2010-06-08

Social Influence Tactics Used by Physicians: An Empirical Study

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SOCIAL INFLUENCE TACTICS USED BY PHYSICIANS: AN EMPIRICAL STUDY

By

Sheryl L. Alonso

A DISSERTATION

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Doctor of Philosophy

Coral Gables, Florida

June 2010
A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy

SOCIAL INFLUENCE TACTICS USED BY PHYSICIANS: AN EMPIRICAL STUDY

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A field study was conducted to investigate patterns of influence used by physicians among a variety of constituents. Specifically, the association between a physician’s use of influence tactics and the level of power of the constituent was examined to offer insights into physician influence and leadership. Preliminary studies identified a listing of the constituents a physician deals with on a routine basis and then the level of power of each of these constituents was investigated. In the main study participants from each of four groups were asked to complete a questionnaire. The groups were selected to include one constituent group from a higher power level than the physician (for upward influence), one constituent group with an equal power level (for lateral influence), and two groups with a lower level of power (for downward influence).

The study was carried out in a major medical system in a large, metropolitan city. Using survey data collected from Registered Nurses, Physician Colleagues, Patients and Top-Level Administrators, this research sought to examine the use of influence tactics used by physicians across three strata's of power. All data were collected from the target perspective. The results indicated only two levels of power among the physician constituents. The results also indicate that physicians use a variety of tactics in influencing others and there were several differences found between the groups analyzed.
However, the hypotheses were not all supported. There was greater support for the hypotheses, with clearer directional differences when data for the two groups were analyzed. The directional differences of the tactics were not all as expected. Four of the tactics; reason, upward appeal, exchange, and assertiveness, had significant directional differences. Coalitions had suggestive differences between the groups and ingratiation was not used differently among the targets in any significant way. The hypothesized relationships for use of influence tactics against certain influence targets based on the level of power of the target and degree of forcefulness of the tactic was largely upheld when analyzing two groups for level of power.
ACKNOWLEDGEMENTS

This dissertation marks the finale of my four years spent completing my Ph.D. at the University of Miami. I stand in humble disbelief that this distant dream could become a reality. I am indebted to the support of several who have made my success in this a possibility. My sincere gratitude goes out to my committee, which I describe as the "Dream Team," as I have been extremely fortunate in having the best and the brightest to guide me along the way.

I would like to express my deepest gratitude to my dissertation Committee Chair, Professor Linda L. Neider; without her guidance this would not have been possible. Her confidence in my abilities opened new doors, first, by inviting me to teach, and then, by her encouragement to engage in the Ph.D. program. I cannot thank her enough for her dedication and diligence in guiding me through the process, copious reading of drafts, and suggestions for improvement. Her high expectations continue to set an example for distinction.

I wholeheartedly thank my committee members. It would have been next to impossible to write this dissertation without their help and guidance. Professor Steven G. Ullmann granted me the opportunity to work with him, allowing for the attainment of financial assistance to make this degree possible; opening doors with his abundant network connections; and giving his perpetual support. Professor Chester A. Schriesheim, with his genius, provided me the lessons for excellence as a researcher. His high performance expectations and scholarship have inspired and motivated me to excel, and to attain levels I would not have imagined for myself. Professor Michael T. French graciously joined my committee and diligently waded through this document providing
valuable feedback, especially in terms of the physician influence model. Lastly, Dr. Mark T. O’Connell validated the medical perspectives of my research and opened doors for me among the healthcare community.

Ms. Susan Stearns has always been supportive and I thank her for this along with the wealth of practical information and assistance she has provided. I am forever grateful to Elena Kasparis who assisted in the data input. Her help has been invaluable.

Finally, my family has been immensely supportive. My three children, Morgan, Clayton, and Haley never anticipated that their mother would be going to college alongside them. They have been there for me, listened, and gave helpful advice and support. Importantly, I need to thank my husband, Manuel, for his undying love and backing of me throughout this demanding phase in my life. He has been, and I know will continue to be, my best friend and a rock of support. I am not entirely sure he ever wanted or expected a workaholic for a wife. Despite this, I know and appreciate his wholehearted support. I recognize and am touched by my family's pride in my accomplishments.

This marks another chapter in my fortunate life and I look forward to new and exciting opportunities as a researcher. I am eager to embrace the challenges. Lucky me - my real life has truly been better than my dreams!
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CHAPTER I
INTRODUCTION

Background of the Problem

The health care environment in the United States is in a period of rampant change. The system is facing a myriad of challenges. The United States has the highest health care spending per capita in the world and is projected to spend over $2.5 trillion on health care in 2009, or $8,160 per U.S. resident [Centers for Medicare and Medicaid Services (CMS), 2009]. Health care costs are out of control. The cost of care has risen dramatically, posing major funding issues. Demographics, with an increase in the aging and indigent populations, will significantly increase the burden on the system. While Medicare/Medicaid initiatives and managed care have revolutionized the care delivery system, new markets for medical care are emerging. The financial resources are scarce. Given this scarcity of financial resources, questions arise on how to best fund these programs. Third party payors have an increasing power base within this framework. Clinical research has led to increased knowledge of diseases and their etiologies resulting in improved treatment modalities and improved diagnostics. This too, has contributed to the rising costs. Research and development costs of new medications have skyrocketed and the legal environment has pushed physicians to practice defensively. There are numerous pressing issues in the legal and political health care environment. Technological change is revolutionizing all aspects of patient care. Under this influx of change,
there are pressing time burdens on the physician. Medical errors are an increasing concern. Berwick and Nolan (1998) sum this chaotic environment well:

Searching for one word to describe the state of mind of the physician in the United States today, we might chose beleaguered. Threats appear from all sides – from payers, would-be managers of care, the growth of technology, and even patients. The rhetoric is one of siege and battle, and the dynamic seems to be a clash of values….Scientific and health research suggest that health care could, indeed perform better than it does today and that a shared aim of improving health outcomes for patients at a cost that society can afford is sensible and within reach. However, achievement of these improvements will require of physicians not handwringing (sic) and resistance to change but concerted, positive, capable leadership (Berwick & Nolan, 1998).

Thus, in this type of dynamic environment physicians can not merely practice their medical specialty, but must also lead multidisciplinary teams. The need for physicians to develop leadership skills has been well documented (Reinertsen, 1998; Berwick and Nolan, 1998; Williams, 2001; Stoller, 2009; Fernandez, Vozenilek, Hegarty, Motola, Reznek, Phrampus, and Kozlowski, 2008; Fairchild, Benjamin, Gifford, and Huot, 2004). However, there is a paucity of scholarly research in regard to the physician as a leader, particularly studies which address the actual characteristics of the physician leader and the
determinants of effectiveness. In addition, medical schools rarely offer coursework on leadership, organizational skills or management training; though, out of necessity, MD/MBA programs are becoming increasingly popular. Undoubtedly, physicians need to be effective leaders within a team framework. One way to define leadership is the ability to effectively influence others toward the accomplishment of defined goals (Northouse, 2007). Physicians must know how to successfully influence and direct others in order to provide the best, safest, most efficient care in a rapidly changing environment. Physician leaders can become the intermediaries between other physicians and healthcare administrators, in order to minimize miscommunication and maximize collaborative outcomes (Guthrie, 1999).

Healthcare is one of the largest and most vital industries in the United States and it affects virtually every individual in the nation. The stakeholders are numerous and varied, ranging from the patient, to complex, multi-system industries, such as pharmaceuticals, and even government regulators. Physicians and administrators play a significant role in providing care and influencing decisions that affect the delivery of care. Hence, understanding leadership and influence strategies is increasingly important in an environment which will continue to become increasingly more challenging (Menaker, 2009).

Leadership, power, social influence and team dynamics are well researched topics within the fields of organizational behavior, psychology, and sociology. However, there has been little crossover of this body of work in the medical arena. Furthermore, research in the arena of social influence has been
traditionally studied in work settings looking specifically at employer/employee relationships. Physicians are often self-employed or employed by a Professional Association (PA). Only a small percentage of physicians are hired employees. Therefore, the characteristic social influence research may not be generalizeable to physicians working within the medical arena. Notably, physicians deal with a variety of constituents, not merely those in the typical employer/employee relationship. Thus, this is an area which needs to be addressed.

Purpose and Contribution of this Research

The proposed study will address the gap between the application of well-researched organizational behavior concepts regarding social influence and the health care environment, specifically focusing on the physician leader. This research seeks to examine the influence processes between physicians and the people they deal with on a frequent basis. Specifically, the social influence styles utilized by physicians interfacing with different constituencies will be investigated. The study will thus highlight the influence tactics used from the perspective of the target (those the physician influences). Constituents in the study will refer to the various categories of individuals with whom physicians interact with on a regular basis. The constituents, for the purpose of this study, will be defined as the main groups of individuals physicians encounter frequently. A preliminary study will verify the constituents and these groupings may include: Acute Care Patients, Non-acute Care Patients, Chronic Care Patients, Hospital Administrators, Medical Students, Physician Colleagues, Professional
Subordinates, Non-professional Subordinates, and Third Party Payors. This research is an important area of study in lieu of the current complexities of the healthcare system in the U.S. which places ever increasing leadership pressures on the physician.

This investigation will address the level of power held by each of the constituents and assess whether different influence tactics are used when physicians interface with constituents possessing various forms of power. No previous research has linked these topics together among the physician population. Using the well researched and established Schriesheim and Hinkin Revised POIS (Schriesheim & Hinkin, 1990), this study will focus on influence tactics as utilized by physicians from the perspective of the target. Influence tactics will be correlated with the various physician constituents and the level of power of each in relation to the physician, so that eventually a framework can be established to assist medical leaders in the effective influence of others. This will provide a theoretical model as a framework for scientific analyses and will reveal several of the complex, conceptual relationships necessary for physicians to better face challenges and improve outcomes through a better understanding of influence. Identifying and implementing appropriate leadership tactics, and effective physician leadership development, based on sound scientific research, may eventually result in improved quality of healthcare and enhanced cost effectiveness.

The collaborative nature of this study is vital. The foundation for this research lies in a cooperative stance, which supports the efforts of physicians,
researchers, and healthcare leaders to work together towards informed decision making and towards directing others to utilize appropriate influence tactics. Healthcare administration and leadership are closely associated with management. Social influence tactics are well studied within the fields of psychology, sociology, and organizational behavior. The study of healthcare and its’ practitioners is in the interest of public health, with particular relevance to epidemiological studies. Actual physician input is vital to the effectiveness of this study in establishing the actual healthcare administrative issues, the leadership demands within their respective fields, and the challenges of the current environment.

Thus the research reported here will contribute to the current body of knowledge in many important ways. First, it will assess the generalizability of previous studies on influence tactics and power from the fields of organizational behavior, sociology, and psychology. Second, the study will contribute to the body of knowledge regarding physicians as leaders. “Physician executives are in demand, and this demand is growing” (Fulkerson & Hartung, 2008) yet the body of research in this regard is lagging. The well regarded 1999 findings from the Committee on Quality of Healthcare in America, Institute of Medicine, *To Err is Human: Building a Safer Health System*, revealed that health care in the United States is not as safe as it should and could be. The committee recognized that a strategy for improvement includes establishing a national focus to create leadership, research, tools, and protocols to enhance the knowledge base about safety. In a follow-up, the Institute acknowledged that it is critical for leadership
to be involved in all aspects of the effort of redesigning the healthcare delivery system to ensure its applicability and acceptability to both clinicians and patients [Committee on Quality of Healthcare in America, Institute of Medicine (IOM) 2000; Committee on Quality of Healthcare in America, Institute of Medicine (IOM) 2001]. Physicians need to be at the forefront of these efforts and therefore this investigation will provide a platform for learning more about physician leadership. Connecting research in the power and influence fields with particular emphasis on the physician will help to identify the successful leadership skills of physicians within a collaborative framework. Additionally, scholarship in health care leadership will be enhanced while also serving as a resource to aid the medical profession in developing training and development in leadership and effective influence tactics. In the increasingly dynamic world facing health care practitioners these characteristics are necessary to supplement clinical expertise.

Thirdly, learning more about influence tactics and those which provide the best outcomes could help to ultimately improve the quality of healthcare delivery. “Knowing more about how physician executives influence others in health care organizations is important, because the ability of the physician executives to persuade others will determine much of their success in managing the health care enterprise” (Garko, 1993, p. 27). Leadership and business activities must begin with the patients' clinical needs as the primary focus (Silbaugh & Leider, 2009). Numerous studies demonstrate that engaging clinicians in leadership and management roles is positively correlated with drivers of organizational performance so that learning more about how physicians influence can lead to
better outcomes, in other words, performance measures tend to improve when physicians are at the helm (Silbaugh & Leider, 2009; Shortell, 2005; Casalino, Devers, Lake, Reed, and Stoddard, 2003; Mountford & Webb, 2009).

Importantly, studies such as the one proposed may lead to a reduction in the number and severity of medical errors. Hierarchical differences and concerns with upward influence among the patient care team have been associated with medical errors (Sutcliffe, Lewton, and Rosenthal, 2004). Patients, and even medical students and subordinates, are often afraid to speak up if they feel insecure, inferior to, or threatened by, the physician. Importantly, further research into the influence tactics utilized by physicians and other members of the healthcare team may eventually lead to fewer medical errors and better healthcare outcomes.

