective needed to perform a job task. If the test is a performance-based evaluation, then a checklist of behaviors must be created. A review of the test items and objectives by experienced employees must be conducted to ensure test content. The authors then recommend piloting the test on a small sample of employees for their response along with an analysis of the results to evaluate the clarity of the questions. The final tasks of their recommendations for criterion-test creation involve setting a cut-off score; checking the test reliability by retest; training judges for acceptable performances evaluation consistency; and finally, reporting scores back to the test takers in terms of pass or fail (Shrock & Coscarelli, 1998, pp. 275-293). This form of competency testing works well with basic

education requirements and technical vocations using repetitive behavioral skills:

> Competency-based education has become popular in adult vocational education, continuing education, and adult basic education, especially through the Adult Performance Level study. Individualized learning systems and programmed instruction are more likely to supplement rather than replace traditional instruction. (Elias & Merriam, 1995, pp. 104-105)

Competency and Outcomes Measurement in Medical Education

The American Council for Graduate Medical Education (ACGME) Outcome Project's goal for United States resident medical education is an increased focus upon the documentation of outcomes of competency before allowing the specialty resident physician to complete residency training, take board examinations, and enter into independent practice. Resident physicians are tested often and rigorously throughout their medical training using traditional cognitive examinations. Many of the examinations are standardized tests that all residents must pass. Specialty training programs also have specific examinations to evaluate knowledge and skills for specialty tenets that their program's residents must pass. These examinations utilize normative items, criterion-based items, or a combination of items. All of the examinations are structured to evaluate the competency domain of

scientific, theoretical, and medical knowledge. Some of the examinations evaluate problem-based aptitudes by giving the resident diagnostic or treatment problems to solve, but the answers are typically provided in a multiple-choice format.

Residents' performance and attitudes are normally evaluated by the resident's attending physician in clinical situations with real patients. "There are significant differences between the attributes used by basic science teachers and those used by clinical teachers to evaluate students" (Jason & Westberg, 1982, p. 102). For example, a study of basic science instructors found that these educators had not thought about using the following six criteria to evaluate medical residents that are used regularly by clinical instructors:

> Demonstration of skills needed by practicing physicians; familiarity with standard references; attitudes toward scientific inquiry; capacity to deal with ambiguity and uncertainty; skills in relating to patients; skills in relating to other students and faculty. (Hillard & Westberg, 1982, p. 102)

These differences in areas of evaluation demonstrate that the evaluation of resident physicians' competence cannot end with only the use of traditional written competency examinations to measure resident physician learning. There are many areas of professional learning

and performance that deal with skills and attitude qualities that cannot be described or quantified easily with traditional knowledge assessment tools. "The secure examination is contentious because many believe that it tests only the ability to recall factual knowledge, and as such, bears little relationship to the day-to-day practice of medicine" (Norcini & Lipner, 2000, p. s68). This routine exposure to a variety of decision points regarding the treatment of patients evokes and blends knowledge and skill with an intuitive approach to decision-making:

> Every competent practioner can recognize phenomena, families of symptoms associated with a particular disease [and] for which he cannot give a reasonably accurate or complete description. In his day-to-day practice he makes innumerable judgments of quality for which he cannot state adequate criteria, and he displays skills for which he cannot state the rules and procedures. Even when he makes a conscious use of research-based theories and techniques, he is dependent on tacit recognitions, judgments, and skillful performances. (Schön, 1983, pp. 49-50)

The need for a multiple domain of competency assessment is clearly evident. "Because competence is multi-dimensional and individual assessment approaches have limitations, it is unlikely that a single approach to assessment will be adequate" (ACGME Outcomes Project, 2000, para. 11).

Complex Issues of Competency Assessment for Professionals

The evaluation of competency of resident physicians must be multi-modal and multi-faceted due to the complicated nature of the combination of the science and art requisite for medical practice. "What learning means depends upon a set of assumptions" (Mezirow, 1996, p. 158), and any measure of learning and performance is based upon what the observers' expectations are for standards of performance (Institute for International Medical Education, 2002, p. 130).

Medical educators must recognize that evaluation of the professional practice of medicine will require many types of assessments of learning and performance in addition to behavioral competency-based appraisal. This is seen clearly when the resident physician's clinical judgment for treatment is based upon fine distinctions of interpretation or problem-based decision-making (Schön, 1983, p. 170). In medicine, resident physicians must use patients' unique presentations of medical problems as the basis for decision making for the best treatment strategy. Professionals who are adept in the art and performance of skills within a defined field are able to problem solve in unique situations where the problems can be imprecise (Cervero & Azzaretto, 1990, pp. 162-163).

> The ultimate test of a professional is the ability to solve problems (or to decide that they cannot be solved), and those problems usually involve vital and deeply significant outcomes. Thus, the practioner must be psychologically prepared to live in a world of uncertainty. (Houle, 1980, p. 43)

Learning through problem solving complicates the preplanned knowledge objectives in competency-based testing. Competency-based education requires that the goals of learning be known and prearranged before beginning the learning process in order to facilitate the measurement of outcome. This static requirement may not allow for the shift of outcomes in learning (Elias & Merriam, 1995, p. 95). Conditions within residency training programs as well as the variety of patients typically treated in medical practice require competency assessments that measure a range of learning as well as measure a range of the learner's ability to modify learned information to address unique situations. This is because of the constant modifications in learning and responses required to adapt to ever-changing patient presentation, diagnostic, and treatment circumstances. "Reliable and valid outcome measures are difficult to produce in all areas of medical practice, particularly clinical education. They are even more problematic in psychiatry, where assessment of

thoughts, emotions, affects, and behavior is difficult to operationalize" (Beresin & Mellman, 2002, p. 190).

Patients come in "a series of one who must be understood in terms of the unique experiences of his life" (Erickson as cited in Lerner, 1958, p. 76). The art of medicine can be difficult to specify in terms of task inventories as different physicians will have a unique style of interacting with patients (Schön, 1983, p. 108). An individual physician-patient style may not be quantified as preferable over another relationship style if the overriding goal of interaction is met. The overriding goal of the art of medicine is the application of the physician's personal talents, wisdom, style, knowledge, and ability to interpret a specific circumstance and the ability to engage a patient in a compassionate and caring manner (Flocke, Miller, & Crabtree, 2002, pp. 3-4).

Domains of Learning

In 1956, Benjamin Bloom led a group of psychologists in the development of a classification system of knowledge, skills, and attitudes thought to be important to the processes of learning. This classification system was developed upon the assumption that abilities can be measured upon a continuum from simple to complex. An example of simple learning ability is memorization with the

goal of reciting the material back to the instructor. This can be measured easily with competency-based knowledge tests. An example of complex ability is the synthesis of multiple levels of learning and the ability to evaluate the learning material (Schwenk & Whitman, 1993, p. 15). Complex learning ability may not be readily ascertained through the use a single domain of competency-based testing. Objectives for and evaluations of professional learners can be conceptualized using Bloom's model. For the measurement of learning, tests based upon objectives have an advantage over tests based upon subject matter or task content (Learning Skills Program, 1996, pp. 1-2).

Bloom's concepts may be applicable to the field of medical education in the realm of evaluating learning and performance in a more fluid manner. "The problem-solving process associated with differential diagnosis involves the generation, modification, and rejection of diagnostic hypothesis, a procedure that is difficult to simulate with current testing procedures" (Samph & Templeton, 1979, p. 298).

Competency-based testing works well for the measurement of specific abilities and skills performance. In technical industries, the ability to perform outweighs the person's ability to think:

> In view of the advancements in technology and the need of a well-trained competent workforce in industries, the design of training programs for technicians requires a fresh approach. The focus of training programs should be on ensuring what a person can do rather than what he knows. The competency-based training units approach this problem using a very systematic and scientific approach. (Competency-based training units, 1999, p. 1)

This type of technical skills assessment can work well for some areas in the procedural fields in medical science such as the specialty of surgical medicine. However, even "the procedural fields [in medicine] also require not only the skills to carry out the procedures, but knowledge of when these procedures must be done" (Long, 2000, p. 1181). Additionally, for the measurement of physician attitudes, and the performance of these attitudes both toward patients including the attitudes of general professionalism that are non-procedural knowledge, complex measurements and assessments may be useful. "Measurement of this parameter can be a major leap in complexity from that of the earlier parameters" (Gilman, Cullen, Leist, & Craft, 2002, p. 811). Since the measurement of competency in graduate medical education is complex, reliance upon only one domain of measurement may result in a bias.

Beyond Behaviorism

"In adult education, there are well established norms differentiating between education and indoctrination" (Mezirow, 1996, p. 171). Modern humanist and constructivist educational philosophies may hold the key to addressing the development of assumptions toward these complex issues of assessment of individual knowledge, attitudes, and affects.

Humanists approach education from a developmental perspective. "The purpose of education is to develop potentials -- all the potentials -- of man as a whole" (Patterson as cited in Elias & Merriam, 1995, p. 113). The reductionist behavioral philosophy toward assessment approach flies in the face of humanist and constructivist philosophy as it can fracture learning into unconnected pieces (Yamada, Greene, Bauman, & Maskarinec, 2000, p. 647). This may lead to examination driven curriculum.

> The more we analyze, the more we feel we understand. The more we analyze, the more we feel we can control. By trying to understand everything, we may understand nothing. We analyze so much and so well that we may also destroy the vital essence and meaning of things by breaking them into pieces. (Andreasen, 2001, p. 26)

The humanist approach toward the assessment of learners takes a philosophically opposed position to behaviorist philosophy. For example, "in learning

situations as well as in therapeutic treatment, behaviorists look for changes in overt behaviors whereas humanists aim for achieving insight into problem-solving" (Wandersman as cited in Elias & Merriam, 1996, p. 115).

Malcolm Knowles was a humanist educator. He proposed that the behaviorist's focus on the learners' progression through the educational system occurring when the instructor says the learner is ready is too simplistic for adults in the educational process (Knowles, 1970, pp. 42-43). His viewpoint of adult learners is that they will learn throughout a lifetime. "Studies of the development of expertise as well as the constructivist view of learning suggest that people make judgments and review, reflect on, and change behavior, continually reconstructing relevant and useful knowledge as they interact with a situation" (Kerka, 2001, para. 4). Adult learners, specifically, medical resident trainees, must be able to be:

> Sufficiently flexible in order to understand and accept the fact that the beliefs, practice, and resources of our society change. Thus, medical education must be designed to educate the physician of today to be able to deal with the complexities of medical practice of the future. (Samph & Templeton, 1979, p. 11)

Thus, contemporary medical education must find a balance between the philosophies of the constructivist, humanist, and behavioralist approaches to determining

competency in a complex professional field. Each approach has its strengths and weaknesses and a combination of assessments may arrive at a pragmatic and holistic measurement of competency. Furthermore, "the problem-solving process is more idiosyncratic than the outcome" (Schuwirth et al., 2002, p. 926). This means that as resident physicians continue to practice and treat patients throughout residency, greater differences will be noticed between their approaches to diagnosing and recommendations for treatment although the outcomes may be the same in terms of results. Approaching the measurement of competency in multiple domains may hold the key for future prediction and outcomes research.

Issues in Competency Research

Competency Defined

Research in competency begins with addressing the definition of competency. The meaning of competence is varied and is usually influenced by those who seek to define it. For example, a business leadership-training program defines competency as "the ability to the do the job. It is made up of two components: knowledge and skill" (*Competency*, 2002, p. 2). The idea of measuring multiple components is the crux of the core issues of competency research. Current outcomes-focused research in resident

medical education must address the new requirements for competency assessment by utilizing multiple perspectives.

Another definition of competency offered by Michael Whitcomb (2002), the editor of Academic Medicine, is "to be competent means that they [residents] are able to provide medical care and/or professional services in accord with practice standards established by members of the profession and in ways that conform to the expectations of society" (p. 359). The vast preponderance of physicians who have completed residencies are competent, and it is more a matter of residency training programs documenting the competence of the graduating residents than a need for more assessments of competency (p. 359).

Whitcomb's (2002) view is that residency training programs need to "formalize what is now a largely informal process" (p. 359). This may require programs' assessment of resident competency to be documented in a multitude of ways that were not necessarily couched in terms as proof of competency in the past. "Therefore, what is needed to satisfy the legitimate concerns of the public about the competency of physicians entering practice is not for new methods for assessment of their competence, but a better system for documenting the faculty's observations" (Whitcomb, 2002, p. 360).

Competency Measured

The definitions of competency provided above generate thought about the need to measure competence both from learning (knowledge) features and competent performance (skill) aspects. "Assessment is defined as the process of collecting, synthesizing, and interpreting information to aid decision-making. The results of the assessment should allow sound inferences about what learners know, believe, and can do in defined contexts" (ACGME Outcome Project, 2000, para. 3). In other words, "what is measured is what is, or becomes, valued" (Hillard & Westberg, 1982, p. 101).

Multiple domains of competency, including the required scientific knowledge and theory and the performance of psychotherapeutic skills, are evaluated in a multi-modal fashion for the medical residents researched in this study. The multimodal competency assessments include traditional standardized tests of knowledge along with the direct observation of skills and attitudes by faculty psychotherapy experts. These multiple domains of competency require the completion of evaluation tools to quantify the performance assessment of the residents. "Competency-based assessments are defined as what doctors do in testing situations, while performance-based

assessments are defined as measures of what doctors do in practice" (Rethans et al., 2002, p. 901).

This measurement of competency in real-life settings creates a dilemma with standardization procedures as the situations and descriptions of the testing situations in practice performance are not uniform (Cervero, 1988, p. 154). Thus, additional avenues for enhanced assessment of resident competency need to be performed, such as strengthening the faculty rater's ability to be objectively and subjectively reliable through expertise and clinical judgment in real practice settings. Psychologist Erik Erikson called this form of clinical judgment "disciplined subjectivity" (Erickson as cited in Lerner, 1958, p. 74).

Training in the area of evaluation of the competency elements will need to occur for the faculty evaluators along with the provision of standardized forms for reference containing the elements and the objectives of the competencies being evaluated to standardize the assessment process. Residency-training programs must have clear objectives for the competency areas that can be measured by task performance and standards for those areas that are non-procedural and/or typically subjective outcomes. "An essential element of practice performance assessment involves combining the results of various procedures in

order to see the whole picture. This must be derived from both objective and subjective assessment, as well as a combination of quantitative and qualitative assessment procedures" (Schuwirth et al., 2002, p. 925).

Psychiatrists at Wright University moved to create competency-based outcome measures that identified resident achievement in specified core tasks; this is a behavioral approach to competency assessment research. This group suggests that "performance objectives be broken down into their smallest components: formative assessment measures as steps en route to ultimate competency" (Bienenfeld, Klykylo, & Knapp, 2000, p. 69). This group generated a list of prospective skills to be measured that were gathered from surveys of the local psychiatric community. The authors then grouped the list items and prioritized their importance in medical practice. The variables were then placed in a "selection matrix" to compare them with the curriculum provided by the training program. The result of their research was a "listing, for each graduate year, the required skills and the number of times each needed to be demonstrated" (p. 70). Resident skills were assessed by clinical faculty observation as the "primary measurement criterion" (p. 72). The researchers note "the establishment of skills defined does not imply that the

skills defined are the only elements of physician competency" (p. 73). Specifically, the performance of a task for a checklist does not guarantee competence; it only indicates completion. The study confirmed that all resident training programs will need to supplement their required performance skills checklists with other forms of evaluation including the assessment of the competent performance of preferred physician-patient associated attitudes.

"The fundamental issue in a competency-based training program or in a traditional years-in-training program is to determine whether competency has been achieved" (Long, 2000, pp. 1181-1182). Measuring competency is only as beneficial as the fundamental measurement techniques utilized. For instance, a surgical training program in New York strove to measure competency using a simulated setting with a comparison of faculty assessment of the residents' past performance. This research in competency assessment found that the simulated performance of a surgical task along with the accuracy of decision-making was efficient and correlated well with the faculty evaluations of the resident's performance over a 2-year period (Satish et al., 2001, pp. 557-561). This study reiterated the need for the subjective evaluation of performance by expert training

program faculty clinicians using sound clinical judgment of the attainment of competency goals.

Researching competency in the medical education field may be different from non-professional fields because of the progressive nature of professional development. Evaluating a professional is vastly dissimilar to evaluating a technician. A technician can be trained to perform a definite set of procedures using a definite body of knowledge. Measurement of competency occurs when the technician completes the task and can be evaluated in terms of accomplishment. For example, an electrician is a technician who performs specific tasks that can be evaluated with concrete assessment of outcome, such as, whether the light works when the electrician's job is complete. However, for professionals such as graduate resident physicians, the task of evaluation of performance is far more complex. A physician may be extremely proficient in medical skill and practice, and the patient still may die as an outcome. Observing outcomes of performance alone cannot be utilized to determine a physician's professional competency since patients will not live forever nor will they necessarily seek medical care early on in the disease process when medical problems are more likely to be successfully treated.

Furthermore, achieving and maintaining professional competency in medicine will require a lifelong endeavor by the physician. Medical training programs must provide the trainee with the breadth and depth of experience and basic sciences to begin the journey toward expert status through continuing practice experience.

> The pace at which scientific findings revolutionize the practice of medicine continues to accelerate. While it is important for undergraduate medical students to master the basic and clinical science foundations of medical practice, it may be even more important to teach students how to find and interpret medical information, form professional relationships with mentors and peers, and make a commitment to lifelong learning and professionalism. It is critical that students understand that the curricular program at any college of medicine is only the beginning of a life of study. (Wallach, Roscoe, & Bowden, 2002, p. 1169)

Physicians must continue learning past medical school and specialty residency training to stay current in medical research and technical advances for the sake of their patients and for competency of medical practice. "Continuing education enables practitioners to progress from novice to expert" (Knox, 1993, p. 275). Physicians must also continue learning beyond medical school and residency as continued medical education is required by most states in order for the renewal of the physician's medical license to practice medicine, as part of

participation in professional medical groups, or for insurance credentialing. "Physicians report spending, on average (among other activities), 50 hours per year in CME [continuing medical education] activities" (Davis et al., 1999, p. 867). The required hours of CME credits per year varies from state-to-state in the United States with a low of 25 hours per year to a high of 50 hours per year (Greene, 2000, p. 11). "The continuation of medical education after the completion of a formal training period has been an integral part of the practice of medicine since the time of Hippocrates" (Oklahoma State Board of Medical Licensure and Supervision, 1999, para. 2).