Furthermore, the study of influence tactics could further focus on an ethical framework of physician influence. Eventually, scholars in the field could correlate specific influence tactics with actual outcome variables.

Finally, this investigation will develop a functional model of influence tactics for physicians at differing levels of power. The model will provide a conceptual schema of antecedent factors, inputs of selected influence tactics, level of target power, situational factors, and processes affecting influence and how these lead to successful outcomes.

Yukl (1989) aptly notes that success in influencing people and developing their commitment to task objectives is one of the most important determinants of managerial effectiveness. Physicians need to better understand the processes of power and influence, and how these can be utilized effectively in order to be the
transformational leaders necessary in the healthcare environment of today. “Power and influence are key processes in organizations and anyone wanting to learn how to lead or manage organizations effectively must first understand the dynamics associated with such processes” (Schriesheim & Neider, 2006, p. vii). Clearly, quantitative, empirical, theoretical-based research, which focuses on a physician as a leader is needed. Especially given the dynamic state of healthcare, we need to increase our knowledge base on physician leadership to enhance best practices, improve patient safety, increase cost effectiveness, and remain competitive as the leading world health care provider.
CHAPTER 2

LITERATURE REVIEW

Physician Leadership

The physician has been recognized as a leader in society for more than two centuries. Plato aptly noted that the true physician is a ruler of the human body (Plato, The Republic, Book I, 380 B.C. in Allen, 2006). Though claiming the label of a leader, physicians often do not have the training to be effective in this role. Recent times have magnified the need for increased leadership training and skills among physicians. This has been well recognized in the literature (McCall and Clair, 1990; Berwick, & Nolan, 1998; Guthrie, 1999; Schwartz, 1998; Schwartz and Pogge, 2000; Xirasagar, Samuels and Stoskopf, 2005; Kohn, 2000; Chaudry, Jain, McKenzie, & Schwartz, 2008; to name a few). Physicians need to assume increasingly responsible leadership roles as there is an accelerating demand for physician executives (Fulkerson and Hartung, 2008).

The Institute of Medicine, (IOM) under the National Academy of Sciences has published an extensive, and highly regarded, series of reports and books which lay out a “vision for how the health care system and related policy environment must be radically transformed in order to close the chasm between what we know to be good quality care and what actually exists in practice” (Committee on Quality of Healthcare in America, IOM, 2001). The series was based on an intensive literature review to identify the problems in the health system and what needs to be done in order to close that chasm (Committee on Quality of Healthcare in America, IOM, 2001; Kohn, 2000). In order to achieve this vision,
knowledgeable and savvy physician executives are needed who have advanced training in evidence-based medicine, systems of quality improvement, and in healthcare business and finance (Kohn, 2000). Medical schools are also recognizing this growing need for a sound leadership knowledge base among physician executives. In response to this recognized need for physicians to also develop leadership skills, 49 out of the 130 accredited M.D.-granting U.S. medical schools currently offer an MD/MBA option, with several more programs currently under development [Association of the American Medical Colleges (AAMC), 2009; National Association of MD/MBA Students, 2009]. Furthermore, an increasing number of established physicians are returning to graduate school to acquire Masters of Business Administration (MBA) degrees, to better understand the ‘business of medicine’. Parekh and Singh (2007) report that these physicians, after completing their degree, substantially change their practice patterns, especially reflecting an increase in time spent in administrative responsibilities. Moreover, 81 percent of the sample they investigated, reported that the MBA was essential/very useful in their career advancement (Parekh & Singh, 2007).

The need for enhanced physician leadership training and development is well documented in the literature. Chaudry and associates (2008) recognize that unless they have formal training in leadership skills, many physicians are not equipped to lead in this marketplace. They also identify the specific skill sets physicians need to lead in this changing environment, specifically: organizational behavior-based skills, including motivation of followers, effective
communication, team building, conflict management, and culture development; and analytical skills, including risk analysis, quality control, and financial expertise (Chaudry, Jain, McKenzie, & Schwartz, 2008).

Michael Guthrie (1999) recognizes that the physician executive can be the “tool” for achieving physician participation in addressing the myriad of issues confronting health care organizations. He identifies some of the challenges of developing physician leaders and defines the many differences between the physician and the executive. The challenges focus primarily on the fact that the personal skills and interpersonal competency required of a physician leader are substantially different than those of the physician. Physician executives must not only learn, but also practice, skills and actions that take respected values and apply them to the larger needs and vision of the whole healthcare organization. To become a leader, the physician must be able to challenge and modify the expert mindset and behaviors (Guthrie, 1990).

There has been an effort to promote the need for physician leaders within certain clinical specialties. Richard Schwartz and his associates in the Department of Surgery at the University of Kentucky have published several articles related to the essentiality of leadership skills among physicians (Schwartz and Pogge, 2000; Schwartz, Pogge, Gillis, and Holsinger, 2000; Schwartz, 1998; Chaudry, Jain, McKenzie, & Schwartz, 2008). Schwartz and Pogge (2000) contend that physicians, especially surgeons, are the ideal leaders for health care in the 21st century. Despite this, it is their contention that the vast majority of physicians lack the necessary skills for major leadership/management roles. It is
imperative for healthcare administrators to recognize physicians who are most capable of providing leadership within the greater healthcare system and systematically mentor and cultivate their growth in the necessary leadership skills (Schwartz and Pogge, 2000).

David Fairchild and associates (2004) recognize that the increased importance of physician administrative leadership provides an opportunity for physicians interested in expanding their clinical work to interface with disciplines such as finance, and management. They recognize the need for additional expertise beyond clinical expertise, calling these physicians, Academic Physician Administrators and Leaders (APALs). Fairchild defines APAL’s as clinician-administrators whose academic contributions include both scholarly work related to their administrative duties and administrative leadership of vital academic programs. Additionally, the authors recommend modifications to existing clinical training and “special societies” to support and develop physicians in leadership and academic roles (Fairchild, Benjamin, Gifford, & Huot, 2004).

In a two part series, McCall and Clair (1990) examined, in a qualitative analysis, why physician managers fail. The authors reviewed other studies regarding physician executives and then used an interview approach supplemented by three workshops with physician managers. The number of participants for the interviews was small, 14, and no mention was made of how many participated in the workshops. The findings recognized ten flaws of physician managers which included insensitivity and arrogance, inability to choose staff, overmanaging, inability to delegate, fighting the wrong battles, being
seen as untrustworthy (having questionable motives), failing to develop a strategic plan, being overwhelmed by the job, lacking specific skills or knowledge, and lacking commitment to the job (McCall and Clair, 1990).

Despite the abundance of literature on physician leadership, there are few experimental studies utilizing a theoretical model and even less which address social influence tactics used by physicians. In fact, the published literature on physician leadership tends to be normative, prescriptive, anecdotal, or observational, largely based on qualitative opinion surveys (Xirasagar, Samuels and Stoskopf, 2005). Xirasagar and colleagues (2005) have provided one of the few scholarly studies actually examining the association between physician leadership styles and effectiveness within a theoretical framework. They studied the association between physician leadership styles and leadership effectiveness using an adapted Multifactor Leadership Questionnaire (MLQ; Bass and Avolio, 1990). The researchers surveyed 269 executive directors of community health centers to assess their perceptions of the medical director’s leadership behavior and effectiveness. The results supported the hypothesis that transformational leadership behaviors were more positively associated with executive directors’ ratings of effectiveness, satisfaction with the leader, subordinate extra effort, and the center’s clinical goal achievements. Specifically, the findings suggest that applying the transformational-transactional leadership model to physician leadership development may be beneficial in improving both the quality of health care and controlling costs (Xirasagar, Samuels and Stoskopf, 2005).
Horwitz et al. (2008) conducted another theory-based, empirical study within the physician leadership literature analyzing a surgical resident cohort. The study was a collaborative effort between management, public health and surgical disciplines using the MLQ as a means for identifying leadership areas most in need of leadership training. The MLQ was useful for identifying specific areas where leadership training would be most beneficial in the educational curriculum. It was demonstrated that the MLQ was able to discern areas where leadership training was most needed and strongly suggests that significant benefits for assessing such needs in surgical resident curriculums could be realized through the administration of the instrument as part of designing and improving individual programs (Horwitz, Horwitz, Daram, Brandt, Brunicardi, and Awad, 2008).

The construct of power can be defined as the potential influence some individual or group has over an individual (Raven and French, 1959). Numerous scholarly articles do focus on the concept of physician power. “Physician power has been attacked, and tabooed, in legitimate efforts to strengthen patients’ rights” (Schei, 2006, p. 393). Schei (2006) argues that the structural and symbolic power wielded by physicians is what makes good and right healing possible. Further, he points out that avoiding the issue of power can lead to confusion, uncertainty and faltering trust. Schei concludes that “doctoring entails and generates power; ignoring or denying the responsibility to lead may cause harm to patients” (Schei, 2006). Likewise, Måseide (1991) has argued that the “benefits of medicine would not exist, were it not for power.” He stipulates that recognition of medical
competence facilitates doctor-patient relations and creates “a legitimate hierarchy of domination and subordination, recognized by all participants” (Måseide, 1991). Chervenak et al. (2006) also recognize the need for physician leaders to seek Gregorian (interest of others is the primary motivation) power relationships in order to preserve and strengthen medicine as a fiduciary profession (Chervenak, McCullough, and Baril, 2006).

Patients feel that the ideal physician is confident, empathetic, humane, personal, forthright, respectful, and thorough (Bendapudi, Berry, Frey, Parish, and Rayburn, 2006). Patients desire compassionate-empathic physicians though these are not often found in medical settings (Carmel and Glick, 1999). A career as a physician is considered a noble profession; it has consistently been among the most respected of professions, ranking among the top occupational categories for honesty and ethics (Saad, 2008). Unfortunately, interactions between physicians and others have not always been described in the most flattering of terms. Numerous published accounts describe physician arrogance (Lazarus, 2009; Bauerschmidt, 2008; Rudland and Mires, 2005; Duff, 2004; Berger, 2002; Hoffenberg, 2001; Friedman, 1997; Brody and Miller, 1981; Ingelfinger, 1980), which Merriam-Webster (2009) defines as an attitude of superiority manifested in an overbearing manner or in presumptuous claims or assumptions. Closely related is a condescending attitude defined as assuming an air of superiority (Merriam-Webster Online Dictionary, 2009). Many scholarly journal articles describe condescending attitudes of physicians toward others (Mason, 2002; Makoul, and Curry, 2007; Thompson, Robinson, and Beisecker, 2004; Wofford,
Wofford, Bothra, Kendrick, Smith, and Lichstein, 2004; Sulmasy, 2000; Becker, and Newsom, 2003). Still other articles describe poor communication skills or patronizing or abusive/disruptive behavior in physicians (Jenkins, 2002; Back, Arnold, Tulsky, Baile, and Fryer-Edwards, 2003; Branch, 2006; Duggan, 2006; Weber, 2004; Leape & Fromson, 2006; Rosenstein, and O’Daniel, 2005). In 2008 the Joint Commission issued staff behavior standards requiring hospitals to define a code of conduct along with consequences for bad behavior (Joint Commission issues staff behavior standards, 2008). The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) clarifies that

“intimidating and disruptive behaviors include overt actions such as verbal outbursts and physical threats, as well as passive activities such as refusing to perform assigned tasks or quietly exhibiting uncooperative attitudes during routine activities. ... Such behaviors include reluctance or refusal to answer questions, return phone calls or pages; condescending language or voice intonation; and impatience with questions” (JCAHO, 2003; O’Reilly, 2008).

Such negative perceptions and attributes can have detrimental consequences in the health care delivery system. Medical errors have been attributed to arrogance of physicians, as have poor patient compliance and outcomes (Duff, 2004; Richardson, Berwick, Bisgard, and Newhall, 2000; Lazare, 2006; Moskop, Geiderman, Hobgood, and Larkin, 2006; Barrier, Li, and Jenson, 2003). In fact, disruptive behavior in both nurses and physicians has been shown to have a negative impact on clinical outcomes. For example, Rosenstein and
O’Daniel (2005), found that nurses and doctors recognize that disruptive behavior results in negative or worsening effects on difficult situations, medical errors, patient safety, patient mortality, the quality of care, and patient satisfaction. The conclusions indicate that the consequences of disruptive behavior exceed issues of job satisfaction and morale, influence communication and collaboration among clinicians, and have a negative impact on clinical outcomes (Rosenstein & O’Daniel, 2005). Such behavior can also put into question the ethics at hand.

Needless to say, medical errors are a serious concern in the United States. This heightens the importance of studying the leadership behavior of physicians. In fact, between 44,000 and 98,000 die every year in U.S. hospitals because of medical errors (Sutcliffe, Lewton, and Rosenthal, 2004). Sutcliffe et al. conducted face-to-face interviews with medical residents regarding medical mishaps in which they had been involved. Though the sample size of the study was small, and it was anecdotal in nature, the study illuminated some important findings. The authors concluded that the occurrence of everyday medical mishaps were often associated with faulty communication and is related to upward influence. The communication failures were found to be far more complex than mere transmission or exchange issues. The failures related strongly to hierarchical differences, concerns with upward influence, conflicting roles and role ambiguity, and interpersonal power and conflict. Medical residents were often apprehensive in terms of offending or contradicting those in power. This
combined with their perceptions that powerful others would not listen to them or hear their point of view, discouraged the residents from expressing a conflicting point of view (Sutcliffe, Lewton, and Rosenthal, 2004).

Numerous studies have addressed the physician-patient relationship. Patients are often afraid to speak up and the literature is rife with articles addressing patient empowerment. Quill and Brody (1996) found that patients faced with serious medical decisions are vulnerable to being over- or under-influenced by physicians. Patients may fail to speak up due to feelings of intimidation by the physician (McGrath, 1999). In addition, other members of the health care team express similar concerns. Several articles address the hesitancy of nurses to speak up (Rosenstein, and O’Daniel, 2005). Certainly, all of these focus on the influence relationship among physicians and those they interact with on a routine basis.

Many of the aforementioned attitudes and behaviors may also be offensive to the patients. Numerous physician behaviors can contribute to humiliating or offending patients and, thus, lead to a poor service quality. These include excessive waiting times, failure to address the patient by his or her preferred name, violations of privacy of conversations and records, inappropriate body exposure of the patient, failure to listen to the patient and failure to adequately explain the nature of the illness or procedures, inadequate communications among the treatment team, and making disparaging or condescending comments about the patient’s medical conditions or habits. Patients who have been exposed to such behaviors may react in a variety of ways, such as concealing their anger, verbally
assaulting the physician or other members of the health care team, complaining to hospital administration and/or governing bodies or simply by seeking medical care elsewhere (Lazare, 1987). These findings and studies point to the need to investigate physician power and influence tactics as they relate to the various constituents and to different outcomes.

Furthermore, these negative perceptions and attributes harm the image of the physician and hinder their leadership capabilities. Paradoxically, in earlier times physicians were actually instructed to be condescending. In 1893, the Code of Medical Ethics prescribed that it was “often necessary for the physician to be condescending; to be yielding in minor details so that his authority may be greater in important particulars for the good of the sufferers” (An Analysis of Medical Ethics and Etiquette, 1893).

Certainly, although it is not appropriate for physicians to be condescending, many of these insalubrious attitudes continue to persist. Physicians are often in a very difficult position as there is often a genuine need to be assertive in some contexts. It may be that some such attitudes, a form of coercive power, give the physician the ability to manage effectively in certain situations (Schei, 2006; Måseide, 1991; Chervenak, McCullough, and Baril, 2006). Even Yukl (1994) acknowledges that some coercive power is necessary to reinforce legitimate and expert power when a leader needs to induce compliance with rules and regulations, or to restrain or eliminate those who would harm others, disrupt operations or cause the leader to appear weak and incompetent (Yukl, 1994). However, physicians need to better understand their own behavior
and influence patterns which may better prepare them to lead in this healthcare era. Physicians must know how to successfully influence and direct others in order to provide the best, safest, most efficient possible care in a rapidly changing environment. They must recognize how they influence others so that they can constructively influence a variety of constituents in a positive fashion in order to be effective leaders.

Social Influence and Power

Classic Studies on Influence and Power

Leadership is a concept with abundant definitions; in fact, there are almost as many different definitions as there are people who have tried to define it (Stogdill, 1974). There have been as many as 65 different classification systems developed to define the dimension of leadership (Fleishman, et al., 1991). A common thread among many of these definitions is the ability to effectively influence others (Zaccaro and Klimoski, 2001). Many definitions focus on the “personality perspective which suggests that leadership is a combination of special traits that individuals possess and that enable them to induce others to accomplish tasks” (Northouse, 2007). Neider and Schriesheim recognize “that a leader must be able to conceptualize the organization as a whole entity, developing internal and external processes that channel the entity’s energy into organizational unity and focus” (Neider and Schriesheim, 2001, p. ix).

It is apparent that leadership is closely linked with the ability to influence others. This leads to the question: what is influence? Basically, influence can be
conceptualized as the ability to motivate another to do what you would like them to. French and Raven (1959) define influence as a force one person (known as the agent) exerts on someone else (known as the target) to induce a change in the targets, including changes in behaviors, opinions, attitudes, goals, needs, and values (French and Raven, 1959). Barry (2001) describes social influence as the processes by which individuals modify their cognitions, attitudes and behaviors in response to socially constructed concepts” (Barry, 2001). “The study of social influence is renowned for its demonstrations and explication of dramatic psychological phenomena that often occur in direct response to overt social forces” (Cialdini, and Goldstein, 2004, p. 591). Effective leaders must be able to effectively influence others in order to enact change in their behavior to carry out requests, support proposals and implement decisions. Ultimately, “the effectiveness of leaders depends on their influence over superiors and peers as well as subordinates” (Yukl and Chavez, 2002, p. 140).

Closely intertwined and integrated with influence is the concept of social power. French and Raven (1959) define power as “potential influence of some individual or group O over an individual P, and legitimate power as that power which stems from internalized values in P which dictate that O has a legitimate right to influence P and that P has an obligation to accept this influence” (Raven & French, 1959). Social power can be envisioned as the resources accessible to one individual, so that he or she can shape the behavior of another individual; to behave in a fashion that person would not have otherwise been inclined to act
Level of power can be described as the degree to which one person has the capacity of influence over another, based upon that power.

Researchers have, in fact, been examining the issues of leadership, interpersonal influence processes and social power for more than a century (Neider and Schriesheim, 2001; Bruins, 1999). Machiavelli, in his early political treatise to the prince, Lorenzo de’ Medici, wrote *The Prince*, as a guide for Medici on how to govern his realm and maintain power. The now popular book contends that influence and control exist to build dominance over the people of the municipalities as a leader through the effective exercise of power (Machiavelli, 1505). More modern times have seen an influx in important research on power and influence in the fields of both social psychology and organizational behavior.

The social psychologist, Kurt Lewin, is credited as one of the first scholars in modern times to study power and influence (Lewin, 1941; Bruins, 1999). He developed a framework for change by looking at the forces that influence a situation. Specifically, Lewin considered “power the possibility of inducing force on someone else, or more formally, as the maximum force a person A can induce on person B divided by the maximum resistance that B can offer” (Bruins, 1999, p.8).

In the late 1950’s, John French and Bertram Raven established themselves as seminal researchers in addressing the issues of social power and influence. Chief among their vast body of work is their explorations into social influence
and power and the identification of the bases of power. Recognizing the processes of power are pervasive and complex, they enumerated five distinct bases of power: reward power, coercive power, legitimate power, referent power and expert power. They define reward power as the power whose basis is the ability to mete out rewards. Coercive power stems from the target’s expectation that he will be punished by the agent if he fails to conform to the influence attempt. It involves the ability to manipulate the attainment of valences. Legitimate power is the power that stems from internalized values that dictate that the agent has a legitimate right to influence the target and the target has an obligation to accept this influence. This is widely recognized as the legitimacy of authority a superior would have by mere nature of his/her job title. It is the perceived right of the person to holding an office and issuing directives. Referent power refers to the power originating from a feeling of oneness with the source of power; a desire to become closely associated with that person. Due to a personal liking of the agent, the target wants to behave like the source of the influence. Lastly, expert power results in primary social influence on a person’s cognitive structure. The strength of expertise power varies with the extent of the knowledge of perception the person attributes to the source of power within a given area. The target evaluates the agent’s expertise in relation to his/her own knowledge, as well as, against an absolute standard (French and Raven, 1959).

Filley and Grimes (1968) presented another classic investigation, focusing on the theoretical concept of power and power relationships. These researchers conducted exploratory studies to develop a reliable scheme by which future
qualitative statements could be classified for inclusion in a larger study. The study analyzed 36 full time employees all reporting to a single leader. Each participant was interviewed using a standardized questionnaire. This resulted in 864 statements to explain why people respond to decision situations. The authors perceived the findings as tentative and hoped this would set the stage for future research on this important topic. They also made an attempt to develop a classification system for the bases of power. Their preliminary investigation led to classifying the bases of power into a scheme with 12 types identified (Filley and Grimes, 1968).

However, the French and Raven model has been the conceptual framework used for most investigations attempting to assess power relationships within organizational settings. Numerous studies used the French and Raven model to measure the five bases of power in actual work settings (Bachman, Bowers, and Slesinger, 1966; Student, 1968; Thamhain and Gemmill, 1974; Dunne, Stahl, and Melhart, 1978; Busch, 1980; Cobb, 1980; etc.). Importantly, Podsakoff and Schriesheim (1985) in their review of numerous field studies found that “a majority of them suffer from severe methodological shortcomings that make their interpretation problematic at best” (p. 387). Their reanalysis of the literature “strongly suggested that some of the knowledge about the five basis of power was methodologically suspect” (p. 387). Podsakoff and Schriesheim raised several important questions regarding methodological problems in most of the field studies of power. They found that many studies investigating power used unsound psychometric measures. Because of this, they concluded that the
knowledge regarding the relations between bases of social power and subordinate criterion variables was likely to be incomplete (Podsakoff and Schriesheim, 1985).

Driven by the aforementioned limitations and methodological shortcomings of the French and Raven typology, Frost & Stahelski (1988) conducted a study in an “attempt to correct some of the scale format confounds that had affected previous empirical efforts.” A 23-item scale questionnaire was developed based on the French and Raven (1959) definitions for each base of social power. A Likert-type scale was utilized to report the frequency with which the participants used each behavior to exercise control over their subordinates. The factor analysis supported five distinct bases of social power (Frost and Stahelski, 1988).

Hinkin and Schriesheim (1989) developed new scales to measure the French and Raven (1959) bases of social power using psychometrically sound principles. They conducted a tiered study that designed measures of reward, coercive, legitimate, expert, and referent power. They began by generating definitions for each base of power, then evaluated the proposed definitions and came to a consensual agreement on the theoretical definitions. Next, they generated, and reached agreement on, a list of 53 items. These items were then submitted to a formal content validity examination by two independent panels of judges. Based on this content validity assessment, 42 preliminary items were generated. These items were investigated further for content validity by administering survey questionnaires to 254 participants. Subsequently, based on
the results from this sample, the list of items was reduced to 20, four items for each of the bases of power. Importantly, this was the first psychometrically sound investigation to evaluate the measures of power (Hinkin and Schriesheim, 1989).

An additional development in the field occurred when Kipnis, Schmidt, and Wilkinson (1980) introduced a new scale they pioneered to measure social influence. Since that time the scale has been cited in over 350 other articles, and is used repeatedly. This also set the path to measure influence. The researchers set out to analyze the tactics of influence used by people to change the behavior of their superiors, co-workers and subordinates. In the initial study, 165 lower-level managers wrote essays to describe an incident in which they influenced their boss, co-workers or subordinates. Through a content analysis of the essays, Kipnis and his colleagues identified 370 influence tactics which they grouped into 14 categories. In a follow-up study, a 58-item questionnaire was developed and used to investigate the extent to which the participants used each item to influence their boss, co-workers or subordinates. Factor analysis was used for additional refinements leading to eight tactics of social influence (Assertiveness, Ingratiation, Rationality, Sanctions, Exchange, Upward Appeals, Blocking, and Coalitions). Subsequently, Kipnis, Schmidt and Wilkinson developed a commercial version of their tool called the Profiles of Organizational Influence Strategies (POIS) to measure the eight influence tactics. The POIS is a self-report questionnaire from the perspective of the agent (Kipnis, Schmidt, and Wilkinson, 1980; Kipnis and Schmidt, 1982).
Littlepage et al. (1993) compared three instruments frequently used to study the French and Raven (1959) power bases: the Hinkin and Schriesheim (1989) Power Scale, the Frost and Stahelski (1988) Social Power Scale, and the Kipnis et al. (1982) Profile of Organizational Influence Strategies (POIS). The authors hoped to replicate earlier independent studies on these tools and further assess the internal consistency and factor structure of the instruments. The three scales were administered to a sample of 479 undergraduate psychology students with at least three months of work experience. The Hinkin and Schriesheim (1989) instrument demonstrated stronger internal consistency and a more precisely defined factor structure than the Frost and Stahelski (1988) instrument. Also, the corresponding scales of the two instruments which measured the French and Raven (1959) power bases were not highly correlated, suggesting that the two instruments are not equivalent nor interchangeable. The Hinkin and Schriesheim instrument scale measured five distinct factors while the Frost and Stahelski tool measured only four distinct factors. In terms of comparison, the alpha coefficients demonstrate that the Hinkin and Schriesheim tool has the highest reliability of the three tools with a mean alpha of .84. The Kipnis et al. POIS tool shows moderate reliability with a mean alpha of .68. The Frost and Stahelski tool showed the lowest reliability with a mean alpha of .54, and also appeared to have serious psychometric deficiencies. Also, “the pattern of correlations between scales of the three instruments suggests that neither the French and Raven, nor the POIS typology fully represents the structure of influence tactics” (Littlepage, Van Hein, Cohen, & Janiec, 1993, p. 107).
In response to many subsequent studies and new theoretical conceptualizations of power, Raven, Schwarzwald, and Koslowsky, (1998) developed an instrument to measure 11 bases of power. These power bases incorporated the six original French and Raven (1959) bases of power along with further differentiation of three of the bases. The researchers devised a new scale, the Interpersonal Power Inventory (IPI), to measure the expanded bases of power structure. The internal consistency of the items which made up the 11 bases of power proved adequate. Factor analysis established seven factors and two factor solution or categories of bases: harsh and soft. The weak or soft bases: credibility, reference, and legitimate dependence, explained 34.6% of the variance. Whereas, the harsh or strong bases of power made up 24.7% of the variance. These were considered to be legitimate equity, impersonal sanction, personal sanctions and legitimate position. The tool has not appeared to draw much subsequent use or attention. The results showed individual alphas ranging from .67 to .86. Also, in conjunction with the study, the authors set forth quite a complicated diagram, or model, to explain their smallest space analysis (SSA) of the 33 items in the IPI. The smallest space analysis examines the latent structure of the underlying conceptual space formed by the scale items. The SSA provides a space diagram for dimensionality or a pictorial representation of the distribution of the items. This is meant to help conceptualize the overall empirical structure (Raven, Schwarzwald, & Koslowsky, 1998).