Adult education researcher, Cyril Houle (1980) posited that continuing education for professionals should be undertaken for the following reasons: "maintenance and modernization", "preparatory for change", and "induction into new responsibilities", and as a "refresher" (pp. 105-106). Typically, physician continuing medical education occurs as part of a didactic and lecture format presentation developed by professional medical groups such as a local medical society. Researchers at a continuing education department in Canada analyzed the effects of different modes of CME to study the impact of CME on physicians implementing new strategies and changing

practice performance (Davis et al., 1999, p. 869). These researchers concluded from their study that a lecture format of CME was not found to significantly change physician medical practice in the future. The researchers assert from their study findings that the largest impact on changing physician performance and competence were CME activities that "used interactive techniques such as case study, role-play or hands-on practice sessions [as they] were generally more effective changing those outcomes" (p. 870). This comes as no surprise to educators who work with adults. Adult learners benefit from and value the ability to "reflect on their own practice situations" using "experientially based methods" (Cervero, 1988, p. 159).

Resident physicians are not required to accumulate hours of CME to keep their medical licenses current because they are continuously practicing their skills in a learning environment. In addition, the reason to participate in continuing education is the desire to hone medical practice skills to an expert level through the gaining of new knowledge and by interacting with colleagues in the same specialty field.

It is important to note that becoming an expert in the provision of psychotherapy treatment is not equivalent to competence. Even if it were possible for the resident to

learn all of the information about psychiatry and psychotherapy in 4 years of training, the moment the resident graduated, the learned information would be obsolete (Ludmerer, 1985, p. 277).

> It is, of course, possible to cram more material into an ever-diminishing timeframe, but this is, inevitably, at the cost of time for the student to reflect on and absorb new information, practice new technical skills and reach comprehension of concepts and issues. (Crosbie et al., 2002, p. 6)

A training program must allow for a full range of learning and practice experiences for the graduate physician, but the provision of experiences and practice are for naught if residents do not come willing and prepared for the enormous learning undertaking ahead of them and the challenge of practicing in a profession that is constantly evolving. Residency training programs frequently use prediction studies to ascertain residents' capabilities and core personal qualities before recruiting them into a specialty-training program.

Competence Predicted

The opportunity to predict the success of a venture prior to beginning the endeavor is a valuable resource. Similar to epidemiologic studies, the ability to predict a potential problem in a given population can result in interventions to change outcomes. In medical education,

the ability to predict a trainee's capability for success can lead to enhanced abilities to recruit individuals that have the potential to benefit most from a standard residency training program.

Prediction research can also enhance a training program's ability to help those trainees who may not fare as well in a standard training program. This may be accomplished through early recognition of the potential for problems and the design of remediation interventions such as special opportunities for additional practice experience or increased one-on-one training.

Prediction Studies in Medical Education

Prediction studies are abundant in the medical field. For example, a search reviewing the past 30 years in only one medical literature site called PubMed revealed 25,700 articles using the concept of prediction. The following prediction research studies focusing upon medical education issues were chosen for review as they show the use of prediction to determine success in medical education.

The first study examined was a prediction study of students' undergraduate institution's admission requirements, which is also referred to as selectivity, on students' ability to perform successfully in medical school. This study's purpose was "to examine how well

three measures of institutional selectivity could predict medical students' performances, specifically their performances on the USMLE Step 1 and Step 2 and their final medical schools GPAs" (Blue, Gilbert, Elam, & Basco, 2000, p. 32). The study's findings confirmed that the MCAT does indicate successful performance in medical school, especially early in matriculation. The study also noted that institutional selectivity characteristics may discriminate against applicants "with other desirable characteristics who have been granted degrees from less selective undergraduate institutions" (Blue et al., 2000, p. 31). This study was a follow-up study to research done by K.J. Mitchell in 1990.

Mitchell's study reviewed the predictive value of performance data such as the Medical College Admissions Test (MCAT); scores received on the National Board of Medical Examiners (NBME) examinations parts one, two, and three; as well as information regarding the student's undergraduate educational institution's reputation for level of difficulty for successful completion of medical school. Students' undergraduate transcript data was reviewed for categorization of courses taken in order to control for grading differences across undergraduate institutions and to evaluate the institutions'

competitiveness in entrance requirements. This study also noted that the use of selectivity characteristics might discriminate against minority and disadvantaged applicants who may have graduated from large, state-sponsored colleges. Both of the studies note that since selection for medical school usually indicates the eventual practice as a physician, other areas of admissions decision should be evaluated such as "nonacademic and interview information" (Mitchell, 1990, p. 157). The authors of these two prediction studies suggest that the use of only the traditional predictors, even while highly predictive of medical school success, may not necessarily predict success in graduate medical education or competence in independent practice.

The Medical College Admissions Test's (MCAT) ability to predict success of performance on the USMLE Step 1 has also been investigated. "This study tested the hypothesis that employing MCAT scores aggregated by undergraduate institution as a measure of selectivity improves the prediction of individual students' performance on the first sitting of the United States Medical Licensing Examination Step 1 (USMLE Step 1)" (Basco, Way, Gilbert, & Hudson, 2002, p. 13). The study's independent variables were the students' undergraduate grade-point averages (GPAs) and

scores received on the three parts of the MCAT. The study data was collected from two publicly funded medical schools. The trial variables were the average MCAT scores achieved by all students between 1996 and 1999. This research used multiple regression and correlation statistical analysis. "Cross validation procedures were employed to estimate the shrinkage that results from using multiple regression for prediction and demonstrated that multiple regression results would be generalized to a similar sample of students" (p. 13). The study found moderate correlations between GPAs and individual MCAT scores, especially the verbal scores, and USMLE Step 1 scores and substantial correlations between GPAs and USMLE Step 1 scores. It confirmed that undergraduate science GPAs and MCAT scores are strong predictors of students' medical school standardized test performances. This study also cautioned against placing too much emphasis on undergraduate selectivity criteria as it may prejudice medical school selection against the recruitment of students from rural or urban underprivileged areas.

Application of Prediction Studies in Future Research

From the review of previous prediction studies of medical education, there are numerous concepts regarding competency and prediction that must be entertained when

doing research in this area. The first and foremost is a researcher's practical understanding of the role of prediction as an indicator rather the final say about a study topic in question. Additionally, prediction studies in medical education have been found to have a substantial influence over graduate physician selection procedures and the recruitment of individuals chosen to participate in the medical education process. These studies emphasized the extensive impact of the medical school selection process as those students who are not chosen will never have the opportunity to study medicine and eventually practice medicine as physicians.

This ability to influence outcome is not an effect to be taken lightly. One must present the outcome of prediction studies with the caveat that good judgment along with the assessment of other desirable factors must accompany the use of the prediction data. The matter of researcher accountability is an overriding directive of prediction or any other type of research undertaken.

An additional benefit gleaned from previous prediction research is the use of several domains of potential prediction components to provide a clearer picture of resident competence. For example, the prediction of psychiatry resident psychotherapy competence should involve

traditional standardized scientific knowledge tests along with demographic information and program-specific resident performance requirements. This varied field of potential predictors may allow for nuances of resident personal and academic attributes that have not been examined previously to determine competence in the provision of psychotherapeutic treatment.

For example, previous prediction studies in resident medical education have typically relied upon traditional methods of assessing the medical knowledge domain to predict competency in the same type of assessed domain of knowledge. These predictors of success are most likely aligned because they measure the same domain of cognitive skills and knowledge. This single domain of competency determination of knowledge may not be enough to assess the prediction of psychiatry resident competency in the provision of psychotherapeutic treatment. "All too often, easily attainable quantitative data, such as test scores and grades, are taken as infallible measures of skill levels. In reality, the best available predictors of achievement do not even approximate perfect prediction" (Koenig, Sireci, & Wiley, 1998, p. 1105).

The provision of psychotherapeutic treatment by psychiatric residents requires a strong therapeutic

alliance also known as physician-patient rapport. The creation and maintenance of an alliance or rapport with the patient is a key component of successful therapy.

> We must recognize that clinical psychiatric practice is as much an art as a science. Our primary tools are ourselves. As such, we are imperfect and often need to flounder a bit before we strike the optimal balance between intimacy and distance that is favorable for a particular patient and a particular therapist at a particular time in treatment. (Gutheil & Gabbard, 1998, p. 414)

This physician-patient therapeutic alliance depends entirely upon the resident's ability to communicate effectively with patients and to induce patients to effectively communicate their needs in return (Schön, 1983, p. 296). The prediction of competency in this type of skilled interaction with unique patients requires an assessment of several domains of knowledge, skills, and attitudes as well as potential personal attributes that graduate physicians may bring with them to the practice of psychiatry.

> Cognitive psychotherapy consists of a number of specific treatment techniques, each of which is applied in a planned and logical fashion and tailored to the individual patient. As with other psychotherapies, the cognitive therapist applies the techniques in the context of a particular kind on interpersonal relationship. The general characteristics of the therapist which facilitate the application of cognitive therapy (as well as other kinds of psychotherapies) include warmth, accurate

> empathy, and genuineness. (Beck, Rush, Shaw, & Emery, 1979, p. 45)

Predictors for these types of skills and attitudes may not be ascertained in a traditional knowledge testing situations. Rather, these types of attitudes and behaviors may be predicted by the gender or age of the resident or other types of demographic information. Conversely, these types of attitudes and behaviors may be better predicted by the number of hours and experiences the resident has had in the provision of psychotherapeutic treatment as part of the training program requirements. Likewise, these types of attitudes and behaviors may be predicted by the learning strategies of the resident. There has been a "call for studies examining other important qualities, such as integrity, interpersonal skills, capacity for caring, willingness to commit to lifelong learning, and desire to serve in underserved areas" (Koenig, Sireci, & Wiley, 1998, p. 1095). Therefore, prediction research should include three domains of potential predictors for determination of resident competency in the provision of psychotherapeutic treatment: (a) traditional, standardized testing predictors; (b) demographic information; and (c) particular training programmatic psychotherapy requirements.

CHAPTER 3

METHODS AND PROCEDURES

Introduction

The purpose of this descriptive study was to measure and relate potential predictor variables to the rank order competence of the resident physicians in a psychiatry training program and describe the relationship of the predictor variables to the demonstrated knowledge, skills, and attitudes of psychiatry resident physicians. An entire population was used for this study which included 15 psychiatry physicians in the residency training program at University of Oklahoma College of Medicine, Tulsa.

The variables used for this study were examined individually and were also examined when grouped by similar characteristics that included demographic variables, pre-training and training program variables, resident self-measurement variables, training program monitoring variables, and standardized knowledge assessment variables. The variables and the competency rank order list and group competency lists were analyzed using correlation analysis, chi-square analysis, regression analysis, and discriminant analysis. These procedures uncovered indicators and predictors for psychiatry resident physician psychotherapy competence. Some of the variables were found to be reliable

indicators for describing the participant residents' competency, and some of the variables were found to be potent predictors for describing the residents' psychotherapy competency. These indicators and predictors can be used by psychiatry resident training programs to select residents who will complete a standard training program competently in the 4 years of training. The predictors can be used with high accuracy to describe the residents currently in a training program and for prediction of resident placement in either the high degree of competency or low degree of competency groups. This study examined a relatively small number of residents in a specific program. Additional replication studies will be necessary to confirm these findings.

Design

"Research design has three purposes: (1) to provide answers to research questions, and (2) to provide a road map for conducting a study using a planned and deliberate approach that (3) controls or explains quantitative variation or qualitative observations" (McGaghie, Bordage, Crandell, & Pangaro, 2001, p. 929). This descriptive research study was designed to explore the prediction relationship among an assortment of population variables to a rank order competency list of OUCM-T psychiatry

residents. "The branch of statistics called descriptive statistics, provides us with ways to describe the characteristics of a given population by measuring each of its items and then summarizing the set of measures in various ways" (Population, 2003, p. 1).

Descriptive research describes what occurs naturally in variations of the independent variables, and a "descriptive study may be used to develop theory, identify problems with current practice, justify current practice, make judgments, or identify what others in similar situations may be doing" (Ross, 1999, p. 7). This research study required "quality observation or measurement [which] is at the heart of descriptive research" (Cashwell, 2001, para. 2).

This study identified, measured, and related potential predictors to psychiatry resident psychotherapeutic competency in a specific psychiatry resident training program. Numerous variables were analyzed for this research endeavor in order to ascertain if there were promising predictors of resident competence in the delivery of psychotherapeutic treatment. Predictors are useful tools for medical residency training programs to use for selection, recruitment, and retention of residents who will

successfully complete standard residency training requirements in a competent and appropriate manner.

Population

"A population is a group of individuals (or elements) having certain common characteristics designated by the investigator [and] the defined population is the population about which statistical inferences can be made" (Rimm, Hartz, Kalbfleisch, Anderson, & Hoffmann, 1980, p. 21). Statisticians characterize a population as the total group of study participants that interest the researcher and potentially hold the answers to the researcher's questions. Furthermore, "the critical difference between a population and a sample is that with a population our interest is to identify its characteristics" (Population, 2003, p. 1), and "by specifying these common characteristics, the population is thus defined" (Rimm, Hartz, Kalbfleisch, Anderson, & Hoffmann, 1980, p. 21).

As of January 2002, there are 125 accredited medical schools in the United States and 180 accredited psychiatry-training programs throughout the United States with a varied number of resident physician training positions or slots. For example, the University of Maryland/Sheppherd and Enoch Pratt Hospital Program has the highest number of resident training slots in the United States with 74

available slots, and the UMDN-J School of Osteopathic Medicine Program has the lowest number with no training slots available although it is an accredited program (AMA, 2002, pp. 1, 404, 1267-1269). The average number of training slots in accredited programs for general psychiatry resident training in the United States is 27 positions (Woodman & Schultz, 1999, p. 138).

The population for this study was the second through fifth program-year psychiatry resident physicians at the University of Oklahoma College of Medicine, Tulsa (OUCM-T), in the Department of Psychiatry. The first year residents were not included because psychiatry residents do not develop a panel of psychotherapy patients until their second year of training.

OUCM-T Department of Psychiatry currently has 21 residents in all post-graduate years (PGY) of training, with 14 residents in program years 2-4 available for participation in this research from the general psychiatry-training program. OUCM-T has four residents in the dual Family Medicine-Psychiatry training program with one resident available for study participation. Six graduated psychiatrists from the previous 2 years of residency training were also solicited for participation in this study, and two chose to participate. Thus, the total

number of psychiatry residents who consented to participate in this research study was 15.

A survey completed by the American Psychiatric Association (APA) (2003), performed for the academic year of 2001-2002, revealed generally fewer residents in all psychiatry accredited residency training programs than six years ago (para. 4-5). The APA asserts that this decrease is due to "program mergers, closures, and downsizing over the past few years" (para. 5). However, the total number of residents in psychiatry training programs for year 2001-2002 was 5,766, which was actually an increase of 52 residents in-training over the previous year.

The 2001-2002 APA resident survey provides the psychiatric community with a profile of the resident physicians who will be available for patient care and other important functions including the education of future psychiatrists. Demographic information is important for the tracking of resident training trends and to ensure that there will be enough psychiatrists to provide patient care in the future. Of the psychiatric residents in training for year 2001-2002, there is almost an equal distribution of males (49.9%) and females (49%) with 1.1% of the residents unidentified for gender on the survey. This ratio of males to females in psychiatry has been

consistently similar over the past 3 years in the United States with females lagging an average of 1-2% behind males (AMA, 2003, p. 2). For the year 2001-2002, 58% of the psychiatry residents in the United States identified themselves as Caucasian. The remainder of the residents surveyed for academic year 2001-2002 were as follows: 2.1%--other, 3%--American Indian/Eskimo, 4%--Pacific Islander/Hawaiian, 6.7%--black/African American, 24.6%--Asian, and the remainder did not indicate their ethnicity. Furthermore, in the year 2001-2002, 54.6% of psychiatry resident attended U.S. medicals schools, 38.6% of residents reported that they attended foreign medical schools, and the remaining 6.8% of surveyed residents did not indicate training venue (APA, 2003, pp. 2-8).

The population for this study was psychiatry residents from a specific psychiatry specialty-training program in the Department of Psychiatry at the University of Oklahoma College of Medicine in Tulsa (OUCM-T). OUMC-T currently has 21 residents in its general psychiatry and dual Family Medicine/Psychiatry Program. Of this current resident training group, the difference in gender is similar to all psychiatry residents in training in the United States with 48% females and 52% males. In addition, the total resident group is also nearly evenly split between those who

attended United States medical training (52%) and those who attended international medical training (48%).

Of this group of current residents, 15 of the 21 were eligible to participate in this competency prediction study, and 13 consented to participate. In addition to these 13, there were 6 residents who had graduated but who were eligible to participate in this competency study, and 2 agreed to participate. In this group of 15 that made up the population for this study, there was a small reversal of the slight male prevalence in overall psychiatry programs across the United States with this study being 53% female and 47% male.

The pattern for ethnicity for this study's participants was unlike the training programs surveyed for year 2001-2002. The majority of the residents in this study were Caucasian with only 20% of the participants of any other race. The resident participants ranged from ages 27 years old to 56 years old, with a mean age of 36.67 years of age (see Table 1). In the participant group of 15 psychiatry residents, two-thirds of the residents were U.S. medical graduates and one-third were foreign medical graduates.

Table 1: Frequency of Demographic Variables

Variable	Frequency	Percent
Gender		
Female	8	53.33
Male	7	46.66
Race		
Caucasian	12	80.00
Non-Caucasian	3	20.00
Age		
27	1	6.66
28	1	6.66
30	2	13.33
31	1	6.66
32	1	6.66
33	3	20.00
35	1	6.66
41	2	13.33
44	1	6.66
56	2	13.33

Residents are associated with a cohort group based on completing residency training during the same graduate year. Therefore, the residents were also examined according to the cohort to which they belonged (see Table 2). The OUCM-T residents participants are evenly distributed throughout the training program years. This reflects the Residency Review Committee recommendations for the OUCM-T psychiatry department's quota of having four residents per training year with the exception of the two resident participants that have already graduated. The actual numbers vary slightly from this quota due to transfers from other medical training programs or residents

who are on an off-cycle schedule from the typical schedule of July to June.

Table 2: Frequency of Resident Cohort Groups

Cohort Year	Frequency	Percent
2005	3	20.00
2004	5	33.33
2003	5	33.33
2002	1	6.66
2001	1	6.66

Rank Order Competency

As with all research studies that involve human participants, numerous groundwork procedures were undertaken to initiate this research endeavor. The first course of action was to obtain approval for this prediction study from the Institutional Review Boards (IRB) at the University of Oklahoma, the site of the research study, and then from Oklahoma State University. The study received an expedited review from both research Institutional Review Boards. Once approval was received from both universities, the next step was the development of a rank order list of potential resident participants from most competent to least competent.

Two OUCM-T Department of Psychiatry expert psychotherapy supervisory faculty members independently determined the residents' psychotherapy baseline competency by placing the psychiatry resident potential participants

in a rank order list from most competent with a rank of 1 to least competent with a rank of 21. The faculty member's subjective clinical judgment was used along with other available objective resident assessment information for the creation of the rank order competency list. "While there is no easy way to avoid highly subjective evaluation of these variables, decisions have to be made on the basis of available data and one's best professional judgment, in a manner similar to clinical decision-making" (Davis, 1986, p. 77).

For example, competency evaluation checklists that are completed during the resident's provision of psychotherapy treatment with patients were utilized by the faculty psychotherapy experts to complete their rank order lists. These competency ranking assessment forms focus on the psychiatry residents' live demonstration of elements of knowledge, skills, and attitudes in the provision of psychotherapeutic treatment and were developed based upon the Accreditation Council for Graduate Medical Education (ACGME) required psychotherapy competencies. Each faculty psychotherapy expert rater did not have access to the other expert rater's resident evaluation forms in order to maintain objectivity in the assessment of resident competency. Additional subjective general guidelines for

the faculty evaluators' development of the rank list included the faculty member's comfort level for referring a patient to the resident physician for psychotherapeutic treatment. The faculty raters were unaware during this ranking process of all the other potential predictor variables to be analyzed in this research study.

Upon completion of the individual faculty member's rank order listing, the two psychotherapy faculty experts met to disclose the rank lists, discuss and reconcile potential disagreements, and formulate a final rank order consensus. The potential resident participants in this research study were ranked by level of competency from 1 to 21, with 1 being the most competent and 21 being the least competent. This final consensus rank list provided the benchmark for competency criterion to analyze the effects of potential of competency predictor variables (Gay, 1987, p. 240). The research then proceeded to the next stage of the study. This entailed the presentation and the description of the research study to the potential psychiatry resident participants along with an invitation to participate.

Informed Participant Consent

The current psychiatry resident physicians were given a brief verbal description of the study by the primary

investigator along with the research protocol approved by the Institutional Review Board (IRB).

Consent to participate in the prediction study was gathered by a research coordinator in order not to unduly sway the residents' decision to take part in the research project. If the resident physicians chose to participate, they were asked to sign a consent document for the study and were given a study questionnaire to complete. The completed questionnaires and the consent forms were collected by the research coordinator and entered into a database by a participant identification number in order to blind the primary investigator to the residents' answers to the questionnaire. The description of the study, the invitation to participate, the consent form, and the study questionnaire were mailed to the physicians who had already graduated from residency training program. Once the consent forms were received, the research investigator signed off the consent and copies of the consent forms were returned to the participants as per the study protocol.

Variable Selection and Development

Each training program in psychiatry currently utilizes various assessments and particular methods of competency appraisal for the residents in training. The Accreditation Council for Graduate Medical Education (ACGME) mandates

that evaluation methods be developed that fairly assess the skills of psychiatry residents in the six general competencies as well the five psychotherapy competencies (AMA, 2002, p. 317). Since the creation of monitoring specialty boards, "evaluation has become an integral part of the continuum of medical education" (Samph & Templeton, 1979, p. 14).

The OUCM-T psychiatry training program is like other psychiatry resident training programs in its quest to fairly evaluate resident performance, learning, and competence in a comprehensive manner. The task of comprehensive resident evaluation required commitment and creativity by the OUCM-T Departmental Chairman, the Residency Program Director, the Director of Psychotherapy Education, and the other psychiatry full-time faculty. The OUCM-T Department of Psychiatry developed a variety of innovative means to evaluate its residents in the ACGME competencies including the use of the skilled clinical judgment inherent within the profession of medicine. Just as medicine is a combination of art and science so too is the evaluation of the medical professionals by the medical professional. Evaluation methods and assessments must include objective components that are standardized and subjective components that are based upon skilled and sound

clinical judgment. This is a difficult task in a complicated and complex professional field.

> A combination of the rapid expansion of scientific knowledge and the complex perspective of all-around competence has resulted in theoretical and practical difficulties for those involved in the design of programs of evaluation. A number of the more important challenges include the evaluation of skills in different areas of competence, the association of assessment with training objectives, and the use of different types of assessment. (Prescott, Norcini, McKinlay, & Rennie, 2002, p. 93)

The field of medicine requires an adept blend of knowledge, skills, and attitudes to practice competently. Measurement of this combination of art and science requires assessments that evaluate multiple domains of competence. "A much greater individualization than at present must be provided so that the whole program does not rest on a single process" (Houle, 1980, p. 12).

Therefore, three domains of variables were assessed for this research endeavor in order to determine predictors of resident competence in the provision of psychotherapy: demographic variables; training program requirement variables; and formal, standardized testing variables.

Demographic Variables

"Demography is concerned with the characterization of human populations" (Rimm, Hartz, Kalbfleisch, Anderson, & Hoffmann, 1980, p. 21). This research study of predictors

analyzed the following potential demographic variables of OUCMT-T psychiatry residents including age, gender, and ethnicity as defined by Caucasian versus non-Caucasian. Ethnicity variables were not further broken down into the various ethnic groups for this study because the population size was limited and further ethnic description may have caused individual study participant identification.

Other pertinent early scholastic and medical training variables were explored as psychotherapy competency predictors such as the physician's undergraduate college major and grade point average, the medical school attended, medical school grade point average, medical school class rank, residency training cohort, and the global faculty evaluation score on the resident's initial application to the OUCM-T residency-training program. An additional descriptive variable was evaluated for possible prediction of competency: traditional resident versus non-traditional resident. For the purpose of this study a traditional resident was defined as beginning residency training immediately following medical school graduation, and a non-traditional resident was defined as beginning residency training later in life.

Residency Training Program Variables

Training program variables were assessed as potential psychotherapy competence predictors including psychiatry program specific evaluation measures such as the resident's first program year neurology faculty evaluation score, global mock oral board scores, Psychotherapy Grand Rounds case presentation scores, and the resident's personal learning strategy as determined by the ATLAS. Additional potential training program variables examined were the residents' documented number of hours of psychotherapy treatment of patients, the number of live faculty supervised psychotherapy sessions, and the number of hours of supervision received from the residents' individual psychotherapy supervisor. The final potential training program variable is the resident's actual or projected year for training completion to ascertain the potential effects of cohort group variables.

Standardized Test Variables

In addition to demographic and program specific variables, formal standardized examination scores were considered. These standardized testing variables included resident scores received on the Medical College Admission Test (MCAT); the United States Medical Licensing Examination (USMLE) scores on Steps 1, 2, and 3; and the

Psychiatry Resident In-Training Examination (PRITE) overall global psychiatry and neurology scores, and subcategory scores.

The Medical College Admission Test. The MCAT is taken by the potential medical student in anticipation of application to medical school. The MCAT is designed as a prediction examination for students' potential for success in medical education (Mitchell, Haynes, & Koenig, 1994, pp. 394-395). Examinations used for prediction purposes should reflect a high correlation between the skills needed for a profession and the skills examined in the measurement tool. "In predictive validity, we assess the operationalization's ability to predict something it should theoretically be able to predict" (Trochim, 2000, p. 3). A high correlation between prediction and actual performance would provide confirmation of the tool's prognostic validity.

> The MCAT assesses mastery of basic concepts in biology, chemistry (general and organic), and physics; facility with problem solving and critical thinking; and writing skills. The skills and concepts tested by the MCAT are those identified by physicians and medical educators as prerequisite for the practice of medicine. (AAMC, 2003, p. 3)

Additional research regarding the predictive validity of the MCAT evaluated the attrition rate of students once they were admitted to medical school. "The definition of

aptitude for medical education embodied in successive versions of the MCAT has certainly met the pragmatic standard by achieving a nearly zero percent rate of attrition for academic reasons" (McGaghie, 2002, p. 1090).

The MCAT consists of four sections. There are 77 questions in the physical sciences section, 60 questions in the verbal reasoning section, 77 questions in the biological sciences section, and 2 questions in the writing sample section of the MCAT. Four raw scores are generated using the sum of the correct answers provided; one for each section of the examination. There is no penalty for guessing at answers to the multiple-choice questions. The raw scores are converted to a 15-point scale to reduce inconsistencies from test versions (AAMC, 2003, pp. 4, 11-12). "The 15-point scale tends to provide a more stable and accurate assessment of your abilities, since two candidates would be expected to get the same scaled score, even though there might be a slight difference in their raw scores" (AAMC, 2003, p. 12).

Another study that examined the predictive validity of the MCAT described potential errors when performing prediction studies. The study performed by Koenig, Sireci, and Wiley (1998) found that the MCAT is a good predictor of medical school success (pp. 1105-1106). These researchers

also noted that there were some prediction errors that occurred from the MCAT as well. The study found MCAT errors in overprediction and underprediction based upon the examinee's ethnicity (p. 1095). The authors noted that extensive efforts are made to ensure that the MCAT is free of bias by use of examination item contributors of diverse ethnic backgrounds along with a "sensitivity review" and field-testing. However, the researchers found ethnic test bias defined as a "certain population consistently performs better (or worse) than predicted from the equation" (p. 1096). The researchers defined underprediction as the population performing better than predicted and overprediction as the population performing less well than predicted. "The results of the study are similar to findings from other admission testing programs, specifically, that the performances of minority groups tend to be overpredicted and the performances of nonminority groups tend to be underpredicted" (Koenig, Sireci, & Wiley, 1998, p. 1104).

The United States Medical Licensing Examination. The United States Medical Licensing Examination (USMLE) is a three step, multiple-choice examination that must be successfully passed by all physicians who desire to be licensed to practice medicine in the United States

(O'Donnell, Obenshain, & Erdmann, 1993, p. 734). The chronicle of the USLME began as a debate about licensing requirements for physicians as early as 1902, but no organizing body was in place for the formation of a licensing examination until the National Board of Medical Examiners (NBME) was created by the American Medical Association (AMA) (NBME, 2001, p. 1). The NBME administered the United States physician licensing examinations until 1990. The management of physician licensing examinations changed when the NBME and the Federation of the State Medical Boards (FSMB) joined to create one oversight body. These governing bodies appointed the USMLE as the sole complex examination for U.S. physician medical licensure (NBME, 2001, p. 5). The USMLE currently continues to be jointly sponsored by the FSMB and the NBME.

The USMLE three-step examination is rigorous and comprehensive in nature with one step of the examination building upon the previous step of the examination. Each step is complementary to the other steps, and no one step can be the sole measurement of competency for physician medical licensure.

The USMLE Step 1 was first administered in 1992 and is the Basic Medical Science Examination. This portion of the

licensing process necessitates an eight-hour testing session. The Step 1 examination investigates the physician's grasp of the medical sciences including health and disease models along with treatment strategies. "The Step 1 examination seeks not only to test the student's fund of knowledge, but also the student's ability to interpret data, to identify gross and microscopic pathologic and normal specimens, and to solve clinical problems through the application of basic science principles" (Simon, Volkan, Hamann, Duffey, & Fletcher, 2002, p. 535). USMLE Step 1 also tests the physician's ability to understand the basic tenets of scientific methodology in order to generalize this knowledge for future learning. The USMLE Step 1:

> Covers content related to the traditionally defined disciplines of anatomy, behavioral sciences, biochemistry, microbiology, pathology, pharmacology, and physiology, as well as to interdisciplinary areas including genetics, aging, immunology, nutrition, and molecular and cell biology. (USMLE Step 1, 2003a, p. 4)

The USMLE Step 2 is the Clinical Science Examination and was also first introduced in 1992. Step 2 is administered in a one session nine-hour testing period. Step 2 evaluates the use of medical sciences and preventive care strategies in the provision of patient care. This

examination ensures that the physician understands the basis for clinical practice decisions in a comprehensive and competent manner. The USMLE Step 2:

> Is constructed from an integrated content outline that organizes clinical science material along two dimensions. The first section deals with normal growth and development, basic concepts, and general principles. The remaining sections deal with individual disorders [and] physician tasks, promoting preventive medicine and health maintenance, encompasses the assessment of risk factors, appreciation of epidemiologic data, and the application of primary and secondary preventive measures [along with an] understanding of mechanisms of disease, establishing a diagnosis, [and] applying principles of disease management. (USMLE Step 2, 2003b, pp. 3-4)

The USMLE Step 3 is the examination that assesses whether the physician can employ the biological and clinical sciences for use in treating patients at medical outpatient settings. Step 3 is a 16-hour exam that is split into two days of testing and was first administered in 1994 (FSMB, 2003c, para. 5). The Step 3 examination evaluates the physician's ability to problem-solve hypothetical clinical scenarios in order to assess the physician's ability to practice medicine independently (FSMB & NBME, 2003c, p. 2). The USMLE Step 3:

> Emphasizes selected physician tasks, namely evaluating severity of patient problems and managing therapy. Assessment of clinical judgment will be prominent. Test items are patient-centered [and] pose action-related challenges that require clinical decisions or judgment.

> Emphasis is on ambulatory patient encounters; however, in-patient encounters of significant complexity and reflecting contemporary trends also are represented. (USMLE Step 3, 2003c, p. 4)

In short, "the USMLE assesses the physician's ability to apply knowledge, concepts, and principles that are important in health and disease and constitute the basis of safe and effective patient care" (FSMB & NBME, 2003, p. 1). The USMLE test series is designed to be the "single uniform pathway to physician licensure" (O'Donnell, Obenshain, & Erdmann, 1993, p. 734). However, residency-training programs have used the USMLE examinations for additional non-licensing reasons. The USMLE has been used "for the evaluation of the examinees' level of academic achievement, for the evaluation of educational programs the examinees have experienced, and for the selection of examinees into residency programs" (O'Donnell, Obenshain, Erdmann, 1993, p. 734).

Researchers O'Donnell, Obenshain, and Erdmann (1993) examined the reliability of the USMLE along with the wisdom of non-licensing uses of the USMLE Steps 1 and 2 as noted above (p. 734). These researchers posited that in order to use an examination for purposes other than what was initially intended, the standardized examination must be clearly understood in terms of statistical significance and

application. The researchers discussed speed versus power tests and noted that the USMLE Step tests are power examinations. This means that the examination questions are presented from easiest to most difficult. The purpose of the power examination is to determine the examinee's ability, which is dependent upon the difficulty of the test item. In addition, these researchers noted that the USMLE examination questions are randomly distributed with no grouping of like subjects. The researchers note that this causes the examination to be more difficult as "the examinee must change his or her mindset from question to question and does not have the advantage of cues frequently suggested by questions on the same topic" (p. 737).

At the time of their research, the Step 3 portion of the USMLE had not yet been released; however, the authors offered reliability data for Steps 1 and 2. They report a "reliability coefficient that exceeds .95, which is generally considered more than adequate for individual decisions" (O'Donnell, Obenshain, Erdmann, 1993, p. 734). These researchers warn however, that training programs should actually review the test and its questions for a better evaluation of the residents if they are going to recruit them based upon USMLE test scores. These investigators assert that in order to have an appreciation

for the types of information required of the test-takers, an actual review of the examination questions must be completed.

> Reading about the test and learning about its characteristics and specifications and then making decisions on those bases is much like a physician reaching a diagnosis and prescribing a treatment plan after reading the presenting complaint and the lab workup, but never personally seeing the patient. (p. 739)

Another group of researchers reviewed the performance of medicals students and their performance on USMLE Step 2. These researchers found "this study provides support for the validity of Step 2 scores as a measure of cognitive aspects of clinical sciences. The relationships between school-based ratings and Step 2 scores are uniformly positive" (Case, Ripkey, & Swanson, 1996, p. s32).

The Psychiatry Resident In-Training Examination. The Psychiatry Resident In-Training Examination (PRITE) was created in 1978, initiated in 1979, and requires two and one-half hours to complete each section (ACP, 2002, para. 3; Webb, Juul, Reynolds, Ruiz, Ruiz, Scheiber, et al., 1996, p. 831). The PRITE consists of 300 items and is divided into two parts that are typically completed at two separate examination settings.

> The primary objectives of the PRITE offered by the American College of Psychiatrists, are to provide an assessment of knowledge base in the

> clinical science of psychiatry and to provide educationally useful feedback to individuals and groups in the form of comparisons with peers in specific areas of knowledge. (ACP, 2002b, para. 12)

There are 14 content areas in the PRITE: 53 questions in the global neurology section and 247 global psychiatry questions which break down into subcategories as follows: growth and development--22 questions; adult psychopathology--39 questions; emergency psychiatry--15 questions; behavioral science and social psychiatry--21 questions; psychosocial therapies--22 questions; somatic treatment methods--38 questions; patient evaluation and treatment selection--21 questions; consultation and liaison psychiatry--14 questions; child psychiatry--22 questions; alcoholism and substance abuse--21 questions, and the final section labeled miscellaneous--12 questions (ACP, 2002, para. 12).

Upon completion of both parts of the examination, the residents receive their scores as well as the answers to the questions along with answer explanations. The answers and explanations can be provided because the PRITE is a formative evaluation, and there is no pass/fail set. The PRITE question bank does not need to be protected as in summative examinations. The PRITE is designed to provide

residents and training programs with the residents' strong points and weak points before completion of residency training (Webb et al., 1996, p. 831).

The residents' raw PRITE scores are converted to standard scores. The standard scores are then scaled with a mean of 500 and a standard deviation of 100. "Standard scores have several advantages over raw scores. It is not necessary to know the mean raw score and standard deviation for the total group to place an examinee's score in the context of the performance of the total group" (ACP, 2002, pp. 10-12).

Two examination groups were instituted to generate scoring reports. One group is a norm group, which includes all general psychiatry for the first through fifth year residents. The other group is the peer group, which is used to calculate percentile rank scores for residents in similar years of training (ACP, 2002, p. 7).

The reliability and validity of the PRITE has been documented and the PRITE has well-established construct validity (Woodman & Schultz, 1999, pp. 137-138, 140). Woodman and Schultz's study of the correlation between faculty evaluations of performance and the PRITE found that there is a strong correlation between them. Criterion validity was supported by their research as well with

Pearson correlations of "0.89 for the PGY-1 group, for the PGY-2 group correlation equals 0.87, in the PGY-3 group correlation equals 0.82, and PGY-4 and -5 groups, the correlation equals 0.85" (p. 138).

The Brief Questionnaire Instrument

One final area of competency rank to predictor variable assessment was the completion of a brief questionnaire by the participants. Researchers chose particular instruments as they can provide information about the issue being evaluated by the researcher in a structured and purposeful manner (Gay & Airasian, 2000, p. 145). This questionnaire was a newly created instrument that was specifically produced for this research study. A total of five questions were asked of the resident participants. "The key word in questionnaire construction is relevance" (Bailey, 1994, p. 108).