The first useful framework for future studies tying together the research on influence and power was devised by researchers Timothy Hinkin and Chester
Schriesheim (1990). In a collaborative effort between the two, the relationships between subordinate perceptions of supervisor influence tactics and attributed bases of supervisory power were analyzed. The sample included 251 working, senior business students, who completed a questionnaire regarding their perceptions of their supervisors. Exploratory factor analysis showed that influence targets were able to distinguish five of the seven Kipnis et al. dimensions giving further support for their validity. Furthermore, this demonstrated that future research may be able to employ these measures to examine target perceptions of agent influence behaviors. In addition, the confirmatory factor analysis results reinforced the distinctiveness between the constructs of power and influence. In a more practical realm, the new scales developed could be useful in observing the relationships between perceived leader power and leader behaviors (Hinkin and Schriesheim, 1990).

Additional studies conducted by Schriesheim and Hinkin (1990) led to the creation of psychometrically improved Kipnis et al. scales, significantly advancing research in power and influence. Initially the researchers critiqued the Kipnis and associates influence subscales, then, in a series of four studies, Schriesheim and Hinkin examined the influence subscales. Exploratory factor analyses were conducted in each of the studies and each study built upon the previous with refinements along the way. The overall findings gave support to the dimensionality of the subscales and also provided evidence that substantial improvements could be made by deleting some items and by adding others. The results of the studies supported six of the original eight subscales: rationality,
exchange, ingratiation, pressure, coalition, and upward appeal. The remaining two tactics did not provide stable factors; as a result the blocking and sanctions subscales were eliminated. Schriesheim and Hinkin then adapted the influence scale to develop a tool for measuring social influence, known as the Schriesheim and Hinkin Revised POIS. There were 18 final subscale items, three for each of the six identified factors. Fifteen of these were from the original Kipnis, et al. items and three new subscale items (Schriesheim and Hinkin, 1990). (Appendix 1).

The Kipnis POIS and the Schriesheim and Hinkin Revised POIS have been used as the basis for research in many studies over the years (Thacker and Wayne, 1995; Higgins, Judge, and Ferris, 2003; Ammeter, Douglas, Gardner, Hochwarter, and Ferris, 2002; Deluga, 1991; Deluga and Perry, 1991; etc.). It should be noted that the Schriesheim and Hinkin Revised POIS examined upward influence (not influence of peers and subordinates) and thus the validation of the instrument was tested for upward influence only. However, a few studies have used the Schriesheim and Hinkin Revised POIS to measure lateral and/or downward influence (Erez and Rim, 1982; Kipnis, Schmidt, and Wilkinson, 1980). Interestingly, one study was found which combined elements from three different tools to measure influence; the POIS, the Schriesheim and Hinkin Revised POIS and the Influence Behavior Questionnaire (Moss, Barbuto, Matkin, and Chin, 2005). It should be recognized that using adaptations of the scales should be viewed with caution, as the validity and reliability has not been tested.
The first half century of research on power and influence, from the preliminary work of Kurt Lewin (1941) through and including the development of scales for measuring each made great strides and the field has experienced vast advancements. Fifty years of research brought excitement and attention to the field. Important questions had been raised and the door for future research remained wide open.

**Contemporary Extensions Linking Influence with Power**

Recent scholarship in this area has been on linking power with influence, investigating the interaction of the two, and increasing attempts at quantifying the results. Jan Bruins (1999) recognizes that after a period of moderate activity the research on power and influence is increasing in volume as well as impact. The growing body of research is contributing to our understanding of social problems and is elucidating possibilities for corrective actions to counter the issues addressed in the research (Bruins, 1999).

Gary Yukl and his various colleagues have significantly built upon the work on power and influence by providing important contributions to the field, and have emerged as the most prolific researchers in the field (Yukl, and Falbe, 1990; Yukl, Chavez, and Seiffert, 2005; Yukl and Tracey, 1992; Yukl, Kim and Falbe, 1996; Yukl and Chavez, 2002; Yukl, Seiffert, and Chavez, 2008, etc.). Yukl & Falbe (1990) conducted two further studies in order to replicate and validate the original Kipnis, Schmidt, and Wilkinson influence tactics subscales. The research used information gathered from both the agents and the targets of
influence. Yukl and Falbe reported several limitations and concerns in the Kipnis et al. study; primarily, the list of influence objectives needs to be extended, the range of influence tactics measured by the questionnaire was too narrow, and the research examined only self-perception. Overall, the findings demonstrated some inconsistencies with the Kipnis et al. subscales. The conclusion from Kipnis et al., that managers have different reasons for influencing subordinates, peers, and supervisors, was largely supported. However, in other areas the results only partially replicated the Kipnis et al. findings for differences in upward, downward and lateral use of influence tactics. The research also supported the addition of consultation and inspirational appeals to the list of influence tactics (Yukl and Falbe, 1990).

Further analysis by Yukl, Lepsinger, and Lucia (1991) identified a larger group of proactive tactics that are relevant for leaders in an organization. (Proactive tactics are those used in an attempt to influence someone to carry out a request.) The researchers developed and validated a new tool to measure these proactive tactics. They called the tool the Influence Behavior Questionnaire (IBQ). (Appendix 2). The IBQ is designed to measure a manager’s use of the nine tactics used to influence subordinates, peers, and superiors. The tool was specifically developed for use by targets. Factor analysis of the responses to the IBQ by subordinates, peers, and bosses included nine distinct tactics, including five that were similar to those found in the Schriesheim and Hinkin (1990) revisions, namely: rationality, exchange, ingratiation, pressure, and coalition. The additional four tactics were drawn from the leadership and power literature.
These include: consultation, inspirational appeals, personal appeals, and legitimating. The research demonstrated that an upward appeal is a form of coalition that did not, for the most part, emerge as a separate factor (Yukl, Lepsinger, and Lucia, 1991; Yukl & Chavez, 2002).

Yukl and Tracey (1992) conducted a survey field study to investigate how a manager’s use of the nine different influence tactics is related to the target’s task commitment and the manager’s effectiveness. The survey was completed by the subordinates, peers and boss of each manager. The newly developed IBQ was utilized in conjunction with other questions. These questions included how many influence attempts by the agent resulted in complete commitment by the target respondent; and the respondents rating of the overall effectiveness of the influence agent (manager) in carrying out his or her job responsibilities. The relationship to manager effectiveness was determined by group-level analysis. Directional differences (upward, lateral or downward) in frequency of use were found for all of the tactics with the exception of consultation. The findings indicated that the most effective tactics were rational persuasion, inspirational appeal, and consultation and that these tactics were found to be effective across directions. Pressure, coalition and legitimating were found to be the least effective tactics. Ingratiation and exchange were found to be moderately effective for influencing subordinates and peers, but were not effective for influencing superiors. Inspirational appeal, ingratiation, and pressure were used most in downward influence. Personal appeal, exchange and legitimating were used most frequently in lateral relationships. Coalitions were used most frequently in both
lateral and upward directions. Finally, rational persuasion was used most often in an upward influence direction. Overall, the study provides further support for the construct validity of the nine influence tactics (Yukl & Tracey, 1992).

In an interesting study by Yukl, Falbe, and Youn, (1993) patterns of influence used by managers with their subordinates, peers and superiors were investigated using 145 working MBA students, half at the managerial level. Forms were utilized for respondents to provide information relating critical incidents regarding influence attempts and there were fixed-response items to indicate the direction of the influence (up, down, or lateral) and the final outcome of the influence (resistance, compliance or commitment). Coding was conducted independently by two people out of four coders. A total of 646 target incidents were obtained. The study is noteworthy in that it was the first to use the critical incident approach to study directional differences in the use of influence tactics. Also, it was the first to study how often various tactics are used alone and in combination. The findings support the notion that selecting what tactics to use through empirically based guidelines would have the practical outcome of providing managers with a course of action to identify appropriate tactics and would help improve their skills at influencing others. Furthermore, the authors identified a set of 11 tentative guidelines to facilitate this process (Yukl, Falbe, & Youn, 1993).

In a further refinement on the identification and classification of measuring and classifying interpersonal influence, Yukl, Chavez, & Seifert (2005) assessed the construct validity and relative effectiveness of two new influence
tactics, collaboration and apprising. These items had been added to the IBQ when efforts to make the IBQ more useful for multisource feedback to managers revealed evidence of these tactics. The primary purpose of the research was to investigate the construct validity of collaboration and apprising as proactive influence tactics. Another objective of the study was to evaluate the usefulness of collaboration and apprising in lateral and downward influencing of peers and subordinates. Three different methods were used for the study: a field study, incident analysis, and a laboratory experiment. A confirmatory factor analysis supported collaboration and apprising as distinct from the nine other proactive tactics. On the practical side, the research supported collaboration as a highly effective method for influencing peers and subordinates while apprising, which can be considered as an explanation of why a request is likely to benefit the target as an individual, was less effective than either rational persuasion or collaboration. Consistent results were reported across the three different methods used in the study, increasing the validity of the research (Yukl, Chavez, and Seiffert, 2005).

Despite the large volume of research on the use of influence tactics in organizations, the results remain largely inconsistent. To shed light on this problem, Higgins, Judge and Ferris (2003) conducted a meta-analysis of the research. They initially targeted 81 articles for review but after careful inclusion rules selected 23 studies for their analysis. The meta-analysis was used to estimate true population correlations between various influence tactics and work-related outcomes. Their results demonstrate support for positive effects on work
outcomes through use of the influence tactics of ingratiation and rationality. Importantly, the researchers found that individuals who use logic and data to justify their requests and who exhibit ingratiatory behaviors, seem to have a greater chance of succeeding in their career than individuals who use these tactics to a lesser degree. In addition, the findings suggest that use of differing influence tactics have significant effects in certain situations and on specific work outcomes. For instance, ingratiation and self-promotion were strongly associated with success in the employment interview (Higgins, Judge, & Ferris, 2003).

Yukl, Seifert, and Chavez (2008) recently published four studies to validate the extended version of the Influence Behavior Questionnaire. Further, Yukl et al. differentiated between the IBQ-R, and the IBQ-G. The IBQ-R, which is useful for longitudinal studies, measures for the 11 proactive influence tactics where each tactic is represented equally, but presented to the respondent in a random order. In the IBQ-G each of the tactic scales has four items which are presented to the respondent in order. The IBQ-G was used for the validation studies. The results largely support the validity of the 11 influence tactic scales in this newest version. Findings indicate that the IBQ-G measures an agent’s use of the 11 tactics, through the perspective of the target, with an acceptable degree of accuracy when the target is a subordinate or a peer. Specifically, the validation research indicates that four items per scale provide for content validity and internal consistency. The authors assert that the IBQ questionnaire, both the R &
G versions, have extensive potential applications for research, as well as for practice, and feel it is the most comprehensive and best validated measure of proactive influence tactics (Yukl, Seifert, & Chavez, 2008).

Robert Cialdini and Noah Goldstein, social psychologists at Arizona State University, have also reviewed developments in the social influence literature focusing on compliance and conformity research. They delved into a divergent tact of the influence process. In an extensive review of the social influence literature between 1997 and 2002, they focused on the extent to which three central motivations, (to be accurate, to affiliate and to maintain a positive self-concept) would drive targets’ cognitions and behaviors when looking at compliance and conformity. They concluded that “targets are motivated to form accurate perceptions of reality and react accordingly, to develop and preserve meaningful social relationships, and to maintain a favorable self-concept.” Ultimately, the review stressed the ways in which goals fundamental to rewarding human functioning interact with external forces, to engender social influence processes that are outside of awareness. They draw attention to the recent trend in social psychology that focuses on the demonstration of non-conscious influence and automaticity in everyday life (Cialdini & Goldstein, 2004).

Yukl and Chavez (2002) recognized four factors researchers need to identify in order to better understand influence processes. First, researchers need to distinguish distinct tactics of influence which can be observed and measured. Secondly, it is necessary to identify the relevant criteria necessary to delineate if the influence process was a success. Thirdly, the researcher needs to recognize
both conditions which can help facilitate each influence tactic, as well as the limitations of those tactics. Finally, Yukl and Chavez stress that researchers should identify the mediating processes that can help explain the effects of the tactics (Yukl & Chavez, 2002).

Recently, Elias (2008b) provided an overview of the history and evolution of the bases of power set forth by French and Raven (1959) extending this framework to examine the power/interaction model. Further, he addresses the future of this nomenclature in organizational settings. Elias asserts that advances made to the original French and Raven power taxonomy have not been incorporated into the management and organizational behavior literature. Elias holds that the current taxonomy addresses 14 bases of power. Though it is unclear which taxonomy he is referring to. [Raven, Schwartzwald and Koslowsky (1998) differentiate 11 bases of power; Raven (1993) differentiates 14.] He explores contemporary developments and cites studies which break down these power bases as follows: personal versus impersonal reward and coercive power, four forms of legitimate power (position, reciprocity, equity, and dependence), positive versus negative expert and referent power, and direct versus indirect informational power. While there have been numerous studies in this regard, Elias fails to address the fact that the extended taxonomies remain largely untested for psychometric properties. Also, many of these have been standalone studies and no one has addressed all fourteen of these bases all in one study. He
does recognize that because of the advances made in the power taxonomy since its inception, there is still much to discover and apply to organizational settings (Elias, 2008b).

To summarize, there has been a great deal of research in the literature focused on power and influence. Several studies have confirmed the concept that power and influence are recognized as distinct constructs (Hinkin & Schriesheim, 1990; Kapoor & Ansari, 1988; Yukl, Kim & Falbe, 1996). However, “the relationship among specific forms of power, specific influence behaviors, and influence outcomes is complex and not well understood” (Yukl, 2006, p. 169). Advantageously, the body of work on social influence and power from the social sciences can be used to analyze and build a physician driven model. It is apparent that further research in this regard is essential in order to better understand the complexities of understanding influence behaviors and the impact of these on managerial effectiveness.

**Comparison of the IBQ and Schriesheim and Hinkin revised POIS**

Side-by-side comparisons of the Yukl et al. IBQ scales and the Schriesheim and Hinkin Revised POIS scales, including psychometric comparisons, may further elucidate the strengths and weaknesses of each. This would be helpful to researchers in the determination of which influence measurement tool would provide the most rigorous scales for the measurement of influence. The IBQ was developed as a target questionnaire whereas the Revised POIS was developed from the agent perspective; though subsequently at least two
studies have used the POIS to measure target influence behavior (Erez and Rim, 1982; Kipnis et al. 1980). The Schriesheim and Hinkin revised POIS scales found six distinct tactics of influence: Ingratiation, Exchange, Rationality, Assertiveness, Upward Appeal, and Coalitions; while the IBQ identified eleven proactive tactics: Rational persuasion, Consultation, Inspirational appeals, Collaboration, Apprising, Ingratiation, Personal appeal, Exchange, Legitimating tactics, Pressure, Coalition tactics (Schriesheim and Hinkin, 1990; Yukl, Lepsinger, and Lucia, 1991; Yukl, Seifert, and Chavez, 2008). Appendix 3 provides a side-by-side psychometric comparison of the IBQ and the Schriesheim and Hinkin Refined POIS as compiled by the author of this research (Alonso).

In the Schriesheim and Hinkin (1990) examination of the Kipnis, Schmidt and Wilkinson (1980) influence subscales, four studies were conducted. The first study leading to the revised tool included 34 senior business students who answered a questionnaire designed to investigate 27 items taken from the original POIS. Theoretical content validity results showed that 21 items had 70% or greater assignment to the proper influence categories, five other items had less than a 60% of the points assigned to the proper influence categories, and one item did not measure its hypothetical dimension. In the second study, which closely mimicked original Kipnis et al. (1980), 251 business school undergraduates responded to a questionnaire which contained the six Kipnis et al. influence subscales. The respondents were asked (on a five point scale) the frequency with which they used each tactic with their boss in the past six months. Eigenvalues and a scree plot indicated that a six-factor solution was most appropriate.
Rationality and Coalition items loaded as predicted and considerable cross-loading occurred with the other four subscale items and one factor had no substantial loadings. The analysis of the 21 tactics discussed in study one, produced a stronger factor structure with 67.8% of the variance explained, although some of the items did not load strongly on their appropriate factors. The final principal axis factor analysis with 17 items explained 73.2% of the variance and demonstrated a good factor structure with all of the items loading strongly and as predicted. Thus, the plot of eigenvalues and the proposed theoretical structure suggested a six factor solution (Schriesheim and Hinkin, 1990).

Study three was conducted to determine the degree of confidence that could be placed in the findings from study two. To this end, the original set of 58 Kipnis items were reviewed to see if the same set of 27 “best” items would emerge. The sample consisted of 281 MBA students. The data were subjected to multiple analyses. Ultimately, when a factor analysis was conducted of only the 27 Kipnis et al. items which were examined in study two, the eigenvalue-one criterion and the scree plot once again supported the extraction of six factors. In this study the 27, 21, and 17-item instruments had approximately the same coefficient alpha reliabilities (Schriesheim and Hinkin, 1990).

In the fourth and final study, the researchers explored whether the scales of the 17-item instrument could be improved upon by the addition or deletion of items. Two of the items from study 3 were not performing satisfactorily so they were altered – one item was deleted and the other was replaced with a new one. The item deleted was not replaced since there were already four ingratiation items
included in the 17-item set. The final instrument then included an 18-item scale.
The fourth sample consisted of 181 clerical and secretarial workers from a medium-sized southern university. The data were analyzed using LISREL analysis and the data from study three was also analyzed under the new 18-item scale. In both samples the theoretical dimensionality of the scales supported the extraction of six factors. The scree plots also demonstrated a six factor scale. In sample three 69.4% of the variance was explained and in sample four 74.8% of the variance was explained and the two samples closely mirrored one another. The factor loadings for all of the items of the new scales were acceptable and were between .73 and .83. The results suggested that this new 18-item scale warranted further use in research (Schriesheim and Hinkin, 1990).

Hochwarter, et al. (2000) reexamined the taxonomy and instrumentation originally presented by Kipnis et al. and later modified by Schriesheim and Hinkin, using four independent samples to collect the data with a large sample size in each. The results found modest support for the scales. Interestingly, the moderate findings were reported in two of the samples and the other two samples were more consistent with previous research. For Samples 1 and 2 scores on the ingratiation factor did not meet adequate reliability and data for the assertiveness factor were not acceptable (8 out of 24 subscale reliability estimates failed to meet a minimum threshold). The second two samples did support the six factor model. The researchers suggest that perhaps using working students, as in Sample 1, is problematic in assessing construct validity since it may be premature to assume that students fully understand the nature of work, are committed to work and
whether they are even interested in upward influence tactics. The study did provide support, through confirmatory factor analysis, for the construct validity of the six influence tactics as measured by the target perspective in upward influence (Hochwarter, Pearson, Ferris, Perry, and Ralston, 2000). Given the dichotomy between the four samples it is clear that further research is warranted to address the psychometric properties of the scale.

Yukl, Lepsinger, and Lucia (1991) developed and validated a tool, the Influence Behavior Questionnaire (IBQ) to measure the use of nine influence tactics by managers among peers, subordinates and superiors. The results of prior research on power and influence, descriptions of successful influence accounts from the literature, and descriptions of influence behavior from diaries were considered in the development of a new tool. Critical incidents were then collected and analyzed. Factor analysis, sorting of the influence behavior examples by subject matter experts, revisions of the categories and examinations of the outcomes resulted in a taxonomy of nine influence tactics (Yukl, Lepsinger, and Lucia, 1991).

Scales of five to seven items measure the nine tactics. The initial studies focused on target reports. The authors state that two studies were conducted with several hundred respondents in each study, though, interestingly, internal consistency tables identified results for three studies. The researchers noted that factor analysis corresponded to the six factors yielded in the revised POIS,
however, orthogonal factors for three additional tactics were demonstrated.
Hence, consultation, inspirational appeals and legitimating tactics were added

The first study analyzed 506 peers and 118 managers from three large
companies. The questionnaires included the IBQ and two criterion measures on
task commitment and quality of relations. The second study was conducted with
participants from five large companies. The sample size included 526
subordinates and 543 peers of 128 managers. The questionnaire was the same but
the quality of relations was not included, and instead, the respondents were asked
to rate the managers overall effectiveness on a nine point scale (Yukl, Lepsinger,

Later, Yukl and Seifert (2002) revised the IBQ to include two additional
tactics, collaboration and appraising. Another target version is called the IBQ-R
and is used for longitudinal studies and uses the same approach for ordering items
as in the earlier version. The IBQ-R and another extended target version, the
IBQ-G, were investigated in a series of studies by Yukl, Seifert and Chavez
(2008). Twenty doctoral students coded the items and an item was retained only
if it was scored accurately by 75% of the coders. For most of the items the coding
accuracy exceeded 80%. The other method used to identify the items was
exploratory factor analysis. The analysis indicated support for the 11 factors
(Yukl, Seifert, & Chavez, 2008).

In the first study, data from 259 target subordinates and 229 target peers
who rated their boss or peer using the IBQ-R, was included. The second sample
used 70 MBA students who had regular full time positions and who rated their immediate boss on the target IBQ-G. The third sample included 71 subordinates and 75 peers of 26 middle managers at a grocery chain using the IBQ-G. Lastly, sample four included 45 subordinates and 65 peers of 9 middle managers in a manufacturing firm. Confirmatory analysis provided support for both convergent and discriminate validity of the eleven influence tactics. The goodness-of-fit, using Sample 1, was .90 which was acceptable as a value of .90 or greater is required for a good fit (McDonald and Ho, 2002). The pattern of results demonstrated that the tactic scales have adequate discriminant validity and the internal consistency was adequate though a few of the values were less than .80. These studies indicate that the IBQ-G measures an agent’s use of the eleven tactics with an acceptable degree of confidence when the target is a subordinate or a peer (Yukl, Seifert, & Chavez, 2008). The researchers also compared the findings by looking at only the six tactics recognized by the revised POIS questionnaire.

While psychometric comparisons are helpful in determining which tool to use to measure the influence tactics of physicians, questions remain with both tools. The revised POIS was developed from the target perspective though notably, a few studies have used the revised POIS for agent perspective (Erez and Rim, 1982; Kipnis et al., 1980). The IBQ was developed as a target questionnaire. The parallel agent version of the IBQ is used primarily for feedback interventions to help managers. Validity evidence for both tools should not be presumed to generalize to agent or target respectively. Also, both tools
were designed and tested in the traditional boss, peer, employee context. Neither tool has been validated in a different context such as for the physician population where physicians are frequently not employees but rather independent practitioners. The validation of the extended Influence Behavior Questionnaire is quite recent and further validation by an independent researcher has not yet occurred. The Schriesheim and Hinkin Revised POIS has been independently evaluated by Hochwarter et al. (2000). After weighing the pros and cons of each tool it was concluded that the Schriesheim and Hinkin Revised POIS would best meet the needs of the proposed study.

**Forcefulness of Tactics**

Another line of research in social influence further delineates between “hard” and “soft” tactics, creating meta-categories which are classified according to the “extent to which using particular influence tactics takes control over the situation and the target, and does not allow the target any latitude in choosing whether to comply” (Tepper, Brown, and Hunt, 1993, p. 1906; Kipnis, 1984; Kipnis and Schmidt, 1988; Bruins, 1995). Indeed, Bruins (1997) considers that tactic strength may be considered the most important dimension of influence tactics. Tepper and Schriesheim (1991) define influence strength as the extent to which using each of the tactics takes control over the situation and the target by compelling compliance and not allowing for the opportunity to decline. "Ergo, the distinction between hard and soft tactics mirrors the difference in forcefulness of the tactic" (van Knippenberg and Steensma, 2003, p. 57). This dimension
demonstrates the strength or forcefulness of the tactic. Further, this difference between hard and soft influence tactics has helped to align the influence model for research (Tepper et al., 1993) and numerous studies have used this approach (Schriesheim, Castro, and Yammarino, 2000; Case, Dosier, Murkinsson, and Keys, 1998; Falbe and Yukl, 1992; Yukl, Falbe and Youn, 1993; van Knippenberg, van Knippenberg, Blaauw, and Vermunt, 1999; etc.).