The first two questions asked for pieces of information that were unable to be obtained from the residents' training records: the resident's overall score on the MCAT and the participant's undergraduate grade point average. These two items are not generally required as part of the documents requested during the residency recruitment process as they occur early in the potential physician's undergraduate education. These scores were

chosen for assessment as potential predictors of psychotherapy competence as they have been researched and are accepted as valid and reliable predictors of potential for medical training success in previous prediction studies (Basco, Way, Gilbert, & Hudson, 2002; Koenig, Sireci, & Wiley, 1998; Shen & Comrey, 1997; Mitchell, Haynes, & Koenig, 1994). "Undergraduate college grades and MCAT scores forecast medical school performance independently, but their effectiveness is increased when they are used together" (McGaghie, 2002, p. 1089). This current research examined each of these variables as predictors of competent psychotherapeutic treatment by the resident participants.

The third question on the questionnaire asked the resident to perform a self-rating of competency using a 1 to 10 scale, where 1 equaled "no competency" in psychotherapy treatment provision and 10 equaled "highly competent" psychotherapy provider. This question was asked based upon previous research validating the importance of self-measurement as a ranking tool for competency in the provision of patient care as well as the competent performance of the metacognitive task of self-evaluation (Regehr, Hodges, Tiberius, & Lofchy, 1996, p. s52). Additional research in self-evaluation has been conducted and established that "subjects who had the highest scores

underestimated their abilities [and] those in the middle quartiles were generally accurate [and those] people in the lowest quartile greatly overestimated their abilities" (Hodges, Regehr, & Martin, 2001, pp. s87-s89). These researchers were performing a follow-up study to one done by Kruger and Dunning (1999) that evaluated multiple domains of learning and aptitude and found that, typically, learners who are performing poorly also perform poorly in self-monitoring activities (pp. 1121-1134). Both of these studies used expert rank lists for comparison purposes to evaluate the residents' ability to self-assess competence. Research in the validity of self-evaluation generally has been scarce in the health professions (Gordon, 1991, pp. 762-769). Researchers propose a variety of reasons for this deficit in the validation of learners' ability to accurately perform self-assessments. One assumption of self-assessment researchers is that "bright, insightful learners are assumed to know what they know and to know how well they perform" (p. 768). The second assumption asserts "self-assessment is assumed valid because trainees do learn self-regulated professional behaviors under supervisors" (p. 768). The third assumption proposed by researchers is that "self-assessment is a skill, and will remain undeveloped unless explicitly attended to" (p. 768). This

current research study also evaluated the resident participants' ability to self-assess competence successfully and in accordance with the expert's rank list of competence.

The final two questions on the research questionnaire asked the residents to answer questions regarding personal attitudes toward psychotherapeutic treatment. These questions used a five-point Likert scale ranging from one equals strongly disagree to five equals strongly agree. The Likert technique was developed in order to "increase the variability in possible scores by coding for strongly agree to strongly disagree instead of agree and disagree" (Bailey, 1994, p. 353). The first question was asked to measure attitude toward psychotherapy as a useful and valuable psychiatric treatment in general psychiatric practice. The second attitude question inquired as to whether the resident thought that psychotherapeutic treatment should personally be provided by the resident participant. These questions were posed in order to ascertain resident attitude toward this form of treatment in psychiatric practice. Attitude toward psychotherapeutic therapies may be potent predictors of competency in the performance of this mental illness treatment.

The attitudes and values of physicians are important factors in the implementation of certain treatment strategies and subsequent prediction of competency in that treatment strategy (Gabbard, 2001, pp. 1-3). Furthermore, researchers Wear and Castellani (2000) report that if medical professionals are taught that only medical treatments that spring from empirically tested medical science are valid, they may have misgivings about non-objective forms of treatment such as psychotherapeutic care or other thorny professional qualities that are difficult to quantify with basic experimental studies (p. 605). Medical practioners attempting to treat patients using only clinical objectivity which often results in ensuing failure in treatment, may lead medical professionals to underestimate the influence of their personal attitudes upon the treatment process (Wear & Castellani, 2000, pp. 605-607). Other researchers note that further studies must be done to determine physician attitudes to assist with recruitment of humanist, empathic physicians or for modifications needed in training curriculum to address physician attitudes toward treatment strategies and patients under their care (Markakis, Beckman, Suchman, & Frankel, 2000, pp. 142-143; Rogers & Coutts, 2000, p. s76).

These various research endeavors noted above support the construct validity of the questionnaire developed for this study as "the hypotheses were supported in other constructs through content analysis of the documents" (Bailey, 1994, p. 318) and construct validity can be defined as the degree to which a test measures some theoretical construct. A measure of construct validity examines whether the test or questionnaire correlates with other tests as a measure of the concepts demonstrated (Trochim, 2002, p. 1). In conclusion, "the chief goal of questionnaire construction is to construct an instrument that will not only minimize non-response but that will also ensure that the information collected is complete, valid, and reliable" (Bailey, 1994, p. 146).

Data Management and Analysis

This was a quantitative study that utilized statistical analysis to identify and display predictors of psychotherapy competence. Data is collected in a quantitative study in order to answer a researcher's interests about a particular issue or topic (Gay & Airasian, 2000, p. 11).

Resident files were accessed in order to collect the data on each resident who agreed to participate in the study. Most of the information regarding the study

variables collected was contained as part of a standard residency-training file. A data abstract form was created with all of the predictor variables listed. Once all of the potential variable information was collected on each resident participant, all of the data was entered into an Excel spreadsheet for data management and for use in statistical analysis. "Statistics is the science of obtaining, synthesizing, predicting, and drawing inferences from data [and] if multiple data are involved, we study the measures of interaction among the variables" (Rusin, 2001, p. 1).

Statistical Analysis

An important component of any research endeavor is the concept of whether the study is valid. In other words, is the study statistically "measuring what it was intended to measure [and this] question may be even more illuminating if we adapt it to inquire, is it measuring the kind of truth we hoped to measure" (Winter, 2000, p. 9). This research study was undertaken with the goal of identifying potential predictors of OUCM-T psychiatry resident competency in the provision of psychotherapy treatment with patients.

This study required the investigator to examine the predictor variables to determine if interrelations were

present between the rank order list of competency and a group high and low rank list of resident competence using various statistical analyses. "Statistics is just one of the many subdivisions of mathematics. Mathematics is a language with all its symbols and syntax. Statistics in a sense is a dialect of this language" (Rimm, Hartz, Kalbfleisch, Anderson, & Hoffmann, 1980, p. 4).

Because of the limited size of the population to be studied, the effect of variables as predictors was evaluated using a cross tabulation format and various statistical techniques. "Bivariate presentation places two variables together in a single table in such a way that their interrelations can be examined. These tables are called contingency tables or cross-tabs" (Bailey, 1994, p. 381). In addition to these tables, the statistical procedures of correlations, regression, and discriminant analysis were used to examine the relationship of the variables either individually or simultaneously with the competency rank listing.

CHAPTER 4

FINDINGS

Resident Rank Order List

The resident participants were ranked from most competent to least competent. A rank of 1 was equal to the most competent rank placement on the list. A rank of 15 was equal to the least competent placement on the list. The ranking was completed by two full-time psychiatry faculty members who supervise and teach psychotherapy to the resident physicians in the training program. These faculty psychotherapy supervisors are familiar with the residents' skills as psychotherapists through regular weekly supervision and live supervision of the residents' care of patients. The faculty used evaluation forms from live supervision sessions as well as expert clinical judgment for placing the residents in a rank order competency list.

The rank lists were completed by each faculty member individually and to check for inter-rater reliability, first the two scores of the faculty experts were correlated. The faculty's number rank was exact for the first five residents on the list and for the bottom four residents on the list. The faculty's ranking for the middle section of the rank list was not as close in match

for the exact number for rank position of the resident participants.

The scores of each faculty member were then correlated with the composite score. This moderate correlation (r = .65) indicates a high level of agreement between the raters that was not due to chance (p = .002) and suggests that the rank list was a credible method to use for generating a list of the current group of residents from most competent to least competent.

Resident Premedical and Medical Education

The resident physicians had a variety of majors in their pre-medical and medical training (see Table 3). For their pre-medical matriculation, 40% of the resident participants majored in studies that were non-science related. The second major noted most frequently for undergraduate study was biology, which is a science major and is a typical major of many students contemplating attending medical school. Only one resident physician participant trained at an osteopathic medical college (see Table 3). Currently, osteopathic medical training differs very little from allopathic training in the instruction of residents for the treatment of a variety of medical disorders.

Table 3: Frequency of Early Training Variables

Variable	Frequency	Percent
Undergraduate Major		
Biology	5	33.33
Physical Science	2	13.33
Psychology	3	20.00
Other	6	40.00
Medical Training		
Allopathic	14	93.33
Osteopathic	1	6.66
Medical School		
United States	10	66.66
International	5	33.33
First Year Residency		
Psychiatry	11	73.33
Family Practice	1	6.66
Internal Med	1	6.66
Family Practice & Psychiatry	2	13.33
Start of Residency		
Traditional	8	53.33
Non-Traditional	7	46.66

One difference between the two training venues is that osteopathic and allopathic medical doctors have different licensing boards. Another identifiable difference is that osteopathic physicians are trained with a specialized focus on the learning of spinal manipulation for the treatment of spinal disorders. In addition, osteopathic physicians are generally trained as general practioners for primary care provision in rural areas as opposed to allopathic physicians who are trained in many different specialties with applicability in urban or rural areas.

Two-thirds of the resident participants graduated from United States medical schools and one-third of the resident

participants attended international medical schools (see Table 3). There are approximately 1,600 medical schools outside of the United States and Canada, "each with varying educational standards and curricula" (ECFMG, 2002, para. 1). Graduates from foreign medical schools must take additional examinations in addition to the United States Medical Licensing Examination (USMLE). These additional examinations are accredited by the Educational Commission for Foreign Medical Graduates (ECFMG). The ECFMG "assures directors of ACGME [Accreditation Council for Graduate Medical Education]-accredited residency and fellow-ship programs, and the people of the United States, that international medical graduates have met standards of eligibility required to enter such programs" (para. 5).

The Education Commission for Foreign Medical Graduates' examinations includes a language proficiency test and a clinical skills assessment to certify that the international medical graduate is ready to enter a residency in the United States (para. 1). In addition, the international medical graduates are required to take the USMLE Steps 1-3, but they are not required to take the Medical College Admissions Test (MCAT) as a prerequisite entrance requirement to a foreign medical school. International graduates usually have not attended

universities that utilize an evaluation system that uses letter grades that are typically used in the U.S. medical college system. Most foreign medical school graduates are provided with a listing of courses taken and a scoring system of points for each class completed upon graduation along with their ECFMG certification when they apply for residency training.

Some of the resident physician participants began their residency training in another specialty, or they completed training in another specialty before returning for additional specialty training in psychiatry (see Table 3). However, for slightly over three-fourths of the participants, the specialty of psychiatry was their first residency training experience (see Table 3).

Not all residents start residency training after medical school. The participant group was almost evenly split between traditional residents (53.3%), and non-traditional residents (46.7%). Traditional residents are those residents who began residency immediately following medical school. Non-traditional residents are those who began their residency training later in life or as a second medical career (see Table 3).

Achievement in Pre-Residency Training

The residents were high achievers with little or no variation in their performance on pre-medical tests such as the Medical College Admission Test (MCAT). The MCAT is a test used to predict medical school success. On the MCAT, all residents participants but one scored in the 30s overall which is an average score of 10 on each examination section. The scores received by the resident participants are consistent with the average scores for pre-medical students attending OUCM-T. The average individual score is approximately 9.6 on the breakdown of scores of students attending OUCM-T.

When students are in their fourth year of medical college, they need to begin to address residency training. Typically, by early fall of their senior year, medical students begin to apply for residency training at various programs across the U.S. Frequently, students visit the residency programs of interest and then complete an interview process where they meet their potential resident colleagues and potential faculty members.

In the department of psychiatry, at the University of Oklahoma College of Medicine, Tulsa (OUCM-T), students who have solid academic standing in medical school, who have passing USMLE scores, and who have well-written personal

statements on their applications are invited to interview with the faculty and residents for a residency position. Frequently, the interview begins in the morning with the applicant meeting with each of the faculty members individually. After a round of interviews, the resident applicant is given a tour of the campus. Typically, the Chief Resident and several other residents with varied years of training escort the resident candidate to lunch to discuss the program's educational opportunities. The Chief resident is a senior level resident who is elected by the faculty and the residents to act as a liaison between the residents and the faculty.

Throughout the rest of the day, the candidate is able to tour the individual training sites. The applicant typically finishes the interviewing process by interviewing with other members of the faculty not seen in the morning or with individual volunteer faculty members in the community. All faculty member interviewers and resident physician interviewers are asked to complete an evaluation form for the applicant. The score from the evaluations are compiled for use in decision-making for potential resident selection. The rating form uses a five-point Likert scale with a score of five as an outstanding evaluation and a score of one as a poor evaluation. The applicants are

rated on 9 items: (a) professional demeanor and appearance; (b) compatibility with psychiatry; (c) affinity to Oklahoma; (d) emotional maturity; (e) interpersonal skills; (f) communication skills; (g) willingness to learn and apply knowledge, (h) ethical behavior; and (i) competency as evidenced by medical school transcripts, board scores, and letters of recommendation.

When the interviewing process is complete, all of the faculty members meet to evaluate the rating scores for the applicants and to develop a rank list. The ranking process is generally based upon the faculty's determination of which candidates are most desirable and who would be potentially benefit from and finish a standard training program. In addition, this ranking process ensures equability between medical training programs across the country through the use of a complicated matching system. In the spring of the students' fourth year, the match list is revealed, and training programs and students find out who will be working together the following academic year.

The residents participating in this research scored a mean of 4.4 on the five-point Likert scale with a standard deviation of .54 and with a scoring range of 3.6-5.0 on their initial interview evaluations. This indicates that most of the residents invited to interview at OUCM-T are

top candidates and that there is very little variance between the resident candidates. However, not all the resident participants have an interview score. For example, some residents transferred to OUCM-T from other training programs. This means that they were accepted into the residency training program outside of the match system that is usually used to assign medical students to residency training programs. Other residents joined the program by what is referred to as "scramble". When the residency match results come out in the spring of the year academic year, some programs find that not all their open training slots were filled, and some students find out that they did not match with the residency programs of their choosing. The day the match results are revealed is called scramble day where all the unmatched programs and unmatched students scramble to find one another. This scramble process assists residency programs with filling all of their allowed training slots and allows medical students another chance to match with a residency training program.

Standardized Knowledge Examinations

Medical students take the United States Medical Licensing Examination (USMLE) Steps 1-2 in their last years of medical training and before the commencement of their residency training. USMLE Step 3 can be taken after

completing 1 year of residency training. The USMLE scores are reported with a three-digit and a two-digit score. "On the three digit scale, most scores fall between 160 and 240. The mean score for first time examinees from accredited medical schools in the U.S. is in the range of 200-220, and the standard deviation is approximately 20" (FSMB & NBME, 2002, para. 2). The passing two digit score for the USMLE is set at 75. The two digit score is produced from the three digit score and was created because of certain medical licensing requirements that quote the score of 75 as a required passing score in order to become eligible for residency and medical licensing (para. 3). The residents' scores for all three steps of this licensing examination were evenly distributed throughout the range of results with three-digit and two-digit means that were similar to those of other U.S. medical school graduates (see Table 4).

Table 4: Average of United States Medical Licensing Examination Scores

Variable	Mean	SD	Range
Step-1: Three-digit score	203.3	22.7	176-245
Step-1: Two-digit score	82.7	6.9	75-96
Step-2: three-digit score	198.5	24.6	174-252
Step-2: Two-digit score	80.9	6.2	75-95
Step-3: Three-digit score	209.0	16.5	191-252
Step-3: Two-digit score	83.5	4.5	78-95

The Psychiatry Resident In-Training Examination (PRITE) is typically given in the fall of each year of training. The PRITE assessment is presented to the OUCM-T psychiatry department as group scores, and the residents receive their individual scores as raw scores, as scores compared with their colleagues in the same program-training year, and as scores compared with all U.S. psychiatry residents (see Table 5). The raw scores are defined as the number items answered correctly by the examinee (ACP, 2002, p. 30).

For analysis of the PRITE knowledge assessment, two groups were defined in order to produce the scoring reports. One group was defined as the norm group and "includes all general psychiatry residents plus first and second year child psychiatry residents" (ACP, 2002, p. 7). The second group called the peer group was developed to calculate percentile ranks based upon each program year of training. "Memberships in the norm group and peer groups were restricted to U.S. citizens and excluded examinees that took the examination under non-standardized conditions" (p. 7). It is important to note that subtests contain a different number of items and therefore the subscores cannot be used to compare one subscore to another to analyze resident aptitude. In this study, it is also

important to note that trends observed among the scores of the participants and the analysis groups are difficult to interpret as different cohort groups were combined and analyzed for all four years of the PRITE scores examined.

Table 5: Mean of PRITE Scores by Program Year

PRITE	Raw Scores		Program Year		All U.S. Res.	
	Mean	SD	Mean	SD	Mean	SD
Program Year One						
Global Psych.	147.50	18.48	44.58	25.57	23.08	22.56
Global Neuro.	32.08	3.34	44.92	23.22	33.75	23.22
Growth & Devel.	12.58	1.98	50.83	24.80	36.42	21.50
Adult Psychopa.	25.25	5.05	45.33	32.46	31.50	29.95
Emergency	9.08	2.61	33.75	27.35	22.58	22.33
Behavioral Sci.	12.75	2.52	41.83	25.54	32.08	24.06
Psychosocial	12.67	1.97	37.92	22.84	23.42	17.61
Somatic	23.16	4.59	44.50	24.11	23.00	24.36
Eval./Treatment	12.08	2.23	35.83	18.70	18.83	10.93
Consult - Lia.	9.50	2.07	44.75	32.72	32.42	28.87
Child Psych.	12.75	2.52	47.00	28.42	34.25	25.49
Alc./Sub. Abuse	11.25	3.11	38.83	29.55	25.33	25.85
Misc.	6.41	2.68	38.83	30.08	28.25	26.91
Program Year Two						
Global Psych.	166.79	19.82	50.57	25.68	48.50	22.77
Global Neuro.	33.64	7.21	46.50	29.62	46.64	28.96
Growth & Devel.	13.29	3.99	49.00	31.41	47.64	29.98
Adult Psychopa.	27.93	3.79	46.93	29.93	45.43	27.93
Emergency	9.93	2.23	32.43	27.44	32.00	27.14
Behavioral Sci.	13.5	3.16	48.86	28.01	48.50	27.57
Psychosocial	14.43	2.65	38.21	28.87	37.21	27.50
Somatic	27.14	4.02	51.93	26.91	50.29	22.89
Eval./Treatment	13.79	2.19	35.21	27.04	35.29	26.05
Consult - Lia.	10.57	1.87	44.71	32.06	44.83	31.05
Child Psych.	15.43	1.55	61.36	22.01	58.93	20.01
Alc./Sub.Abuse	13.07	2.43	37.00	23.41	37.43	22.93
Misc.	7.71	2.13	38.93	28.49	38.57	27.56

Program Year Three						
Global Psych.	173.91	17.22	47.58	27.23	60.25	25.48
Global Neuro.	34.42	3.34	54.50	20.35	59.67	19.44
Growth & Devel.	14.17	2.98	42.08	32.95	47.83	32.15
Adult Psychopa.	28.00	3.67	43.67	29.96	52.00	30.66
Emergency	10.42	1.31	28.08	22.25	34.75	24.73
Behavioral Sci.	12.33	2.87	36.75	29.95	40.92	29.72
Psychosocial	16.50	2.32	36.75	29.95	40.92	29.72
Somatic	29.67	2.50	56.17	20.02	68.58	17.81
Eval./Treatment	14.92	2.19	56.17	20.02	68.58	17.81
Consult - Lia.	10.25	1.42	31.67	20.39	40.50	22.45
Child Psych.	15.33	3.39	51.58	33.76	58.75	31.46
Alc./Sub. Abuse	14.33	2.46	41.58	26.85	49.17	27.35
Misc.	8.17	1.64	35.67	23.49	43.36	25.40
Program Year Four						
Global Psych.	167.71	49.27	60.83	28.45	77.67	20.85
Global Neuro.	31.67	4.59	37.67	27.93	46.50	25.62
Growth & Devel.	15.00	1.55	44.50	15.78	56.17	17.33
Adult Psychopa.	31.17	3.54	65.33	30.58	76.17	26.62
Emergency	11.00	1.41	33.83	32.13	46.00	32.89
Behavioral Sci.	13.33	2.94	47.50	31.51	55.67	29.73
Psychosocial	17.17	2.14	49.17	29.73	63.83	28.86
Somatic	30.00	1.55	47.00	16.82	69.17	12.45
Eval./Treatment	15.50	2.26	46.83	25.81	62.66	20.54
Consult - Lia.	12.00	2.37	56.17	39.55	65.83	34.30
Child Psych.	15.67	1.86	50.67	25.80	65.83	23.35
Alc./Sub. Abuse	16.00	2.83	48.83	36.35	60.33	29.72
Misc.	8.50	1.05	34.83	19.68	49.17	22.05

Early Resident Training Variables

During the first year of residency, the residents-in-training move through rotations required by the Accreditation Council of Graduate Medical Education (ACGME). These training rotations vary with the previous medical training of the resident. For example, if the resident trained at an osteopathic medical school, the resident must complete what is known as a rotating internship, which includes rotations such as internal

medicine, surgery, family medicine, obstetrics and gynecology, and family practice. This rotating internship is much like the fourth year allopathic medical students' last clinical rotations. The allopathically-trained residents typically rotate through psychiatry-specific rotations such as in-patient psychiatry at one of the training hospitals.

One common rotation for all residents in the first year of training is the neurology-specialty rotation. Neurology is "the branch of medical science devoted to the study, diagnosis, and treatment of organic diseases of the nervous system" (APA, 1975, p. 107). Because all OUCM-T psychiatry residents complete this rotation during their first year of training, the evaluation for this rotation was chosen as a potential predictor variable. An additional reason for this variable choice was that this global evaluation score reflects one of the earliest measures of competence in the residents' training. The score received by the resident may be useful for prediction of future competence in the provision of treatment including psychotherapeutic treatment.

The neurology evaluation form is constructed of questions regarding the residents' demonstration of key knowledge, skills, and attitudes during the neurology

rotation. The final question on the evaluation asks the faculty instructor to provide a global rating of competency from one to five with a five defined as excellent and a score of one as a poor performance. The average score for residents at the OUCM-T was 4.5 with a standard deviation of .77 and with a range of 2.75 to 5.00.

Program Variables

The OUCM-T department of psychiatry assumes the responsibility for providing training experiences and opportunities that create competent psychiatrists who are able to provide knowledgeable medical care for patients and who will become board-certified upon the completion of training. In addition, the department provides opportunities for the resident physicians to display their competent treatment of patients in order to comply with the ACGME competencies guidelines. To this end, the department provides a training and evaluation situation that typifies the testing procedure of the second part of the psychiatry specialty boards.

The second part of the American Board of Psychiatry and Neurology (ABPN) examination is an oral examination that occurs in two parts. The first part requires that the resident interview a patient in front of an examining team, present information regarding the patient gathered during

the interview, and answer the questions of the examiners. The second portion of the examination requires the resident to watch a patient being interviewed by another physician on videotape and to synthesize the information from this interview into a diagnosis. The examined resident also must articulate a plan for treatment for the patient and must answer the questions of the examiners about the formulation of the patient's medical illness and the resident's proposed plan for comprehensive psychiatric treatment including psychotherapeutic treatment.

To assist the resident with passing this portion of the psychiatry specialty board examination and to satisfy the ACGME requirements that residents' clinical skills be examined at least twice during the 4 years of training, the OUCM-T psychiatry training program sponsors a yearly mock oral board examination of the residents beginning with the second year of training. The residency-training program simulates the parts of the examination for the residents as well as examines and evaluates the residents in a similar fashion to the actual oral examination. The OUCM-T psychiatry program requires that the residents pass two of three mock oral examinations before graduation from training as competent psychiatrists. The mock oral board (MOB) scores for the residents participating in this study

had to be examined separately because the resident participants who already graduated and one of the fourth year off-cycle residents had been evaluated using different evaluation scales during their residency training. The older evaluation form was a checklist and the final assessment used a pass or no pass scoring system. No anchor points of competency were provided. The current MOB evaluation forms are more specifically defined according to the ACGME competencies and uses a global scoring system of scores from 1-10 on each category of the examination with a score of 1 rated as no proficiency and a score of 10 rated as highly proficient.

For both groups, the pass rate or the proficiency scores increased with years of training See Table 6). For example, in the categorical scoring system, 75% of the four second-year residents failed to pass the MOB examination.

Table 6: Frequency of Categorical Mock Oral Board Scores

Variable	Frequency	Percent
Program Year 2 Scores		
Pass	1	25.00
No Pass	3	75.00
Program Year 3 Scores		
Pass	2	100.00
No Pass	0	--
Program Year 4 Scores		
Pass	1	100.00
No Pass	0	--

Also, the residents in the second year of training who were scored on the global point evaluation evaluations scored a mean of 7 with a standard deviation of .86.

In contrast, in the fourth year examination 100% of the residents passed on the categorical evaluation (see Table 7). In addition, the fourth year residents received an average 9.54 for the global assessment on the MOB.

Table 7: Mean of Global Mock Oral Board Scores

Variable	Mean	Standard Deviation	Range
Program Year 2	7.00	.86	6.23-8.47
Program Year 3	7.50	1.30	5.67-8.69
Program Year 4	9.54	0.00	9.54

Another avenue the training program provides for the residents to demonstrate competency in psychotherapy is the presentation of a psychotherapy case at psychiatry's Grand Rounds. Psychiatry Grand Rounds is a continuing medical program that occurs every week. It is an avenue for OUCM-T department of psychiatry to share expertise with the mental health community by bringing in national speakers to present information regarding the latest treatment strategies as well as for the department's resident physicians to display their knowledge regarding psychotherapy treatment of patients. Once per month the residents are the presenters at Grand Rounds. Upon completion of the residents' psychotherapy case

presentation and discussion period, the resident is evaluated by the audience using a five-point Likert scale with a score of one representing a poor evaluation and a score of five representing an excellent evaluation. The residents are evaluated on items such as evidence of providing therapy according to the specific competency elements and on the resident's ability to formulate the diagnosis and treatment of their patient's mental illness from the psychotherapy competency models' key tenets. The audience's evaluations are complied with an overall score for the presentation and these scores are kept as part of the resident's residency file. The Grand Rounds scores have potential as a psychotherapy competence predictor because this evaluation represents the resident's demonstration of psychotherapy with a patient and examines knowledge, skills, and attitudinal components.

On the scale of 1 to 5, the residents had a mean score of 4.7 with a range of scores from 4.3-5.0. Since these scores showed little variance in scores for the resident participants and did not allow for discrimination between the residents, Grand Rounds evaluations were not used in the prediction of psychotherapy competence. The high scores received by the residents in this area is, however, evidence that the residents are able to competently present

evidence of their psychotherapeutic care of patients to faculty, resident colleagues, and members of the surrounding psychiatric and mental health community.

Training Program Monitoring Variables

To further comply with the ACGME requirements for psychotherapy training, the OUCM-T psychiatry residency program requires residents to accumulate a minimum of 50 documented hours of psychotherapy patient care, which includes each of the required competency models. The residents must acquire 50 hours of direct psychotherapeutic care of patients for each academic year for training years 2 through 4, and training years 3 through 5 for the dual program residents. The residents are also required to have 1 hour of face-to-face supervision with a faculty psychotherapy supervisor each week. This is typically equivalent to 50 hours per year of direct one-on-one psychotherapy supervision with a faculty member. In addition to this, the residents are also expected to schedule every fourth psychotherapy patient treatment session with a supervisor monitoring the session live through video transmission into a supervisory room. This real-time supervision of psychotherapy treatment allows the supervisor to evaluate the performance of skills and knowledge competencies of the resident, and it allows

residents to receive feedback from the faculty supervisor regarding their performance. This live supervision program was initiated in response to the ACGME psychotherapy competence requirements and was begun in March of 2002.

The residents were in various years of training so the average number of months seeing psychotherapy patients was calculated for comparison purposes. The resident participants had a mean of 19.7 months of psychotherapeutic care for patients with a standard deviation of 8.81 months and a range of 9-34 months. The residents received a mean 90.4 hours of supervision from their psychotherapy supervisors with a standard deviation of 52.83 hours and a range of 40-193 hours of supervision. This large difference in average number of hours of supervision indicates that some of the resident physicians were not receiving the amount of supervision required by the training program and others sought out additional supervision of patient care. The residents had an average of 6.87 patient psychotherapy sessions with live faculty supervision with a standard deviation of 5.15 sessions and a range of 0-18 sessions of live supervision.

Not all the residents were able to participate in our live supervision program on the same basis. One resident from the graduated participants did not have live

supervision available because this resident finished residency off cycle in the previous year. Also, this resident had a large number of psychotherapy patient care hours when compared with the other residents and also had a very low number of supervision hours. Another graduated resident only had 4 months available for live supervision of patient care, yet this resident was able to almost reach the mean of the number of live supervised session as the rest of the resident participants.

Correlation Analysis

This descriptive research study examined carefully chosen knowledge, skills, and attitude potential predictor variables in relationship with the participant's ranking with an expert consensus rank list. Various analyses were conducted using the statistical procedures of correlation, chi-square, regression, and discriminant analysis. The consensus rank list was used in two ways. For some analyses, the exact ranking in the list was used. For others, the participants were divided into groups. These groups consisted of the high-ranked third of the participating residents (competency rank 1-5), and the low-ranked third of the participating residents (competency rank 11-15).

A statistical correlation describes the relationship between two variables and is one of the basic levels of statistical analysis. A correlation can describe the association between variables in three various ways. The first is by way of a positive correlation, which "reflects what is called a direct relationship between the variables" (Huck, Cormier, & Bounds, 1974, p. 30). The second way to describe the relationship is a "negative correlation [which] can be said to reflect an inverse relationship between two variables" (p. 30). The third description is the zero correlation relationship, which displays "no relationship" between the variables (p. 30). However, it is important to note that the occurrence of a correlation between two variables does not mean that one of the variables is the cause for variation in the other variable (Kachigan, 1991, p. 134-135).

The correlation coefficient "is a mathematical way of expressing the degree of relationship between two or more variables" and "expresses the degree to which the variables covary" (Borg & Gall, 1983, p. 622). The squaring of the correlation reveals the amount of "common variance" shared by the two variables (p. 623).

The statistical significance of a correlation expresses whether the obtained coefficient is different

from chance (Borg & Gall, 1983, p. 623). This level of significance is greatly influenced by the number of cases upon which the correlation is based. When the number of cases used in the analysis is small as in this study, the correlation coefficients need to be relatively high in order to be significant.

The terms of high, moderate, and low are often used to interpret the magnitude of correlation coefficients (Huck, 2000, p. 60). Correlational analysis can focus on relationships that are aimed at better understanding behavior patterns or on prediction that is concerned with forecasting certain kinds of future behavior (Borg & Gall, 1983, p. 623). Prediction studies "require higher correlation coefficients than those usually found in relationship studies (p. 623). Given this, a general guide that is useful for most types of educational research for interpreting correlation coefficients is as follows: .20 to .35-slight relationship but of little value in practical prediction situations, around .50-crude group predictions but of little use for individual prediction because they are not much more accurate than chance, .65 to .85-make possible group predictions that are accurate for most purposes, and over .85-a very close relationship exists between the two variables (pp. 623-624).

Several correlation analyses were conducted. Each of the potential predictor variables were compared to the overall consensus rank list and to the group ranking of either being in the top third or the bottom third of the competency list. Several correlations were high enough to be considered for prediction purposes and were significant enough to be stable and not due to chance. The consensus rank list was more useful than the group rank list for producing these high correlations.

The high correlations were with the consensus ranking and age, the Neurology evaluation for program year one, the monitoring of live sessions, and most of the USMLE scores (see Table 8). Age is highly correlated with competency rank order. In this positive correlation between the residents' placement on the competency rank order list and the age of the resident physician, the age of the resident increased along with the residents' placement number on the competency list. All other high or relatively high correlations were negative. This indicates that as the residents' score increased, the resident was given a lower number rank on the competency list. This occurred for the predictor variables of the resident's score on the neurology evaluation during the first year of residency, for Step 1 and Step 2 on the USMLE, and for monitoring of

live sessions. The Step 1 scores for the USMLE were the only high and stable correlations in the group rank.

Table 8: Correlation between the Predictor Variables and the Consensus Rank Order List and the High and Low Group

	Consensus Rank		Group Rank	
Variable	r	p	R	P
Demographic				
Age	.61	.02	.57	.09
Ethnicity	-.34	.22	.22	.55
Gender	.15	.58	-.41	.24
Pre-Med Prep/Training				
Undergrad Major	-.02	.95	.00	1.00
Undergrad GPA	-.10	.75	-.21	.60
MCAT Overall	-.06	.89	-.49	.33
MCAT Verbal	-.13	.76	-.56	.25
MCAT Biology	.01	.99	-.44	.38
MCAT Phys Science	-.05	.90	-.39	.44
Pre-Residency Training				
Med School	.30	.29	.22	.55
Med School GPA	-.45	.17	-.69	.09
Med School Rank	-.20	.64	-.38	.53
Early Residency Training				
Global Interview Score	-.31	.35	-.39	.34
Initial Residency	.10	.72	-.10	.79
Trad/Non-Trad	.37	.17	.41	.24
MD/DO	-.12	.66	--	--
PGY-1 Neurology Eval	-.65	.04	-.68	.14
USMLE				
Step 1 three digit	-.64	.05	-.80	.03
Step 1 two digit	-.66	.04	-.80	.03
Step 2 three digit	-.70	.02	-.69	.09
Step 2 two digit	-.73	.02	-.70	.08
Step 3 three digit	-.39	.24	-.43	.33
Step 3 two digit	-.53	.10	-.55	.20
Program Requirements				
Grand Rounds	.21	.54	.33	.47
MOB 2	.48	.20	.67	.22
Program Monitoring				
Psychotherapy Hours	.24	.39	.21	.57
Supervision Hours	.07	.81	-.07	.84
Live Sessions	-.57	.03	-.59	.07

Several variables were not used for correlational analysis because there were missing data points. For example, only eight residents were able to provide MCAT scores for analysis, and this large number of missing variables precluded the production of useful correlation relationships. Unfortunately, this was the case as well for the participants' medical school percentile ranking. The data for this variable was not complete as many international medical schools do not use the U.S. percentile ranking system for rating their medical students, and just over one-third of the resident participants were international medical graduates.

Chi-Square Analysis

Chi-square analysis was used to examine the relationship between the self-reporting measures of the resident participants and the competency ranking of the participants with them divided into groups representing the top, middle, and bottom third of the group. "A chi-square test compares proportions actually observed in a study with proportions expected, to see if they are statistically significant" (Gay, 1987, p. 397). Chi-square is a nonparametric statistical procedure (Huck, Cormier, & Bounds, 1974, p. 216). In comparison to non-parametric tests, parametric statistics begin with an assumption that

the sample of the population chosen for the research is evenly distributed. Non-parametric statistical tests are considered to be "distribution-free" (Huck, Cormier, & Bounds, 1974, p. 196).

The residents were asked to perform a self-assessment to ascertain if they were able to self-evaluate their psychotherapy competency in concordance with the consensus competence rank of the psychotherapy expert faculty. This self-assessment was requested of the residents because "ongoing self-assessment is an essential skill for the self-directed learning activities and appropriate patient referral decisions of practicing physicians" (Fitzgerald, Gruppen, & White, 2000, p. 737). For this competency self-measurement, the resident physicians were asked to rate themselves as psychotherapy providers from 1-10 with a rating of 10 representing the most competence and a rating of 1 representing the least competence. The residents rated themselves with a mean rating of 6.7, a standard deviation of 1.5 and a range of 4-9. (see Table 9).

In addition, the residents were asked to answer attitude questions regarding the efficacy of psychotherapy as a treatment modality on a five-point scale with a five equaling strongly agree and a one equaling strongly disagree. The first attitude question asked the resident

to globally rate psychotherapy as an effective treatment modality for patients. The second attitude question asked the residents to assess their attitude toward personally providing psychotherapeutic treatment.

The final self-measurement tool was used to assess the residents' strategy for learning new information. By using ATLAS, the participants were divided into three learning strategy preference groups of Navigators, Problem Solvers, and Engagers.

The only chi-square analysis that was significant was for the residents' personal attitude toward the provision of psychotherapy ($\chi^2 = 14.0$, $\underline{df} = 6$, $\underline{p} = .03$) (see Table 9). However, the residents' global attitude toward the provision of psychotherapy was not related to their position on the rank order list ($\chi^2 = 2.73$, $\underline{df} = 2$, $\underline{p} = .26$). This seemingly disparate correlation between attitudes toward psychotherapy may be explained as all the residents either agree or strongly agree that psychotherapy is an effective form of treatment in general (see Table 9); however, they differ according to competency level in how they feel about it being their personal treatment of choice. Those in the High group tend to strongly agree that psychotherapy is a treatment that they should personally provide while all those in the Middle group

agree that they should personally provide psychotherapy for their patients. Those in the Low group hold very divergent views about the importance of personally providing psychotherapeutic treatment for their patients.