The influence tactics employed by the agent vary with the degree of control which the agent has over the target and the situation. When soft tactics are employed the target feels he or she has greater latitude in complying with the employed tactic than with the use of hard tactics. Consequently, hard tactics put greater force on the target to comply, resulting in an increased strain on the relationship (van Knippenberg and Steensma, 2003). The category of hard tactics consists of tactics which are more controlling and coercive, while the soft tactics give the target a greater degree of freedom in choosing whether or not to comply (van Knippenberg, van Eijbergen and Wilke, 1999). A soft strategy involves less aggressive, more psychologically manipulating means (Neale and Northcraft, 1991). Tepper, et al. (1993) further conclude that agents use stronger influence tactics under certain conditions when:

a) The agent has more power than the target,

b) The agent seeks organizational (as opposed to personal) objectives,

c) The likelihood of target compliance is low, and

d) The target has failed to comply in the past because they lack motivation (rather than ability; p. 1906).
The tactics have been categorized into groups based on their strength dimension to reflect higher-order categories of influence (Bruins, 1997; Farmer, Maslyn, Fedor, and Goodman, 1997; van Knippenberg et al., 1999). Thus, the tactics have been sub-divided to represent hard or soft tactics based on the degree of forcefulness. The hard tactics are comparatively more controlling and coercive, whereas the soft categories are less controlling and less coercive. The soft tactics allow for a greater degree of freedom for the target in choosing whether or not to comply. Influence tactics considered to be in the "hard" higher-order category have included pressure, assertiveness, coalition, legitimating, and blocking. Ingratiation, inspirational appeals and rationality have been included in the "soft" meta-category (Farmer et al., 1997; van Knippenberget al., 1999). Barry and Shapiro (1992) characterize the hard tactics as more forceful and included legitimating, exchange, pressure and coalition tactics. They typify the soft tactics as interpersonal tactics, such as rationality, inspirational appeals, consultation, ingratiation and personal appeals. McShane and Von Ginlow, 2007, identify the hard influence tactics as silent authority, upward appeal, coalition formation, information control, and assertiveness; and the soft influence tactics as persuasion, ingratiation, impression management and exchange. Additionally, they portray the soft tactics as resulting in commitment and the hard tactics resulting in resistance, with an overlapping segment of the two resulting in compliance.

Farmer et al. (1997) delineate three meta-categories: hard strategies, soft strategies and rational strategies. Their framework includes, assertiveness, upward
appeals, and exchange based on target coalition as the hard strategies; ingratiation, exchange based on invoking norm of reciprocity, and coalition as the soft strategies; and rationality and exchange as bargaining as the rational strategies. Second-order factor analysis provided some support for the dimensionality of upward influence tactics as representing hard, soft, and rational strategies. The authors found that each strategy was related to a unique set of predictors (Farmer et al., 1997).

Though many studies have used tactic strength as a variable in their analyses, for the most part they are using a measure which has not been validated. Only two studies to date have actually attempted to measure the strength of the tactics. Tepper and Schriesheim (1991) conducted a scaling task where 199 managers rank-ordered twenty different influence categories measuring seven tactics in terms of their strength. The obtained scale values were friendliness (.001), showing the target what to do (1.472), offering to initiate an exchange (1.553), rationality (2.143), upward appeal (2.864), coalitions (2.996), and punitive threats (3.398). Two studies have used these scales to measure the controlliness of the influence, in conducting their research (Schriesheim, Castro, and Yammarino, 2000; Tepper, Brown, and Hunt, 1993). Van Knippenberg et al. (1999) also attempted to quantify the strength of the tactics. They conducted a preliminary study which was designed specifically to measure the strength of the influence tactics. The sample consisted of only 18 respondents who were asked to indicate on a one to seven scale how hard they considered each of the influence tactics. Their results showed the following mean
scores: Assertiveness 5.72, blocking, 5.68, coalition 5.59, exchange 3.90, rationality 3.35, and ingratiation, 2.98. From this the authors included the assertiveness, blocking and coalition tactics as hard tactics, and the exchange, rationality and ingratiation tactics as soft tactics. The mean value for upward appeal is not stated, nor is it clear if this was even evaluated. Though the scale did include a one through seven rating, only six tactic means are presented.

While many researchers conceptually agree that each of the tactics has a varying degree of forcefulness, they do not appear to reach consensus on identifying the "hard" or "soft" tactics. There are many discrepancies among researchers on the categorizations and only the two aforementioned studies (Tepper and Schriesheim, 1991; van Knippenberg et al., 1999) actually attempt to measure the tactic strength. Also, one can point out that there are inconsistencies in the actual number of social influence tactics recognized by different researchers.

Many factors appear to drive the relative frequency with which hard and soft tactics are used. There appears to be a greater preference for soft tactics over hard tactics. This preference of tactic use may be explained by the differential stress the given tactic may place on the relationship between the target and the agent. The agent wields influence as a mechanism to have an effect on the target to carry out a directive or change behavior in a desired fashion. From the target perspective, the use of influence will alter his or her behavior and the situation. Accordingly, the use of influence can come across as unpleasant to the target. Generally speaking, the soft tactics allow the target some freedom in choice,
whereas, the hard tactics are perceived as less friendly and less socially desirable. Therefore, the hard tactics are more likely to place a strain on the relationship (van Knippenberg, and Steensma, 2003). The literature suggests that the frequency of use of soft tactics is greater than that of hard tactics (Aguinas, Nesler, Hosoda, and Tadeshi, 1994; van Knippenberg, Eijbergen, and Wilke; 1999; Yukl and Tracy, 1992). Furthermore, the harder tactics have been found to be less effective than the soft tactics (Falbe and Yukl, 1992).

The reason many studies have documented that influence behavior is dominated by the use of soft tactics may be that the use of hard tactics would more easily endanger the relationship between the target and the agent (van Knippenberg, and Steensma, 2003). This is especially important in the physician population where use of hard tactics, which might be necessary in certain situations, could have deleterious effects if used inappropriately.

Methodological Issues with Measuring Power and Influence

A review of a small sampling of the body of work on social science and organizational behavior research methodology provides a good basis for the present researcher to better assess the pertinent literature reviewed, and also helps to build a better understanding of, and framework for, the research methods to be employed. Sound psychometric measurement is vital in order for the field to advance. Furthermore, the lack of instruments with demonstrated validity and reliability is an impediment to progress in any area of science (Schwab, 1980).
Many questions persist regarding the psychometric properties of measurement of power and influence. Additionally, concerns with the research includes issues of reliability and validity of constructs, inappropriate sampling and poor factor analysis/structure (Hinkin, 1995; Littlepage, Van Hein, Cohen, and Janiec, 1993; Ford, MacCallum, and Tait, 1986; etc.). Numerous researchers have focused on improving and validating organizational behavior research methods. Several of these studies have laid the foundation for the development of psychometrically sound measures for organizational behavior and psycho-social research including studies addressing power and influence metrics. A brief analysis of a few of these studies can facilitate an improved understanding and evaluation of the body of work completed in this regard. The soundness of a particular study can be better gauged after review of the research methods literature, and studies with increased validity and reliability can be formulated and conducted.

Ford and colleagues (1986) provided a systematic assessment of how factor analysis had been applied in psychological research. The researchers analyzed 152 studies that utilized factor analysis, finding that poor choices have been made by researchers in many of the issues relevant to factor analysis. Reporting practices and replicability of the studies was found to be lacking. The authors recommended that factor analytic procedures should be presented clearly and detailed enough to provide for informed review that makes it easy enough for others to replicate. They set forth twelve recommendations for information that should be included in the information reported when reporting factor analytic
results and feel that following these recommendations would help improve the quality and validity of the information reported in research studies. This information should include the factor model, the method for estimating communalities, the rotation method, the strategy for interpretation, eigenvalues, percentage of variance, complete factor loading matrix, descriptive statistics, computer program utilized, the method for computation of factor scores and the pattern matrix if oblique rotation is utilized (Ford, MacCallum, and Tait, 1986).

Anderson and Gerbing (1991) proposed a pretest methodology for predicting the performance of measures in confirmatory factor analysis. Two indices to establish substantive validity were proposed: the substantive agreement index (SA) and the substantive validity index (SV). Subjects in the pretest samples should be selected to be representative of the main study sample and the population of interest (Ghiselli, Campbell, and Zedeck, 1981; Green, Tull, and Albaum, 1988). Recommendations for pretest samples range from 12 to 30 (Hunt, Sparkman, and Wilcox, 1982) and researchers tend to agree that the number should remain relatively small. In light of this, Anderson and Gerbing chose twenty as the pretest sample size. Results from two pretest samples provided support for use of SV coefficient values to discriminate measures which would and would not be retained in confirmatory factor analysis. Significant evidence was found for the reproducibility of the SV index across the two samples. It was noted that researchers utilizing the pretest method outlined by the authors should be able to substantially reduce the number of items that fail in the empirical assessment of the hypothesized measurement model. Also, the
researcher’s constructs should be more fully defined before the empirical research is undertaken when using the proposed pretest approach (Anderson and Gerbing, 1991). Though the SA and SV indices appeared to be relevant in establishing content validity, some concerns have been addressed regarding their approach, including the fact that the ipsative, forced-choice, response format could result in bias (Mehrens and Lehman, 1978; Schriesheim, Hinkin, and Podsakoff, 1991).

Schriesheim, Hinkin, and Podsakoff (1991) investigated the single item ranking, or ipsative, scales that have been the dominant measures used in assessing the French and Raven power typology in much of the organizational behavior research. These ipsative measures were administered to three independent samples, along with multi-item and single-item Likert type rating scales. The data were analyzed using chi-square and analysis of variance. The results of this study demonstrated that much of the previous literature on the French and Raven (1959) bases of power contains distorted relationships with dependent variables and supported the use of the more thoroughly developed Hinkin and Schriesheim (1989) measures. The authors urged that more care and attention be paid to use of psychometrically sound measures in this domain and that new research was necessary to develop a sound knowledge base on social power in organizations (Schriesheim, Hinkin, and Podsakoff, 1991).

Schriesheim et al. (1993) reviewed the literature of the measurement practices found in management journals, raising concerns about serious measurement deficiencies in some of the subdomains of the organizational behavior field. The researchers found problems with the construct validity
primarily due to two major issues: measures are often developed without adhering to a rigid scale construction process and then the items are subjected to empirical data reduction techniques which may produce a number of dysfunctional results. The researchers included a total sample of 125 empirical articles involving paper and pencil survey methods. These came from four journals published over a two year period. The studies were then categorized based on the reliability and validity of the measures they reportedly employed. The results support the concerns regarding measurement quality. Next, the researchers conducted a study to illustrate an example. They selected the Minnesota Satisfaction Questionnaire (MSQ-S; Weiss, Dawis, England and Lofquist, 1967) to examine the methodology recommended. The researchers suggest that instrument content adequacy be required as an initial step toward construct validation in all studies which use new, modified or previously unexamined measures. They propose an approach for quantitatively assessing content adequacy to help improve measurement in management research. The steps they outline for the process include computing a Q-correlation matrix, and then subjecting this to a principal components analysis to extract the factors corresponding to the theoretical dimensionality. A secondary approach they recommend is computing the correlations among items in the matrix and then conducting principal components analyses (Schriesheim, Powers, Scandura, Gardiner, and Lankau, 1993). The Schriesheim et al. procedures contributed greatly to the scale development process for power and influence (Hinkin and Tracey, 1999).
Hinkin (1995) reviewed scale development practices in organizational studies and made recommendations to improve the process. Specifically, he recommends a three stage process with several steps in each stage to follow for achievement of "best practices" in scale development and reporting. The first stage, item generation, includes deductive or inductive scale development. In the deductive, logical partitioning mode, a classification schema is utilized prior to the data collection. There is little basis of theory in the inductive method where the constructs are generated from individual responses. Content validity is the primary concern in the item generation stage. The second stage is concerned with scale development and involves administering the potential items generated in stage 1 to a sample to determine whether they confirm expectations of the structure of the measure. This stage also includes an examination of the psychometric properties. Several recommendations should be followed at this stage. Specifically, the sample should be representative of the population the researcher intends to study in the future and should be generalizable; reverse-scored items should be avoided as they have been shown to reduce the validity of the questionnaire responses (Schriesheim and Hill, 1981); careful attention to the number of items in a measure must be considered; the scale used must generate sufficient variance among the sample for the statistical analysis; and sample size must be large enough to increase power and confidence in the results. The second step in this stage consists of scale construction. Factor analysis was found to be the most commonly used technique for the data reduction and refinement of the constructs. Thirdly, reliability assessment should be considered part of the testing
stage of the newly developed constructs. Stages 1 and 2 are primarily concerned with creating measures to demonstrate validity and reliability. Stage 3 consists of additional statistical analysis to provide further evidence of the construct validity of the new measure, a vital component to developing quality measures (Schmidt and Klimoski, 1991; Hinkin, 1995).