Table 9: Frequency Distribution of Personal and Global Attitudes toward the Provision of Psychotherapy with Patients and Competency Ranking

Resident Group and Attitude	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Total
Personal						
High	--	--	1		4	5
Middle	--	--	--	5	--	5
Low	1	--	1	1	2	5
Total	1	--	2	6	6	15
Global						
High	--	--	--	--	5	5
Middle	--	--	--	2	3	5
Low	--	--	--	2	3	5
Total	--	--	--	4	11	15

The chi-square analysis of the resident self-assessment of psychotherapy competency was not related to the faculty expert consensus rank order list ($\chi^2 = 12.0$, $df = 12$, $p = .45$). This analysis revealed that the bottom third of the resident group was the cause for this lack of relationship. For example, further examination of the residents' self-competency rating revealed that the high ranked group of residents (expert ranking 1-5) varied on their self assessment of competency from a low rating of six to a high rating of nine which was close to the ranking by the faculty. The middle ranked residents (expert

ranking 6-10) rated themselves from a low rating of four to a high rating of eight which was also close to the faculty's ranking of competency. The low ranked group (expert ranking of 11-15) rated themselves from a low of four to a high rating of eight. The bottom thirds' ratings reflected the previous research regarding the ability of low competence learners to accurately self-assess knowledge and skills (Kruger & Dunning, 1999). The participant residents in the bottom third of the ranking in this research study were unable to assess their psychotherapy competency as accurately as the top and middle group or in accordance with the faculty ranking of competence.

Two chi-square analyses were conducted related to the residents' self-measurement of learning strategy using the ATLAS. First, no relationship was found between ATLAS and the psychotherapy competence rank list ($\chi^2 = 6.0$, $\underline{df} = 4$, $\underline{p} = .20$) (see Table 10). This indicates that the strategy that the residents use for learning new information is not related to competency ranking for the provision of psychotherapy treatment. Second, the distribution of the residents among the learning strategy preference groups was compared to the typical pattern of distribution on ATLAS. The typical distribution of learners is nearly equal among the learning strategy groups (Conti & Kolody, 1999, p. 18).

Although the distribution was not significantly different from chance ($\chi^2 = 5.18$, $df = 2$, $p = .075$) for this very small group, the majority of the participants identified themselves as Engagers (53%) with the next closest group of the residents identified as Navigators (40%) and only one resident of the participant group was identified as a Problem Solver (7%).

Table 10: Frequency Distribution of Learning Strategy Preference Groups by Competency Level

Resident Competency Group	Navigator	Problem Solver	Engager	Total
High	--	1	4	5
Middle	3	--	2	5
Low	3	--	2	5
Total	6	1	8	15

Regression Analysis

With the correlations, the various variables were examined individually to investigate their relationship with the residents' competency ranking. "Multiple regression is a general statistical technique through which one can analyze the relationship between a dependent or criterion variable and a set of independent or predictor variables" (Kim & Kohout, 1974, p. 321). Regression analysis provides an equation that describes the nature of the relationship between two or more variables (Kachigan, 1991, p. 160). Multiple regression "determines not only whether variables are related, but also the degree to which

they are related" (Gay & Airasian, 2000, p. 501). It also indicates the magnitude of the relationship (p. 502).

Multiple regression may be used in one of two ways. The first way regression analysis may be used is as an "inferential tool by which the relationships in the population are evaluated from the examination of sample data" (Kim & Kohout, 1975, p. 321). The second way regression analysis may be used is as a descriptive technique "by which the linear dependence of one variable on others is summarized" (p. 321). In this study, regression analysis was used for descriptive purposes as "there are no severe consequences to this type of application of the basic regression technique, provided the predictor variables are measured with accuracy" (Kachigan, 1991, p. 160). In regression analysis:

> The most important uses of the technique as a descriptive tool are: (1) to find the best linear prediction equation and evaluate its prediction accuracy; (2) to control for other confounding factors in order to evaluate the contribution of a specific variable, or set of variables; and (3) to find structural relations and provide explanations for seemingly complex multivariant relationships. (Kim & Kohout, 1975, p. 321)

Several regression analyses were conducted to determine if variables could be identified for an equation to correctly identify the resident's competency ranking. For these analyses, the consensus ranking was used as the

criterion variable. For each analyses, a different set of predictor variables were used as the independent variables. These included the following sets of variables: demographics, USMLE scores, PRITE scores, residency variables, pre- and early-residency variables, and program monitoring variables (see Table 11). Although the number of case was small for these analyses, the validity of using several of these variables as predictors for medical students and residents has been established. For example, the USMLE (Koenig, Sireci, & Wiley, 1998) and the PRITE (Woodman & Schultz, 1999) have been used to predict success in medical training or have been used to validate faculty's assessment of proficiency.

Several of these analyses produced equations that explained a large amount of variance in the competency ratings. However, follow-up examinations using the actual data for all the cases revealed that the formulas were too inaccurate for use. For example, using the regression formula, the number one resident was consistently reported as the fifth resident on the consensus rank list of fifteen. In fact, the formulas were consistently inaccurate for those in the top third of the list; however, the formula was somewhat more accurate for those in the lower third of the resident group. Thus, multiple

regression was used to further investigate the relationship of the variables in the study to competency ranking.

Table 11: Regression Analysis of the Predictor Variable Groups and Consensus Ranking

Variable	R	R^2
USMLE Steps 1, 2, 3	.890	.792
PRITE Years One Through Four	.793	.628
Demographics	.674	.455
Residency variables	.663	.439
Early Scholastic	.627	.393
Pre-Residency and Early Residency	.479	.229
Program monitoring variables	.397	.157

Because of the small size of the population involved in the analysis, regression analyses were used only for exploratory purposes to better describe the overall dependence of the competency ranking on other variables. These analyses accounted for a large amount of variance in the relationship, but they were not very accurate in correctly identifying the exact ranking of those in the resident group. However, they did identify variables that were influencing the competency ranking. This is not surprising given the small size of the population. Consequently, while regression formulas were not useful for prediction purposes, they identified the variables to be used for further analyses. Furthermore, they indicated that the prediction should concentrate on predicting placement into a group or a range within class as opposed

to exact ranking. As a result, discriminant analysis was used to pursue this line of inquiry.

Discriminant Analysis

Discriminant analysis was used to examine the relationship of resident competency placement and the sets of predictor variables available to the OUCM-T psychiatry program. Discriminant analysis is used to "to make meaningful decisions about the data and to impose sense upon it" (Conti, 1993, p. 90). Much like regression analysis, discriminant analysis can be used for two objectives (p. 91). The first is for prediction, and the other objective for statistical use is for description. For the purpose of this study, discriminant analysis was used to describe the current group of OUCM-T residents in order to produce discriminant functions that could be used in the future for prediction purposes. "Discriminant analysis is similar in principle to regression analysis, finding its special application in situations which involve a criterion variable that is qualitative in nature. The technique allows us to classify objects into groups based on their values on various predictor variables" (Kachigan, 1991, p. 235).

Typically, discriminant analysis is used to explore the differences between selected categorized research

participants and selected predictor variables. Discriminant analysis utilizes the grouping of participants within "sets of variables to determine if any of them interact in a combination that can explain the person's placement in the group" (Conti, 1993, p. 91). Additionally, discriminant analysis does not depend upon the researcher proposing a hypothesis to validate the examinations of variables for the researchers' interests for study (p. 92). This freedom for questioning allows the researcher to evaluate queries using the logic of the multivariate technique of discriminant analysis to describe the relationship between the variables. "In addition to knowing how well our discriminant function differentiates between members of our criterion groups, we would like to know the importance of the individual predictors contributing to that success" (Kachigan, 1991, p. 232).

Thus, discriminant analysis is a multivariate procedure "for examining the difference between two or more groups of objects with respect to several variables simultaneously" (Klecka, 1980, p. 5). This procedure produces three important pieces of information that can be useful to the researcher in accomplishing the purposes of the research (Conti, 1993, p. 91). These are the discriminant function which is a formula based on the

variables in the analysis that can be used to place people in groups (Klecka, 1980, pp. 22-25), the structure matrix which is used to name the discriminant function and which shows the correlation between individual variables and the overall discriminant function (pp. 31-34), and the classification table which gives the accuracy of the discriminant function in correctly placing people in their known group (pp. 49-51).

Discriminant analysis was performed in this study to ascertain if there are variables and assessments for the psychiatry resident participants that could classify the residents according to rank order psychotherapy competency. The standardized knowledge assessments of the USMLE and the PRITE were used for these analysis. Multivariate analysis requires very complete sets of data because it is examining more than one variable at time. Several of the variables in the dataset of the participants were incomplete, and therefore these variables were not used in the discriminant analysis. Some of the data was not available to the researcher, or the data was not relevant to the residents' year of training or place of training. For example, the participants who attended international medical training programs did not have MCAT scores or medical school percentile ranks available for examination. The knowledge

predictor variables of the USMLE and the PRITE had the most complete series of variable data available for discriminant research analysis.

The USMLE scores consisted of the two-digit and three-digit scores for all three Steps of the knowledge examination. Discriminant analysis was conducted using the standardized knowledge assessments as the discriminating variables, and the groups were the residents who ranked in the top third (rank 1-5) of the consensus rank list and the bottom third (rank 11-15) of the consensus rank list. The discriminant function of the USMLE accurately classified 85.7% of the high-ranked group and low-ranked group accurately; it correctly placed three of the four of the high-ranked group and all three of the low-ranked group. The USMLE Step 1 three-digit score discriminant function was:

$$D = .06 \text{ (USMLE Step 1)} - 12.06.$$

The centroid was .98 for the high-ranked group and was -1.31 for the low-ranked group.

The PRITE scores consisted of 13 separate scores for each of the 4 years of the training program. Separate discriminant analysis were conducted for each year of PRITE scores. In each analysis, the list of the standardized knowledge assessments served as the discriminating

variables, and the groups were the participants who ranked in the top third (rank 1-5) of the consensus rank list and the bottom third (rank 11-15) of the consensus rank list. Since these analyses were concerned with correctly placing the participants in their correct competency-level group, the criterion for usefulness of the analysis was that the discriminant function be highly accurate in correctly classifying the participants in their known group.

Accurate group classifications between the high-ranked group of the resident participants and the low-ranked group of the resident participants was found for the PRITE scores. The PRITE score variables were analyzed by training years due to the different number of residents taking the test each year. Only the participants' raw scores were used because there was variance shared by the same scores presented in three different modes of raw scores, percentile scores by training year, and percentile scores compared for all U.S. residents. The discriminant function for all four training years was highly accurate for classifying the high and low ranked residents.

The discriminant function for year one of PRITE was 100% accurate in placing both the high and low ranked residents; thus it perfectly placed all of the participants

in their correct groups. The discriminant function for year one of the PRITE was:

D = .77 (Child Psychiatry) - 1.01 (Adult Psychopathology) + .57 (Alcohol and Substance Abuse) + 8.87.

The centroids for each group for the year one of PRITE were -3.82 for the high-ranked group and 3.82 for the low-ranked group.

The discriminant function for year two of PRITE was 90% accurate in placing both the high and low group residents; it correctly placed all five in the low-ranked group and correctly placed four of the five for the high-ranked group. The discriminant function for year two of the PRITE was:

D = .91 (Child Psychiatry) - 14.15.

The centroids for each group in the year two PRITE were 1.19 for the high-ranked group and - 1.19 for the low-ranked group.

The discriminant function for year three of the PRITE was 100% accurate in placing the resident participants in the high-ranked and low-ranked groups; all four of the high-ranked group and all four of the low-ranked group were correctly placed. The discriminant function for year three of PRITE was:

D = 1.10 (Adult Psychopathology) + .66 (Consult-Liaison Psychiatry) - .70 (Alcohol and Substance Abuse) - 27.66.

The centroids for each group in the year three PRITE were 4.05 for the high-ranked group and - 4.05 for the low-ranked group.

The discriminant function for year four of the PRITE was 100% accurate in placing the residents in the high competency or low competency ranked groups; all three of the high-ranked group and both of those in the low-ranked group were correctly placed.

The discriminant function for year four of the PRITE was:

D = .80 (Global Psychiatry) + 7.88 (Adult Psychopathology) - 11.68 (Psychosocial) - 194.98.

The centroids for each group in the year four PRITE were 20.27 for the high-ranked group and - 30.41 for the low-ranked group.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Summary

Summary of Background

The assessment of competency for medical resident physicians in the United States has dramatically changed as a result of the implementation of the Outcome Project initiated by the Accreditation Council of Graduate Medical Education (ACGME). The ACGME Outcome Project outlined six general core competencies for all resident physicians and five psychiatry-specific psychotherapy competencies that must be assessed and documented before medical residents can finish specialty training. The ACGME Outcome Project requires that resident training programs use an increased focus upon the demonstration and documentation of the required competencies before allowing resident physicians to graduate and begin independent practice. "The Outcomes movement is an ongoing part of clinical research and has extended into the training of competent physicians. [Residency] programs must [now] provide documented evidence to show the competency of each resident" (Beresin & Mellman, 2002, pp. 187-188). This project is a change in focus from institutional programs and time spent in training to a focus on the trainees' learning of new skills

and demonstration of competency in utilizing the new skills before graduation. These new outcomes focus upon upgrading the professional competence of physicians and the improvement of specialty practices within the field of medicine. The desired outcome is that medical residency training will be better in the year 2020 than in the year 2002 through the establishment of competency goals and guidelines in the present training of resident physicians. These new goals of medicine will focus resident training programs upon shaping and planning learning experiences to produce competent physicians and by documenting the outcomes through by valid assessments.

The impact of the Outcome Project has particularly affected the training of psychiatry medical residents. Training programs in psychiatry must assess and document the required six general competencies for all of their residents-in-training in addition to the documentation of the residents' skill in five additional competencies of psychotherapeutic theory and practice. In the past, the practice of psychiatry has typically focused resident psychotherapy training upon one theoretical basis which is the psychodynamic model of talk therapy. The Outcome Project added four additional therapy modalities to the focus for the training of psychiatry residents. These four

additional talk therapies consist of cognitive behavioral therapy, supportive therapy, combined psychotherapy and psychopharmacology, and brief therapies to be included in the residents' psychotherapy curriculum. The ACGME Outcome Project also added a requirement for valid assessments of resident psychotherapy competence and for the documentation of the residents' attainment of these required psychotherapy knowledge and practice competency components. The addition of the general competencies and the psychotherapy competencies is new to psychiatry resident training, and these competency measures have yet to be standardized across psychiatry resident training programs. Thus, psychiatry programs are left to establish the competency guidelines for their residents, to assess these competency elements, and to document the competency of their residents in order to remain accredited residency training programs.

> The outcome assessment goal for Phase 2 of the Project is to stimulate improvements in residency programs' evaluations of their residents. The desired outcome is more credible, accurate, reliable, and useful educational outcome data. Assumptions underlying this increased emphasis are: 1) exposure to and participation in educational activities do not assure learning; 2) assessment methods used most often in residency programs do not optimally support learning or ascertain how well residents perform; 3) assessment results can stimulate and direct performance improvement of both individual

residents and educational programs. (Swing, 2002, p. 1278)

The cost to implement new assessments of general and psychotherapy competency as well as the documentation of the competency of the residents' knowledge, skills, and attitudes are marked. Moreover, the additional costs for training programs to add extra competency assessments and new documentation strategies may impact the training programs' ability to expend limited funds for the essential and fundamental training requirements for standard medical resident training. Most residency training programs are already stretched thin to cover all of the current training requirements for their resident physicians. However, these funding and faculty expenses for training may not be increased significantly if the evaluation tools that are already in place to assess resident competence are identified through research to be accurate and reliable for the documentation of resident competency. Accurate recognition of which resident evaluations and assessments are useful to indicate and/or predict competency may save limited residency training budgets. This may also save valuable faculty time spent for the completion of additional assessments that may not enhance the evaluation of competency of the resident physicians.

Furthermore, an improved ability to choose residents based upon a prediction of competency may be exceedingly beneficial. Enhanced resident selectivity will allow programs to recruit residents who will demonstrate competency in the ACGME requirements, and this will allow training programs to focus budgetary allowances, ancillary resources, and faculty time on enhancing the broad spectrum of standard training requirements and for enhancing the competent care of patients. These basic training enhancements are preferable to spending these resources for remediation and special training programs for incompetent residents.

Therefore, the purpose of this study was to measure and relate potential predictor variables to the rank order competence of the resident physicians in a psychiatry resident training program. This study described the relationship of the predictor variables to the demonstrated knowledge, skills, and attitudes of psychiatry resident physicians as evaluated by psychotherapy expert faculty. The evaluation by the expert psychotherapy faculty was evidenced by the resident's number placement on a competency rank order listing of the residents from most competent to least competent in the implementation of the ACGME required five psychotherapy competencies. The

potential candidates for this study were ranked from 1 to 21 with a rank of 1 representing the highest degree of psychotherapy competency and a rank of 21 representing the lowest degree of psychotherapy competency. The 15 residents who chose to participate, with the exception of one, were approximately the top two-thirds of the initial consensus competency rank order list of 1 to 21. All of these residents were deemed to be competent in varying degrees. The residents closer to the high rank placement of number one displayed a higher degree of psychotherapy competency when compared with those residents with the lower number placement on the consensus rank list.

Summary of the Findings

This research study was initiated in order to evaluate and describe the relationship between potential predictor variables and a rank order resident psychotherapy competency list. The predictor variables were clustered in groups of analogous characteristics that included demographic variables, pre-training and training program variables, resident self-measurement variables, training program monitoring variables, and standardized knowledge assessment variables.

There was a three-fold rationale and objectives for the selection and grouping of the potential descriptive

predictor variables. The first rationale was that the majority of the variables were readily accessible for analysis as they were already being collected as part of the resident recruitment and training process. The second objective for variable selection was that some of the variables chosen were already being used to assess the resident physicians and if these assessments were found to be accurate in describing the residents' competency, it might save crucial training program time and finances because the development of new assessments for competency documentation would not be required. The third rationale for the variable selection was because the variable, or groups of variables, were used in previous prediction research and were found to be valid in describing and predicting competency for other medical training purposes such as selectivity.

Several statistical procedures were conducted for this study including correlational analysis, chi-square analysis, regression analysis, and discriminant analysis. The correlational analysis showed relationships for psychotherapy competency and age, the program year one Neurology evaluation global score, the USMLE Steps 1 and 2, and live supervision. The chi-square analysis showed that a positive attitude by the resident toward personally

providing psychotherapy for patients was related to psychotherapy competence. Regression analysis was conducted for all of the study variables and several of these analyses produced equations that explained the variance in the residents' rank order competency. However, these equations were found to be inaccurate when examined against the actual competency rank number placement. Discriminate analyses were performed for the knowledge variables of the USMLE and the PRITE and those assessments classified resident degree of competency with a high degree of accuracy.

Thus, indicators and predictors for psychiatry resident physician psychotherapy competence became evident during the course of this study's data analysis. Some of the variables were found to be reliable indicators for describing the residents' competency, and some of the variables were found to be potent predictors for describing the residents' psychotherapy competency.

One area of possible competency description that was notable but that was not analyzed was the choice of the resident to participate in this research study. All but one of the residents who were ranked at the lowest positions of competency chose not to participate in this competency prediction study. The residents were not

advised where they placed on the competency rank list at any time during the process of this competency research study. A self-assessment of competency was not requested nor were the other potential variables of competency collected for these residents because they did not consent to participate in the study. Therefore, a further analysis of these particular residents and the variables associated with these physicians was not performed. Although there may be other reasons why these residents chose not to participate, one may speculate that they may have been cognizant that their skills in psychotherapy treatment were below the level of the competence of their resident colleagues. Thus, the election either not to participate or to participate in competency research may be a potent indicator of competency.

Competency Indicators

Correlation analysis is performed to assess the "association, if any, which exists between two variables" (Kachigan, 1991, p. 117). Correlation analysis was used in this research study to assess the relationship between different groups of variables and the competency rank order list.

Correlation Analysis of Participant Demographics

The demographic variables of age, ethnicity, and gender are the qualities of a population that are constant and not open to change by modifying factors. Moreover, these variables are the personal characteristics that the resident participants brought with them to the residency training experience. The training program cannot change these characteristics that may have an influence over the learning and performance process, but the program may be able to modify the influence that these fixed characteristics may have on upon the residents' learning and the implementation of new skills.

The demographic variables of age, ethnicity, and gender were assessed as descriptive predictors for the residents' competence, and the variable of age was found to be associated with the competency rank order list. This association was a negative correlation that indicated that as the age of the resident increased, the degree of psychotherapy competence decreased. The conclusion that may be drawn from this finding is that the age of the resident may be associated with the resident's demonstration of psychotherapy competence. Moreover, this is an unusual finding as adult education researchers assert that mature learners are typically successful in learning

situations as they have had the most experiences with learning opportunities and life experiences in general (Merriam & Cafferella, 1999, pp. 221-247). This change from the usual success pattern may be a factor of an inability of the resident to fully incorporate different strategies for patient treatment other than those areas that are comfortable for the resident. "Adults have acquired a larger number of fixed habits and patterns of thought, and therefore tend to be less open-minded" (Knowles, 1970, p. 44). One conclusion that may be drawn from this finding may be that the more mature residents are set in their ways and have difficulty with the implementation of the new competencies in psychotherapy training. This may be especially true if the ACGME competency requirements were implemented during the middle of the mature resident's training course where the previous focus of psychotherapy training was only on the modality of psychodynamic psychotherapy. The mature resident may have been immersed in the psychodynamic psychotherapy training and may have viewed other forms of therapy with wariness. This may have kept them from fully engaging in the learning of the new required competencies and then subsequently implementing the new modality skills into practice for the demonstration of competency.

In addition, not all learning and life experiences are beneficial or educative (Elias & Merriam, 1995, pp. 56-57). For example, some of the mature residents in the training program were also non-traditional residents who completed training in another medical specialty prior to their current residency. For these resident participants, their second residency training in psychiatry was in preparation for a subsequent career in medicine. This previous medical training may actually have inhibited their learning as they changed medical professions to the specialty of psychiatry. Some of the nontraditional residents' first careers in medicine were completed in medical specialties such as internal medicine or family medicine.

Generally, other than psychiatry, all medical specialties feature a robust focus upon the biological functioning of humans with limited attention and time focused upon patients' other life issues. This strong biological focus is employed in those medicine specialty areas for both philosophical and time limitation reasons. Typically, physicians are chosen by patients within their medical specialty for the physician's concentration on the patient's specific medical problem which allows non-psychiatric physicians to schedule more patients into

practice sessions because the patient visits are brief and focused on addressing one particular medical problem.

However, in psychiatry there is an expectation that both biological issues and other life issues of the patient will be addressed in treatment thus increasing the complexity and length of the medical visit. Learning the skills required to use a complex synthesis of multiple problems and to competently address the patient's biological and life issues in tandem results in a longer training program for psychiatric physicians as well. Psychiatry resident training requires 4 years of education and practice whereas the other resident training programs of the primary care specialties such as family medicine, internal medicine, pediatrics, and obstetrics and gynecology require 3 years of residency training. The only exception to this increased training for psychiatry and other specialties is the specialty-focused surgical residency or for the residents who train in more than one specialty training program simultaneously.

Psychiatry residents must exhibit a strong biological focus on the patient along with a perceptive focus on the psychosocial aspects of the patient. The psychosocial aspects of patients include the influence of temperament and personality as well as environmental factors. These

aspects may exacerbate the patient's mental illness and the patient's ability to function in work and leisure activities and in important relationships. The impact of this shift from a single biological focus to a synthesis between the biological and psychosocial aspects of the patient may seem overwhelming for the mature resident when learning this new specialty. This sense of feeling overwhelmed may keep the residents from fully engaging in the practice of the skills required to be found competent.

Moreover, research has been conducted regarding intelligence of adults and two factors have been proposed regarding the types of intelligence exhibited by adult learners. One type is called fluid intelligence and the other is called crystallized intelligence (Merriam & Cafferella, 1999, pp. 175-176). Fluid intelligence is ability to perceive complex relationships and is usually tested by "rote memory, basic reasoning, figural relations, and memory span" (p. 175). Crystallized intelligence is "normally associated with acculturated information - those sets of skills of knowledge that we each learn as part of growing up in any culture" (p. 175). Researchers assert that both types of intelligence must be nurtured as adults mature. It may be that the older residents in this study were not presented with enough opportunities during medical

school to use their beneficial life experiences to enhance their training and this may have alienated the mature residents for the learning and practice of new skills in their residency training including the practice of psychotherapy.

Correlation Analysis of Participant Early Training

Early medical training has been found to influence subsequent training, therefore, numerous early premedical and medical training variables were evaluated in this research. These variables included undergraduate major; undergraduate grade point average; Medical College Admission Test (MCAT) scores; allopathic versus osteopathic medical school training; U.S. versus international medical school training; medical school grade point average; medical school percentile ranking placement; United States Medical Licensing Examination (USMLE) Steps 1, 2, and 3 scores; status of traditional versus nontraditional resident; and the specialty of the residents' first year of residency training. These variables were analyzed using correlation statistical analysis. Only one of these variables was found to be associated with the rank competency list.

The USMLE Steps 1 and 2 knowledge assessments were found to be associated with resident rank order competency.

This was a negative correlation, which indicated that as the residents' scores on these examinations went up, the residents' number rank on the competency list decreased which denotes a higher degree of competency. The USMLE standardized three step knowledge examinations have been found to be a valid evaluation of medical student competence for licensing to practice medicine as a resident (Simon et al., 2002, p. 535). The USMLE has also been found to be valid in assessing the skills required to become a physician. The conclusion that may be drawn from this association with competency and this research study is that the USMLE Steps 1 and 2 may be used to indicate and describe psychiatry residents' psychotherapy competence.

Correlation Analysis of Participant Residency Training

Early residency training variables such as the global residency interview score, the score the first-year residents received on their neurology rotation, and later resident training competency variables such as Mock Oral Boards (MOB) and global scores received on the residents' psychotherapy Grand Rounds presentation, were also evaluated for competency association through correlation analysis. The correlation analysis revealed one indicator. This indicator was the residents' first year global neurology evaluation score. This was a negative

correlation that indicated that as the score of the global assessment of neurology increased, the residents' number placement on the rank list decreased indicating a higher degree of competence. This variable was chosen as it is one of the earliest competency evaluations of the resident physicians. This correlation may be interpreted as an indicator of the potential of the resident's ability to learn the additional competencies of psychiatry including the psychotherapy competencies.

Correlation Analysis of Training Program Monitoring

Specific training program monitoring variables such as documented hours of psychotherapy patient care hours, documented hours of psychotherapy supervision, and number of live faculty supervised psychotherapy sessions were also analyzed through correlation analysis. The number of live supervised sessions the resident had monitored by the psychotherapy attending faculty was found to be associated with the competency rank list. This was a negative correlation that indicated that as the number of live psychotherapy sessions the resident had supervised by an expert psychotherapy faulty member increased, the residents' number placement decreased indicating a higher degree of the competency. This relationship may mean that direct observation of psychotherapy treatment by the

supervisor is associated with the degree of resident focus on the learning this new knowledge and the ensuing implementation of the required psychotherapy competency modalities. This may be due to an affect of being directly monitored which may have increased the residents' adherence to the competency model elements being assessed. The expectancy of the resident to perform for the supervising faculty member may reinforce the behavior and subsequent performance of the resident. "Key to understanding which behavior (once acquired) in the individual's repertoire will occur in a given situation are the concepts of expectancy and reinforcement. Expectancy is the likelihood that a particular reinforcement will occur as the result of a specific behavior" (Phares as cited in Merriam & Caffarella, 1999, p. 260).

In addition, live supervision has been found to enhance learning through the process of immediate feedback to ensure the resident is using medical techniques appropriately (Saba, 1999, p. 857). "Learning will be further enhanced by regular feedback on progress, and positive feedback will act as a reinforcer for the pursuit of more learning" (Brookfield, 1986, p. 20). This may be especially true for the practice of psychotherapy techniques in a live, real-life practice setting such as

with live supervision because positive skills and the implementation of those skills can be reinforced by the supervising faculty member in real time. Resident psychotherapy skills that are not within competent skill performance can also be modified through supervision and feedback. Adherence to the techniques used in a specific competency model of psychotherapy competently will most likely result in a positive competency evaluation by the resident's supervising faculty member.

An additional relationship with the live supervision of psychotherapy and skill building may be that the residents may become comfortable with demonstration of their skills over time. This comfort level may lead to an increased confidence in their ability to provide psychotherapy treatment for patients and may lead to an increased level of competence. This increased confidence in competence may induce the resident to more willingly seek feedback through the live supervision process.

Chi-Square Analysis of Resident Self-Measurements

Chi-square analysis was performed on the self-measurement variables assessed by the residents. The self-measurement variables that were examined were the resident's self-rating of competency, the resident's global attitude toward psychotherapy as a treatment modality, the

resident's attitude toward the provision of psychotherapy personally, and the self-measurement of learning strategy through the use of the ATLAS instrument. The resident's attitude toward personally providing psychotherapeutic care for patients was found to be an indicator for the description of competency associated with the competence rank list. The residents were asked to rate their attitude toward psychotherapy as a treatment they should personally provide for their patients. The residents who ranked at the top and in the middle of the competency rank list were more positive toward personally providing therapy. Those residents who ranked at the lower placement on the competence list were diffusely spread across the attitudes from strongly disagree to agree.

The conclusion that may be drawn from this indicator is that those residents with a more positive attitude toward providing the competency requirement of psychotherapy personally are more likely to value the competency and skills required to perform this form of treatment with patients. This value for the treatment may influence the resident's attitude toward learning the competency models, which may, in turn, influence the competent practice of the talk therapy treatment strategies as evaluated by the supervising faculty members.

Regression Analysis of Participant Variables

An additional statistical analysis of all of the study variables was performed using regression analysis to investigate the "concomitant variation in many independent variables acting simultaneously" (Roscoe, 1975, p. 362). "The techniques of multiple regression enable the behavioral scientist to use his knowledge of two or more independent variables to predict scores on a single dependent variable with greater success than is possible with a knowledge of a single independent variable" (p. 362). The predictor variables were analyzed in contrast to the criterion variable of competency rank, and several regression formulas were produced that explained a great deal of the variance among the independent variables. However, when the formulas were used with the actual resident data to describe competency placement, the formulas were found to be inaccurate in exact rank placement of the resident participant. The conclusion that may be drawn from this analysis is that regression analysis is not useful for describing exact competency rank order of the resident participants. This finding was most likely due to the limited size of the resident population available for study.

Competency Predictors

The ability to describe and predict which residents will be successful in learning and who will competently implement the ACGME Outcome Project required psychotherapy models will allow training programs to anticipate future training needs and to identify strong residents and those residents with emerging problems. Discriminant analysis was used to describe the relationship between the standardized knowledge examination variables and the competency of the resident physicians. "Discriminant analysis is a powerful multivariate technique that has much potential for use in adult education. Unlike univariate techniques, it can allow simultaneous analysis of many variables in the complex phenomena of adult learning" (Conti, 1993, p. 94).

The knowledge examination variables of the United States Medical Licensing Examination (USMLE) and the Psychiatry Resident In-Training Examination (PRITE) were evaluated using discriminant analysis in relation to the resident competency groups. The resident participants were split between those residents with a high degree of competency and those residents with a lower degree of psychotherapy competency. This descriptive grouping was accomplished by dividing the resident consensus rank list

into the top third (rank 1 through 5) and the bottom third (rank 11 through 15). The middle group of residents (rank 6 through 10) were removed as a buffer zone in order to increase the clarity of the discrimination between variables used for group placement. This removal of this middle buffer sector for the discriminant analysis increased the accuracy of group placement by the discriminant function.

The USMLE and the PRITE assessments were found to be potent predictors of high and low group competency placement through the discriminant formula. The conclusion to be drawn from this statistical analysis is that these predictors can be used to describe the competency of the current resident participants with a high degree of accuracy and these variables can be used to predict psychotherapy competency in future groups of psychiatry residents.

The possible reasons for these potent predictor variables' accuracy may be two-fold. First, they may be powerful predictors due to the validity and reliability of these knowledge assessments. Second, these variables may be powerful predictors as they have been researched and were found to be closely related with faculty assessments of resident competency (Krasner, Shelby, & Howard, 1999).

These variables have also been associated with the ability of medical residents to use the scientific principles needed for the maintenance of clinical competence.

For example, the validity and reliability of the USMLE Steps 1, 2, and 3 have been established and the USMLE Step examinations have been correlated with the knowledge required "for the maintenance of clinical competence through lifelong learning" (Simon et al., 2002, p. 535). Furthermore, the validity and reliability of the PRITE knowledge assessment has been established and the PRITE has been found to be correlated with faculty assessments of residents' knowledge and clinical abilities (Woodman & Schultz, 1999, pp. 137-140).

Furthermore, this study provides additional support for this relationship between faculty competency evaluations and the PRITE examination. Most residency training programs use faculty members to evaluate the competence of the resident in addition to other evaluation tools. This study confirms that faculty members are able to assess residents accurately and in congruence with standardized knowledge assessments. This also documents faculty observations of resident competency to assist with meeting the ACGME competency requirements for resident physician training (Whitcomb, 2002, p. 360).

Recommendations

This research endeavor was successful in identifying indicators and predictors describing psychiatry resident psychotherapy competence in a specific training program. These indicators and predictors may be used by psychiatry training programs to describe the competency of their resident physicians or may be used to predict future resident psychotherapy competence. These descriptive relationships and predictors may be used by residency training programs in two ways. The first way is to use these indicators and predictors as selection tools for the recruitment of potentially competent residents for residency training. The second strategy for use of these indicators and predictors by training programs is to identify the residents already recruited for training who will demonstrate a high degree of competency and those residents who will demonstrate a lower degree of psychotherapy competency. This knowledge can be used to enhance the education of current residents in training through a continued focus on all of the knowledge areas needed to become competent psychiatrists. In addition, these indictors and predictors may be used for the enhancement of new skill implementation as well as the remediation of those residents who are identified as having

potential to be in the lower grouping of psychotherapy competence in the training program. "The heart of adult education lies in the ability of its programs designers to perceive all of the relevant elements in situation and after situation and to take them into account in planning and carrying out learning programs" (Houle, 1984, p. 218).

Selecting Trainees

Selectivity tools for use in the selection of potential medical trainees are important for training programs as they may save money and time for both the training program and the resident trainees. Three of the indicators identified in this study may be utilized to assist psychiatry residency education programs in the selection of residents for training. The first, and most powerful, tools for predicting competency for use in selectivity are the United States Medical Licensing Examination (USMLE) Steps 1 and 2. The second useful indicator tool is the descriptive variable of age of the residency applicant. The third useful indicator tool that can be used for selectivity is the residents' attitude toward providing psychotherapy treatment personally.

USMLE

The USMLE Step 1 knowledge assessment was found to be a powerful predictor of competency with 85.7% accuracy of

placing residents in the high degree or low degree of competency groups. Furthermore, both USMLE Steps 1 and 2 were indicators of the description of residents and competency rank order. The USMLE is typically used to "assess certain qualifications required for the licensure of physicians" (O'Donnell et al., 1993, p. 734). This research provides the impetus for psychiatry training programs to utilize the USMLE Steps 1 and 2 both as indicators and predictors of resident psychotherapy competence. This may be accomplished by examining the scores of the applicants as they apply for residency training. Typically, these scores are just used to ensure that the applicant is eligible for licensing. This study indicates that the early USMLE Step 1 and 2 scores may be used by residency training programs as signs that those applicants with higher scores on the USMLE may demonstrate a higher degree of competence in psychotherapeutic treatment of patients, and therefore, will be desirable candidates for recruitment.

Resident Demographic and Attitude

The age of the resident physician was found to indicate a relationship to competency. Psychiatry training programs will not want to avoid recruiting mature applicants for residency positions as these residents may

provide a unique perspective and wisdom from other life experiences that can enrich the training program. However, the discussion of the mature resident's attitude and openness toward learning the psychotherapy competencies as an important part of comprehensive treatment of patients must be explored.

The desirable candidate for psychiatry training should exhibit during the interview process an ability to integrate treatment of biological and psychosocial aspects of the patient. This observable quality of openness should be evidenced through discussions with the residency training applicant and can be documented through the faculty members' assessment of the attitude of the applicant toward psychotherapy during the interview process. Frank discussions of the competency requirements and requisite positive attitudes toward the personal provision of psychotherapy by resident physicians can serve training programs positively for selecting mature nontraditional resident applicants and younger medical students who should be able to perform well during the training process as well as be found to be competent physicians upon the completion of training. These applicants should value an amenable personal attitude toward psychotherapy as this positive personal attitude was

found to be an indicator of a competent psychiatric physician as designated by this research.