Hurley et al. (1997) provided another useful article for social science researchers debating the usefulness of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). In this commentary, five notable researchers participated in a debate led by Amy Hurley of Chapman University, and Terri Scandura of the University of Miami. This was an interesting approach to the deliberation and brought forth several important considerations and conclusions. Importantly, researchers must scrutinize their decision regarding the analyses they use in their research. Also, the purpose of a study, the data collection method and the data itself must be examined before proceeding to data analysis. All of the researchers agreed on the importance of having a priori theory before commencing confirmatory factor analysis. They also concurred that CFA should not be used as an exploratory technique. The authors framed important issues regarding the need for agreement on a set of standard EFA and CFA procedures which could be used as a set of guidelines for researcher, reviewers, and doctoral students. Essentially, it was recommended that researchers carefully consider and be able to support their decision to use either EFA or CFA in a study (Hurley et al., 1997).
Hinkin (1998) published a tutorial on developing measures for use in survey questionnaires. His step-by-step approach in the scale development process succinctly clarifies the procedure for researchers in a straightforward manner. The review (Hinkin, 1995) showed a weakened understanding of organizational phenomena due to inappropriate domain sampling, poor internal consistency, inadequate factor structuring and deficient reporting of newly developed measures. Given that the measurement of abstract constructs can be considered one of the greatest challenges in understanding behavior in organizations, Hinkin provides a conceptual framework to guide researchers through the stages of scale development. This article does not initially delve into a literature research as in Hinkin's (1995) previously discussed article, but rather gives a thorough, yet concise, step-by-step process of the scale development process. Hinkin (p. 106) also presents a model to depict this and gives a methodical explanation supported by the literature on how to correctly proceed through each of six steps:

Step 1: Item Generation

Step 2: Questionnaire Administration

Step 3: Initial Item Reduction

Step 4: Confirmatory Factor Analysis

Step 5: Convergent/Discriminant Validity

Step 6: Replication
The process recommended provides an excellent and clear-cut approach for researchers to follow in order to assist in the development of scales with psychometrically sound properties (Hinkin, 1998).

After recognizing the gap between theoretical constructs and experimental indicators, Schriesheim, Cogliser, Scandura, Lankau, and Powers (1999) conducted an empirical analysis designed to assess the content adequacy of surveys and questionnaires. The Intrinsic and Extrinsic Satisfaction subscales of the Minnesota Satisfaction Questionnaire (MSQ-S; Weiss, Dawis, England and Lofquist, 1967) were rated by 150 MBA students using separate ratings and simultaneous ratings. The results were compared using three approaches for collecting content adequacy data, and two methods of analyzing this information. It was observed that different methods yielded results with substantial similarities and also some differences. Substantial similarities were found across data collection techniques and the factor analysis procedures relating to the theoretical content of the MSQ-S items. Indeed factor analysis of the three led to the same conclusion that three of the items were assigned to an incorrect subscale. The consistency between the results increases confidence in the findings and in the content assessment of the techniques examined. The authors believe that the procedures outlined would be useful in assessing all new measures and any measures which have undergone modifications. Their study provided an important contribution to the scale development process (Schriesheim et al., 1999).
Building on this work, Hinkin and Tracey (1999) reviewed the techniques that could be used to assess the empirical distinctiveness of a set of survey items and then suggested an analysis of variance (ANOVA) procedure which would offer a greater degree of confidence in determining scale content validity and individual item integrity. They present a process for quantitatively assessing the content adequacy of a measure. The authors felt the procedure used provided three distinct advantages: it effectively eliminates subjective judgment for item retention, it can be useful with small sample sizes, and it is simple and straightforward to use as it involves only one procedure. Hinkin and Tracey conducted two studies to demonstrate and assess the factor analytic and ANOVA techniques. The first study used the Multifactor Leadership Questionnaire (MLQ), Form 5-X, developed by Bass and Avolio (1990). A sample of 57 MBA students was surveyed using four versions of the questionnaire. No significant differences were noted across the four versions. Subsequently, the data were subjected to factor analysis and analysis of variance. Factor analysis using an item-by-item Q-correlation matrix was conducted, consistent with Schriesheim et al. (1993). In the second study, the researchers carefully created their own teaching evaluation instrument and conducted the same analyses as in the first study. This sample consisted of two sub-samples of 44 each from the same student population. The factor analytic results from the first study revealed six eigenvalues greater than 1.0 and explained 62.2% of the variance. In the second study an item-by-item Q-correlation matrix was calculated then this matrix was
subjected to a principal components analysis. Five factors were extracted and explained 72.9% of the total item variance (Hinkin and Tracey, 1999).

In conclusion, the aforementioned articles provide a foundation of understanding for the research methods to be utilized in the present research. Sound research methodology is imperative for the validity and reliability of the suggested study.

**Linking Physician Leadership with the Social Influence and Power Literature**

The literature linking the physician with the organizational behavior and psychology literature on social influence and power has been sparse. Betson (1986) indicated that “there have been no definitive studies describing the way physicians use power, authority and influence” (p. 104). Indeed, more than a quarter of a century later, there are still very few studies in this regard. Harvard University researchers, Lown et al. recently point out that little attention has been paid to the influence of physicians and patients in attitudes and behaviors that facilitate decision making (Lown, Hanson, and Clark, 2009). Notably, there have been a few studies regarding influence in the healthcare field. These investigations have not garnished a great deal of attention and do not have a good fit with the organizational behavior models. The greater part of these studies has been inadequate at best.

Michael Garko, in the early 1990's, wrote several articles relating to physician influence. These studies were developed from a communications,
rather than an OB, perspective. It is unclear whether the sample was the same sample which was utilized in all five studies. In his initial study, Garko (1990) investigated the role of target communication style in persuasion strategies. The investigation sought to explore how physician executives actually manage in upward influence situations. The study participants included 222 physician executives from a variety of practice settings throughout the United States. All were members of the American College of Physician Executives and 94% of the sample were male. The participants were asked how frequently they utilized each of six compliance-gaining strategies in influencing a superior. These strategies included reasoning, bargaining, friendliness, assertiveness, coalition and higher authority. Several weaknesses were noted in this analysis, primarily that the selected influence strategy measures were not psychometrically sound. Also, the author did not substantiate where these came from. No statistical evidence was presented at all. Additionally, in the results section the concepts of communicating in an unattractive style versus an attractive style was introduced but the author neither defines nor explains these. Though the study may have merit as a preliminary approach it can not be used as a model for further analysis, or to provide real world direction (Garko, 1990).

In a follow up to his initial study, Garko (1991) investigates whether there are significant differences in the manner in which physicians influence subordinates. 222 participants were asked to rate the frequency with which they would select seven different influence strategies in influencing a subordinate who typically communicated with them in an unattractive versus attractive
communication style. The tactics investigated were the six investigated in the first study with the addition of sanctions as a tactic. There was a brief description of the unattractive and attractive communication styles. Once again, there was no discussion of where the influence styles addressed came from. Similar to the initial study, there is no actual statistical evidence presented to support the findings, though the author does state that physicians were “significantly” more likely to rely on certain tactics. While these two studies might be useful for preliminary markers their validity is in question (Garko, 1991).

In a much more rigorous study, Garko (1992), examined physician-executives’ choices of influence strategies when seeking to gain compliance from supervisors. Though it is not stated, it appears that this study is a more rigorous investigation of the data from the preceding two analyses. The study analyzed the communication styles as attractive/unattractive and used an adapted version of the Kipnis and Schmidt (1982) Profiles of Organizational Influence Strategies (POIS) to investigate the manner in which physicians function as managers in influence situations. In order to gain access to the participating organization, the POIS was adapted in two ways: by combining items to shorten the questionnaire, and by substituting a Likert-type scale for the frequency of use. The POIS was shortened by selecting two items the author felt best represented for a strategy and combining them to form a single item. The author cites others studies that used such a procedure successfully. To this end, the adapted POIS was tested for, and found to be, structurally reliable by the author using Smallest Space Analysis (SSA-1) and Procrustean Individual Differences Scaling (PINDIS). A literature
review was provided, attractive versus unattractive styles were fully discussed, and the Kipnis summary definitions for the influence tactics were utilized. Attractiveness was conceptualized in terms of the manner in which a supervisor communicates. This was based on the principle that attraction between individuals is largely dependent on the reactions to the communication experience that interactants share; the way they are perceived, the degree of receptivity and the intentions. Attractive styles were viewed as attentive, friendly and relaxed; whereas, unattractive communicator styles were viewed as the opposite. 222 physician executives responded to the adapted POIS questionnaires asking them how likely they would be to select different strategies of influence when influencing a superior who typically communicated with them in an attractive or unattractive style. To test the hypotheses, data were analyzed using multivariate analysis of variance. The findings suggest that the physician-executives were significantly more likely to use the strategies of assertiveness, bargaining, coalition and higher authority when influencing a superior who communicates in an unattractive rather than attractive style. The physicians were significantly more likely to use reason with a superior who communicates in an attractive style. Importantly, while the researcher used the POIS tool for measuring influence, the study may not have sufficient measurement of validity and reliability since it used an ad hoc adaptation of the original POIS instrument. The author did make the attempt to test the adapted tool using structural analysis. This is the most robust, well-designed study to date on physician influence in relation to the
attractive/unattractive styles. Certainly it represents a start in looking at the
ability of physician-executives to influence others successfully and thus,
strengthen their managerial effectiveness (Garko, 1992).

Two additional studies by Garko (1993a; 1993b) investigated physician
executives’ persuasive styles of communication in downward and upward
influence situations respectively. One study examined how physicians influenced
subordinates when attempting to influence them in attentive, friendly, and relaxed
styles. The other investigated the communication style used to influence a
superior. Both analyses looked at the way physician executives communicate in
influence situations and these were measured using Norton’s short form of the
Communicator Style Measurement (CSM-S). The data were analyzed using
multivariate techniques (Garko, 1993a; 1993b; Norton, 1983). The studies,
though interesting, do not fit well with the Organizational Behavior models and
do not shed light on the influence tactics utilized. They are included here since
they demonstrate the meager nature of the work relating influence and physician
leaders.

More recently, Trounson (2002) conducted an investigation to identify
ways in which physician executives influence people. Physicians were asked to
respond to two iterations of a Delphi mail inquiry. In the first, the physician
executives were asked to identify the five most effective methods they could use
to increase influence in their organizations. In the second inquiry, they were
asked to review feedback and asked to assign relative importance ratings for what
the author considered nine domains of influence. Though the findings are
reported, the author provides very little indication of how the study was conducted, the number of physicians surveyed, the response rate, or the specific initial question(s) asked in the survey. The author indicates that there are 286 possible ways for physician executives to increase influence in their organizations. Further, these items were organized into nine discreet domains of influence: personal leadership, organizational leadership and ethics, quality improvement, financial management, community leadership, human resource, introduction to business education, information technology, and system thinking. There is no mention of how these were categorized. There is no evidence that these are psychometrically sound. Though the author does provide a few percentages indicating the percent of the sample providing a particular response, these were difficult to evaluate since the number of respondents and number of responses were not presented in the article. The study lacked a clear methodology, no literature review was provided by which the author based his study, and no statistical analysis was provided. Furthermore, the author does not indicate whether he merely categorized the responses himself or had agreement from experts in the field to do this. Lastly, the categories or domains presented do not appear to be tactics or ways to influence others. The study, as presented, does not appear to possess any validity or reliability and does not have useful applications for the field (Trounson, 2002a).

In a follow-up – part 2 - to his initial research on physician executive influence, Trounson (2002b) reported on ways for physician executives to increase influence. Once again there does not appear to be any scientific value to
the study. There was no clear methodology described, as in the previous study. Means and standard deviations are recorded for the nine domains of influence factors identified in the previous study. These figures are said to represent the most important influence factor within each of the nine domains of influence as identified by the author. It appears that a Likert-type indicator was used (based on a 1 to 7 scale) though it is unknown who rated these or how many respondents participated. While some of the author's suggestions may have merit, this would be at more of an anecdotal level rather than a systematic, scientific approach. The author elucidates ten ways for physicians to increase influence by using techniques the author claims would optimize their ability to influence others. He goes on to recommend two routes of influence. The first route is to acquire skills relating to the primary influence technique in each of the nine influence domains and the second route is to focus on learning management skills (Trounson, 2002b).

In another study, Ringer and Boss (2000) examined the use of upward influence tactics by hospital professionals alongside factors which may lead individuals to use one tactic over another. The study appeared to be well designed, and carefully conducted and analyzed. The sample consisted of 192 professional and technical employees in a hospital. Though the study did focus on hospital workers, no physicians were included in the sample. The researchers examined three variables that might affect selection of an influence tactic within a healthcare organization: 1) perceived power of subordinates, 2) the interpersonal trust between a subordinate and a superior, and 3) the locus of control of
subordinates. Four different instruments were used to measure the relationship between use of influence tactic, power, trust, and locus of control. Perceptions of personal power were collected from the respondents utilizing a scale which was developed specifically for this study. This scale measured power based on six questions using a Likert-type response. The Dyadic Trust Scale (Larzelere & Huston, 1980) which was originally developed to measure trust in close relationships was adapted to investigate trust perceptions of supervisors. Locus of control was measured by use of the abbreviated version of the locus of control scale (MacDonald & Tseng, 1971; Robinson & Shaver, 1973). The Schriesheim and Hinkin Revised POIS (1990) was used to measure the influence tactics used by the respondents. The findings suggest that rather than relying on the influence tactics most dependent on individual ability to control, individuals high in power tended to use all of the influence tactics. It was suggested that high power might provide a strong sense of control and thus, individuals high in power would feel free to employ a variety of tactics. The strong relationship between power and reason suggests that individuals high in power are most likely to use reason as an upward influence tactic. Low reliabilities were obtained in the dependent variable measures indicating the presence of significant measurement error. The study predominantly adhered to sound scientific principles though the relationships between the three different independent variables (power, locus of control and trust) and influence are complex and measuring the effects of these different relations at the same time is difficult and may increase confounding factors. Also, the aforementioned concerns regarding the power scale remain in question. This
research does provide insight into the use of upward influence tactics, though
certainly future research efforts should continue to explore the relationship
between the influence activity of organization members and the overall
effectiveness of those organizations (Ringer & Boss, 2000).