Residency Training

The attitude and the age indicators for resident selectivity along with the other indicators and predictors found in this study also can be used by residency training programs for education enhancement and for resident remediation. The competency indicators may be used by training programs to identify those residents who may have difficulty implementing the five required psychotherapy models and demonstrating their competency for faculty member documentation. The competency predictors can be used by training programs as checkpoints for measuring degree of psychotherapy competency throughout the training process.

Early Resident Evaluation

The first indicator for use as a description and potential intervention for residents' psychotherapy competency is the neurology evaluation completed for residents in their first year of training. Psychiatry resident training programs should evaluate the global scores received by the resident on the common neurology rotation and use this early evaluation as an indicator of the resident's future performance in the provision of other

competency requirements such as of psychotherapy treatment. This early evaluation of the competency of residents before they begin psychotherapeutic treatment in their second year of training will allow training programs sufficient time to intercede early in training for those residents with lower scores on the earliest evaluations of psychiatric competency. "Assessment conducted during the formative stage and before extensive application facilitates the efficacy and effectiveness of learning by ensuring that only the correct processes become automatic. Early assessment also protects patients from harm" (Swing, 2002, p. 1286).

Assessing resident competence early in training allows resident education programs valuable time to enhance training for those residents who are struggling with the foundational and basic concepts of psychiatry. Assisting those residents who are struggling early in training may lay the foundation for future learning activities including the competent care of patients through the use of psychotherapy and psychopharmacology.

Live Supervision

"For some time, a persistent paradox of supervision has continued. Psychotherapy supervision is one of the most important avenues through which residents learn

psychotherapy, yet the teaching of the art and skill of supervision remains minimal" (Whitman, Ryan, & Rubenstein, 2001, p. 156). This research study confirmed that live supervision of psychotherapy is an indicator of resident competence. Live supervision of resident performance of psychotherapeutic treatment with patients should be implemented by psychiatry resident training programs and can be used to enhance training as well as be used to assess the competence of psychiatry residents. "Sufficient supervision is critical to the educational value of clinical experiences for psychiatry residents" (Groot et al., 2000, p. 144).

Live supervision of psychotherapy treatment by residents can improve the care of patients through the process of problem solving by both the resident and the faculty supervisor. This collaborative problem solving process by the resident and supervising faculty member to elucidate difficult treatment problems and to plan treatment strategies for future therapy sessions can improve the residents' abilities to perform this complicated task independently in the future treatment of patients. Research on resident learning found "data that the most valued educational experiences occur when clinical

experiences are shared by working together and observing one another work" (Groot et al., 2000, p. 139).

The residents' ability to perform these complex tasks will also most likely result in the comprehensive and improved care of patients. This result of improved care of patients may impact the public's opinion of the competence of psychiatric physicians as well as assist the residents with meeting and documenting the competency requirements established by the ACGME. In addition, researchers have established that "supervised clinical experience was found to be the most valuable training activity, especially when accurate and specific feedback was provided" (Groot et al., 2000, p. 139). Furthermore, research in quality of supervision of physicians found that resident compliance with competency standards increased with direct supervision of care (Sox et al., 1998, pp. 780-782).

Resident Demographic and Attitude

For mature residents who are already in training and who may be set in their ways and resistant to various psychotherapy treatment modalities for patients, residency programs may want to emphasize the complexity of humans and the importance of the more complex biopsychosocial approach for the treatment of patients. This change in focus can motivate the resident to learn the additional required

competencies. "As traditionally formulated, the mission of education is to endow graduates with the motivation and skills to maintain existing competencies, to acquire new ones, and to remain steadfast in their commitment to professional values" (Frankford, Patterson, & Konrad, 2000, p. 708).

Furthermore, residency programs may wish to assess the personal attitude of the resident group toward the provision of psychotherapeutic treatment of patients throughout training. Research has shown that in groups of learners, the group's attitude may influence the learning and implementation of new skills by members within the group. "Multiple experiments indicate that group opinion can distort one's own judgment significantly" (Cebul & Beck, 1985, p. 61).

The use of resident focus groups may facilitate the process of ascertaining the resident group's attitude toward the new psychotherapy competencies. Understanding the resident's personal as well as the group's attitude toward treatment modalities allows the faculty members opportunity to target corrective interventions for attitude improvement where needed. The results of the focus groups can also allow the faculty to intercede for changing negative attitudes displayed by providing evidence that

these treatment modalities are not only effective forms of treatment but they are also required for comprehensive and competent practice as psychiatrists upon the conclusion of training.

A study that evaluated the communication and interpersonal skills of residents suggests that residents should be asked about the attributes of professionalism and how they perceive it is best to learn these attributes (Hogood, Riviello, Jouriles, & Hamilton, 2002, p. 1259). These researchers found that residents valued competence, respect, and empathy as important aspects of professionalism and their preferred methods of learning were "contact with a positive role model [and] contact with patients" (p. 1259). Since communication skills and professionalism are key elements of effective psychotherapy, the areas noted by these researchers can be highlighted for psychiatry resident focus groups to generate ideas about learning considered necessary for competent psychotherapeutic treatment and preferred methods for learning these areas. Collecting and valuing input from the residents regarding learning needs and ideas about how to achieve those learning desires may generate resident enthusiasm for engagement in the learning process. This may also highlight areas that can be used to help the

residents achieve competence in the ACGME requirements before graduation from training as "active learner participation in the learning process contributes to learning" (Brookfield, 1986, p. 38).

Knowledge Examination

Since the PRITE knowledge assessment was found to be a highly accurate predictor of resident psychotherapy competence, psychiatry programs should analyze the PRITE assessment in each year of the resident's training. The assessment of the questions and the residents' answers on the examination each year can increase understanding of how the training program is performing in curriculum and training provision. The PRITE can also be used for the description of current resident performance. This analysis of the examination scores may allow for the prediction of the residents' competence in psychotherapy through the remainder of the resident's training. The discriminant function provided by this research should allow training programs to predict residents who will demonstrate a high degree of competence from those residents who will require training enhancement. This information may also allow the training program to make decisions regarding a need for remediation in order to move residents from incompetence or a low degree of competence in the provision of

psychotherapy to competence or a higher degree of competence in psychotherapeutic treatment. An analysis of the structure matrix of the discriminant function for each year of the PRITE assessment may provide clues as to why these variables contribute to the description of competency in the participant group and how they may predict performance of future residents in training.

> In addition to knowing how well our discriminant function differentiates between members of our criterion groups, we would like to know the importance of the individual predictors variables contributing to that success. Just as with regression analysis, we would expect that some of the predictors to be more important than others, and the knowledge of these variables would help us understand and perhaps eventually manipulate membership in the criterion groups. (Kachigan, 1991, p. 232)

For example, examination of the structure matrix for year one of the PRITE variables with a correlation of .4, or higher, revealed that the variables of the PRITE subscores of Behavioral Science and Social Psychiatry (.63), Growth and Development (.51), Psychosocial Therapies (.41), and Evaluation and Treatment (.41) had a strong correlation with the discriminant function. In year two of the PRITE, the subscore of Child Psychiatry (1.0) alone had a perfect correlation with the discriminant function. In year three of the PRITE, examination of the structure matrix with a correlation of .4 or higher revealed that the

subscore of Growth and Development (.43) was the most significant correlation for the discriminant function. Finally, the examination of the structure matrix with correlations of .4 or higher for year four of the PRITE revealed that the Global Neurology score (.75), the Child psychiatry subscore (.65), and the Miscellaneous subscore (.41) were significantly correlated with the discriminant function. Examination of each of the subscores and the knowledge required to perform well in these areas may offer further possible explanations for the prediction of psychotherapy competence of psychiatry resident physicians.

To make sense of the structure matrix, a review and description of the knowledge content assessed for PRITE subscore item along with the resident qualities required for mastering and processing these knowledge areas may be beneficial. These knowledge areas may then be linked to the description and prediction of psychotherapy competence through the aspects of shared knowledge essentials and through shared theoretical aspects of the subscores and the tenets of the practice of psychotherapy.

Four subscores were identified as important components of the year one of PRITE by the structure matrix. The Behavioral Science and Social Psychiatry subsection of the PRITE tests the residents' knowledge of "learning theory;

psychology; theories of normal family organization, dynamics, communication; theories of group dynamics and process; ethology, anthropology, and sociology; transcultural psychiatry; community mental health; epidemiology; [and] research methodology and statistics" (ACP, 2002, p. 2). The Growth and Development subsection of the PRITE tests the residents' knowledge of "normal development (biological, cognitive, psychodynamic, personality); death and mourning; most of analytic theory except therapy and psychopathology; [and] normal psychosexual functioning and behavior" (ACP, 2002, p. 2). The Psychosocial subsection tests the residents' knowledge of "all forms of psychotherapies (group, individual, family, behavioral; theory and practice); treatment of psychosocial dysfunctions; hypnosis; [and the] doctor-patient relationship" (p. 3). The Evaluation and Treatment subsection of the PRITE tests the residents' knowledge of "psychological testing; laboratory methods used in psychiatry (biological markers of functional disorders, work-up for organic mental disorders); mental status examination; diagnostic interviewing; [and] treatment comparisons and selection" (p. 3).

One subscore of the PRITE knowledge assessment influenced accurate prediction of the residents in years

two and four, the Child Psychiatry assessment of knowledge area which tests the residents' knowledge of "assessment and treatment of children and adolescents; disorders usually first evident in infancy, childhood, or adolescence; other disorders of children and adolescents; mental retardation and developmental disabilities" (p. 4). Examination of the selection matrix for year three of the PRITE found the subscore of Growth and Development knowledge assessment as already described as noteworthy for the discriminant function.

For year four of the PRITE, the Child Psychiatry subsection once again along with the Global Neurology score and the Miscellaneous subscore were correlated with the discriminant function. The Global Neurology and Neurosciences subsection of the PRITE assesses the resident's knowledge of "clinical neurology; neurologic diagnostic procedures; neuropathology; neuropharmacology and neurochemistry, [and] sleep physiology" (ACP, 2002, p. 3). The Miscellaneous subsection of the PRITE tests the residents' knowledge of "forensic psychiatry; history of psychiatry; administrative psychiatry; [and] ethics" (p. 3).

These knowledge items can be further described in order to fully understand the requisite resident qualities

for mastering and processing these specific knowledge areas. The Behavioral Science and Social Psychiatry knowledge areas generally require that residents understand the function of culture, society, and familial impacts on patients and psychiatric illness. The Growth and Development and the Child Psychiatry knowledge areas require that the resident have a curiosity and appreciation of the impact of developmental issues upon the patient's functioning and mental illness. The Psychosocial Therapies subscore assessment is the area most directly related to psychotherapy competency because it requires that residents understand the psychotherapy treatment theories along with the nuances found in the patient-physician relationship which culminate in practicing the art of psychiatric medicine.

> The scientific aspects of care are always delivered in the context of a personal relationship, the patient-doctor relationship, which is based on a healing bond of trust between the patient and a physician and serves the needs of both. The patient-doctor relationship is as fundamental to the art and science of medicine as are drugs and technological advances. (Friedenberg, 2003, 306-308)

All of these PRITE knowledge areas strongly relate to the knowledge themes required for the practice of psychotherapy. The Evaluation and Treatment area requires the resident to synthesize numerous areas of information

and use these information points to develop an accurate diagnosis and a plan for treatment. The Global Neurology knowledge area requires that residents use pattern recognition and puzzle solving to diagnose symptoms. The Miscellaneous area requires that the resident understand the historical tenets for the field of psychiatry including the importance of ethical issues that impact the field. One may not be certain that these areas impact the prediction of psychotherapy competence, but one may speculate as to why these areas of resident knowledge sets may be linked with the residents' competency.

Psychotherapy is the "method of treatment of mental disorders and emotional and psychological stress that relies on the unique [doctor-patient] relationship between therapist and patient and uses verbal means and techniques to achieve changes" (American Psychiatric Association (APA), 1996, p. 1). "Individual psychotherapy is an effective treatment for a wide range of symptoms and disorders. This treatment modality requires accurate diagnosis, treatment planning, and consistent application of principles of technique" (Ursano & Silberman, 1988, p. 884). The skilled psychotherapist must display a deep sense of curiosity about how patients' symptoms are connected with patterns of thoughts and behavior that may

be connected to developmental experiences. For example, patients' current issues of mistrust may be linked through the their narratives to an inability to trust caretakers to provide for their needs in the past.

The effective therapist should be able to put together the puzzle pieces for patients in order to enhance patients' ability to gain increased awareness of behavior and thought patterns and make the changes required to live a functional life. Before this puzzle reconstruction can occur, the psychotherapist must have an accurate road map for treatment. The road map of choice is based upon the patient's diagnosis. Psychopharmacology, which is the use of medications to treat mental illness, and psychotherapy, which is often referred to as talk therapy, depend upon the clinicians' ability to accurately diagnose patients in order to implement the most effective form of treatment. Without a correct diagnosis, the therapist and the patient become lost in treatment because the wrong methods and medications may be being used due to incorrect hypotheses about how to solve the problem at hand.

Psychiatry training programs need to enhance all residents' ability to problem solve through pattern recognition and through human discourse with their colleagues and patients. The promotion for a curiosity for

developmental puzzles can allow residents to build the qualities necessary for competent practice.

Additional Research Recommendations

One of the limitations of this study included the use of a small population. Although the entire resident population available was almost the average size of psychiatry training programs in the United States, the small participant group may affect the ability to generalize the predictor findings to other psychiatry training programs. In addition, the findings of this research study represent a case study of one program's experience, so it is unclear if these results will apply to the experience of other psychiatry trainees and training programs.

Therefore, this research should be repeated by other psychiatry training programs in order to validate the findings. Future studies should evaluate the variables of the indicators and predictors of psychotherapy competency found in this research to a wider distribution of residents both over time and in other training programs across the United States.

Additional Areas for Training Program Improvement

Although the resident's self-assessment of psychotherapy competence was not found to be an indicator

or a predictor for the description of competence for the resident group, this area must be noted for further study and evaluation by residency training programs.

> Students must be adequately motivated to change behavior, they must be aware of the inadequacy of present behaviors, they must have a clear picture of the behavior required, they must have the opportunity to practice required behaviors, they must obtain reinforcement of correct behavior, and they must have a sequence of appropriate materials. (Brookfield, 1986, p. 27)

The "clear picture of the behavior required" can only be painted if residents are clear about their current level of functioning (Brookfield, 1986, p. 27). From the results of this research as well as other research studies, learners are not accurate in self-assessing their performance (Hodges, Regehr, & Martin, 2001, pp. s87-s89). The ability to self- assess learning needs is a necessary skill for adult learners' ability to learn beyond fundamentals provided in a didactic learning environment and for the implementation of self-directed learning.

> Self-directed learning is based on the assumption that adult learners can identify and remedy deficits in knowledge and skills. This is particularly important for self-regulating professions such as medicine, where continuing education is left in the hands of individual professionals. It is only through accurate self-assessment that physicians can identify areas in which they are deficient in order to pursue further learning. (p. s88)

Two areas for further study can be suggested from this research and through other information known about resident physician self-assessment. First, resident training programs need to understand that some residents may not be aware that they are not performing as well as they believe that they are and this lack of congruence should be monitored by faculty physicians. "As educators, then, we cannot always accept adults' definitions of needs as the operational criterion for our development of curriculum, design of programs, or evaluation of success" (Brookfield, 1986, p. 124). This lack of congruence between the learners and the faculty may be remedied through direct feedback to residents regarding the competence of their performance in relation to training program expectations. Training programs can use the design of this study and ask their faculty members to rank their residents from most competent to least competent and also ask their residents to rate themselves for competency. This information from both the residents and the faculty can be evaluated for congruency and residents may receive feedback as to the level of their skills compared with the faculty's evaluations.

The second area for review should be the development of monitoring the resident training programs' focus on

augmenting and teaching their residents' the ability to self-assess learning and skills. Metacognitive proponents assert that learners enhance the learning of new information by understanding the process of learning for them individually. This also includes the ability to assess the extent of one's lack of knowledge in the learning area. Reflective practice after real-time clinical situations can provide avenues for residents to self-monitor behaviors. "Powerful experiences occur commonly in medicine but may lack optimal conditions for personal growth. To promote practitioner personal growth, medical settings may wish to explore methods to promote introspection" (Kern, Wright, & Carrese, 2001, p. 97). The ability to accurately assess one's progress only comes through the learned ability to self-observe and self-monitor. These are the skills that training programs teach residents to teach to patients; programs would be well served to teach the residents to self-observe accurately as well. "A physician's effectiveness depends on good communication, and cognitive and technical skills used with wisdom, compassion, and integrity. Attaining the last attributes requires growth in awareness and management of one's feelings, attitudes, beliefs, and life experiences" (Kern, Wright, & Carrese, 2001, p. 92.).

This research was undertaken to find out if there are predictors of psychotherapy competency because this information may be useful for psychiatry training programs meeting the new accreditation guidelines and for enhancing the selection and training of resident physicians as outlined by the Accreditation Council for Graduate Medical Education (ACGME). However, it is important to remember that the main mission of residency training remains with assisting adult learners in this context with learning how to learn as well as fostering a desire for lifelong learning. The increased focus on outcomes may divert residency training programs from this mission. One must always keep the learning mission and goals of an educational institution in mind when using outcomes-based competency assessments and research. It would be an unfortunate time in medical education if residency training programs focus only on outcomes measurement and lose sight of the adult learners involved in this process.

Thus, one final recommendation from this study is to evaluate residents' competency along with a balanced focus on enhancing the residents' ability to continue the learning process even when competency outcomes are not being monitored. "Education is not the filling of a pail, but the lighting of a fire" (William Butler Yeats, 1865-

1939). As educators and fellow learners, there is no end to the tasks of learning; there is no moment when one is finished. It simply becomes movement from one level of learning to the next. Stephen Brookfield (1986), a professor of adult education and well-known adult education researcher, states:

> As both a professor and a student, nothing has proved more irksome to me than the insistence that for educational encounters to be valuable there must always be clearly specified learning objectives that are being assiduously pursued. This approach may be suitable in some settings - when it is a question, for instance, of acquiring the psychomotor skills needed to operate a machine. It may also be well suited to some childhood educational setting, although even here the specified objectives may serve more as control mechanisms than as aids to intellectual development. (p. 215)

Effective adult facilitators in medical education will use competency outcomes and prediction data as efficient tools for fostering a need to know in the residents they train and to maintain a focus on the learners involved in the process. Outcomes information will then be useful because it can be utilized as a learning process assessment for enhancing medical resident education as well as for ensuring the protection of the public that these physicians serve.

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VITA 2

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