Another more recent article by Eiser, Eiser, and Parma (2002) regarding
influence tactics for health care leaders is a practitioners piece. The authors point
out that many of today’s leaders in health care organizations have a background in
medicine or some other scientific field. Physicians have been educated in a
rigorous scientific, data-oriented manner and trained in strong hierarchical
settings. Because of this, they may be predisposed to use a narrow range of
influence strategies which may limit their effectiveness as managers. Further, the
authors set forth six tactics of influence, major factors determining effectiveness
of the tactics, and identify four directions in power structures (measuring
outcomes of using particular tactics). The influence tactics are designated as:
logical persuasion, personal persuasion, consultation, reciprocation, forcefulness
and alliances, yet no mention is made of from where these are derived.
Interestingly, the authors identify four directions of influence in power structures.
In addition to the generally accepted upward, downward and lateral influence they
add outward influence, which they describe as being able to influence
stakeholders outside of one’s organization. Though the article may be useful in
suggesting future research, it is inadequate as a summary of the body of literature
on power and influence. Moreover, the authors do not back up any of their premises with factual data or information drawn from sound research (Eiser, Eiser, and Parmer, 2006).

Interestingly, a few studies that were not specifically looking at power or influence provide clues that the type of influence utilized will have a direct impact on patient outcomes in terms of compliance. Two studies demonstrated that the manner in which a patient was influenced regarding his/her care had an impact on follow through of orders in regard to their care. Studies in both Spain and New Zealand demonstrated that patients given written prescriptions would follow through on a directive for exercise to a greater degree than those merely instructed to do so (Grandes, 2009; Swinburn, Walter, Anoll, Tilvard, and Russell, 1998). The verbal instructions could be viewed as a reasoning tactic; whereas the written prescription was more forceful or authoritative and can be construed as assertiveness using power to legitimate the request. Organizational behavior theory could help in the design of experimental studies such as these, and the real world applications could be significant.

Overall, research uniting the highly regarded body of knowledge on power and influence with physician leadership is largely non-existent. The few studies conducted are weak at best, with only one or two investigations which would meet a reasonable threshold of scientific rigor. Certainly, sound research in this regard could lead to greater effectiveness of physician leaders, superior
achievement of critical organizational objectives, and improved outcomes in
terms of quality of care, attitudes, and even financial advantage. This study will
begin to build in this direction.
Rationale for Study

Physicians deal with a variety of stakeholders or constituents within the realm of their practice. As leaders, physicians must be able to effectively influence these constituents in order to provide the best care possible. The best tactic of influence will vary due to a variety of factors, such as who the physician needs to persuade, the situation at hand, and the bases of power. The influence direction (upward, lateral, or downward) or power level of the constituent, in turn might necessitate a different tactic. My objectives in this study are twofold. First, the present researcher will examine the perceived level of power among a variety of physician constituents. Second, I will examine the correlation between the influence tactic(s) utilized with the level of power of the target to identify the most frequently used tactics at differing power levels. As noted earlier, there is a dearth of research assessing the linkages between power and influence among the physician population. Thus, much work remains to improve our understanding of the process, its effects, and how knowledge of influence strategies could enhance effective physician leadership. As indicated previously, the literature has very few rigorous studies utilizing a theoretical model to study physician leadership and even fewer which address the social influence tactics used by physicians. The published literature on physician leadership tends to be normative, prescriptive, anecdotal, and/or observational, largely based on qualitative opinion surveys.
Furthermore, it has been noted that “there have been no definitive studies describing the way physicians use power, authority and influence” (Betson, 1986, p. 104). Consequently, research such as the proposed study, is greatly needed.

The primary research questions to be addressed in this investigation will be whether different influence tactics will be used by physicians against certain influence targets based on the level of forcefulness of the tactic. Several secondary research questions will also be investigated. Specifically: What is the level of power among the various physician constituents in relationship to the power level of the physician? Which social influence tactic is utilized most frequently by physicians when interacting with different constituents? Are different social influence tactics utilized by physicians depending on the level of power of the constituent? The answers to these questions should help address the gap in the literature regarding power and influence among physicians.

Development of a Physician Influence Model

Abundant and complex factors come into play whenever people interact within an organization. Contemporary organizational behavior studies endeavor to better comprehend and model this host of factors. Researchers strive to control, predict and explain these interactions. They must be assiduous in considering a myriad of assumptions to explain these interactions. Organizational theory models can serve to develop a better conceptualization of organizational life (Simms, Price, & Ervin, 1994).
Little work has been conducted to develop a scientific model for influence tactics, and virtually no one has attempted to develop a theoretical framework for physician influence. Yukl and Chavez (2002) suitably point out that “progress on tactic effectiveness has been impeded by the lack of a well-developed model to explain how various tactics affect the attitudes and behaviors of target persons” (p. 143). The literature is lacking a comprehensive theory used to describe the underlying psychological processes, and the facilitating or limiting conditions which contribute to the effectiveness of each tactic. The body of research on influence has been developed chiefly from an exploratory, atheoretical point of view. To date there is little theory to explain how the tactics of influence and other factors interact to provide for effective outcomes of the influence attempt (Yukl & Chavez, 2002).

A few models have been proposed to begin to explain the complex relationships and factors that would determine influence tactic effectiveness and outcomes. A solid model would provide a representation of the influence phenomena and a basis for future research. Yukl and Tracey (1992) proposed that the effectiveness of an influence tactic is dependent on five factors. They identified these factors as facilitating conditions. The factors are identified as:

1. Amount of intrinsic resistance by the target due to the nature of the request.
2. Potential of the tactic to influence target attitudes about the desirability of the requested action.
3. Agent possession of an appropriate power base for use of the tactic in that context.

4. Agent skill in using the tactic.

5. Prevailing social norms and role expectations about the use of the tactic in that context.


According to Yukl and Tracey (1992) a tactic has greater likelihood of success if it meets five conditions: the target perceives that tactic to be a socially acceptable form of influence behavior, the agent possesses a significant level of power to use the tactic, the target is capable of affecting target attitudes about the feasibility and desirability of the request, the tactic is used skillfully, and the tactic is used for a request that is legitimate and consistent with the values and needs of the target (Yukl, & Tracey, 1992; Yukl & Chavez, 2002). Yukl and Chavez (2002) found this preliminary model to be useful as a basis for deductive hypotheses regarding the relative effectiveness of the use of various tactics in different directions. However, the model has not been directly tested. Also, there was no pictorial representation of the model. Significantly, the model does not explain the underlying mediating processes to establish a sound theoretical basis (Yukl & Chavez, 2002).

In 1994 Yukl proposed a dyadic influence model of behavior. The model set forth the assumption that agent power and the type of influence tactic used directly affect the influence outcomes. In addition, the model suggests that power affects the agent’s choice of tactics. The proposed model also describes possible
moderating effects on the relationship between tactics and outcomes. Yukl cautions that only a few studies have been conducted to investigate the relationship between power and influence and there is only limited evidence for the proposition that power influences the choice of influence tactics. He asserts that there is no evidence that power moderates the effectiveness of a specific influence tactic and there is only anecdotal evidence that demonstrates that power increases compliance or changes target behavior. Clearly, as the authors’ state, these important research questions deem more attention (Yukl, 1994; Yukl, 2006; Yukl, Kim, & Falbe, 1996).

Yukl, Kim, and Falbe (1996) proposed an influence model based on research they conducted on the antecedents of influence outcomes. They conducted the first study to show that influence tactics, agent power, and content factors independently affect influence outcomes. The primary objectives of the research were to evaluate the independent effects of these three determinants and to investigate ways in which they may combine to predict influence outcomes. Also, the study hoped to reconcile earlier inconsistent research findings on determinants of influence outcomes. The researchers recognize that people are more readily influenced for some requests over others. The outcome of the influence attempt is dependent, in part, on the appeal of the request, the feasibility of the request, the importance of the request, and the extent to which the request is enjoyable for the target to implement. These factors are considered “content factors” by the authors. Agent power in relation to the target person is another determinant factor of influence outcome and is treated as a distinct construct as
per initial evidence by Hinkin and Schriesheim (1990). In order to come to these conclusions, Yukl and colleagues (1996) conducted a study using the incident influence method. Two samples were utilized – one from the perspective of the target and one from the perspective of the agent. The incident form included a short questionnaire for the respondent to rate the both the type of agent power and the content factors. The narrative descriptions were then coded independently by two coders with expertise in the field, into the nine influence tactic categories with strong inter-coder reliability. The level of agreement exceeded 95% for both variables: tactic and rating of direction, and outcome. The findings provided further support for the Hinkin and Schriesheim assertion that power and influence are separate constructs. In addition the findings suggest that the content of an influence attempt can also be considered a separate construct. The results support that the three types of variables; agent power, influence tactic, and content factors affect the influence outcomes independently. The study provided a quantitative directive for the development of a model of influence. An expanded theoretical model was put forth which supports these findings. The practical implications of the study indicated that target commitment was more likely when the request was important and enjoyable to implement, and the agent had strong referent power, used consultation, inspirational appeals, or a strong form of rational persuasion, and did not resort to pressure as a tactic (Yukl, Kim, & Falbe, 1996).

What makes an influence behavior effective or not? How do you know if an influence attempt has been successful? How can you measure outcomes, and significantly, what are these outcomes? How to answer these questions and
provide accurate data has proven challenging for investigators. Different criteria have been used to measure the effectiveness of influence behavior. Yukl, (1989) suggests that there are three qualitatively distinct influence outcomes, identifying these as commitment, compliance, and resistance. He defines commitment as occurring when the target internally agrees with a decision or request from the agent and makes a great effort to enthusiastically carry out the request or implement the decision. Compliance would occur when the target carries out the request but with apathy. Resistance occurs when the target shows opposition, refuses to carry out the request, or engages in compliance avoidance (Yukl, 1989; Yukl and Chavez, 2002).

Measuring outcomes of influence has presented an obstacle for researchers. What to measure and how to make these measurements have proven problematic. Yukl and his various colleagues have attempted to measure outcomes of influence tactics in several different studies. Falbe and Yukl (1992) used an incident study approach in asking targets to explain in detail how they reacted to a specific influence attempt by an agent. The respondent was also asked to classify their reaction as either commitment, compliance, or resistant. In experimentally designed studies, the targets were asked how committed they would be to carry out a request (Yukl, Kim, and Chavez, 1999). Another approach was taken in other survey studies, asking the targets to quantify how often the influence attempts resulted in commitment (Yukl and Tracey, 1992).

Thirty years after his seminal work on bases of power, Raven (1992, 1993) developed a power/interaction model of power. The model is actually comprised
of two different models, one from the agent perspective and one from the target perspective. The first model is from the perspective of the influencing agent. It begins with the motivation to influence which includes five clearly stated motivations which might shape the choice of influence strategy selected. The motivations to influence include: 1. Attain extrinsic goals, 2. Satisfy internal needs, 3. Role requirements and higher authority, 4. Motivation of the influence, and 5. Desired status in the eyes of self, target and third parties. This would then lead the agent to assess the various bases of power which are available, along with the assessment of the available bases in the relationship to the target, power preference, and inhibitors. Raven extended the bases of power to include personal and impersonal forms of reward and coercion, positive and negative forms of referent and expert power, and three forms of legitimate power. Once determining the bases of power available, it is necessary for the target to consider these alternative action courses in terms of which would be effective in implementing change on the part of the target. Basically, the agent would be completing a cost-benefit analysis of the influence strategy. For instance, level of effort, time constraints, or costs, etc. At this point in the model, the agent would then introduce the various preparatory devices for the influence attempt, such as “softening up” the target. This would directly lead to the choice of influence tactic and choice of power base. Ultimately, following the influence attempt, one would assess the effects of the influence: was it successful? At this point Raven asks a series of questions which could assist the researcher in answering whether or not the attempt was successful (Raven, 1992).
The secondary model proposed by Raven looked at in the power/interaction model of interpersonal influence was from the perspective of the target. This model begins with five motivations for the target, such as desired status, or satisfying internal needs. The model then progresses to a two-pronged action: 1. An assessment of self in relation to the agent, the perception of power base of the agent, and the likelihood of implementation of threats and promises, and 2. the anticipated reaction to the influence attempt, either acceptance or resistance. The model does not show the implementation phase of the tactic and the degree to which it was actually carried out. Finally, one would evaluate the influence attempt and look at the effects as well as side effects (Raven, 1992).

With these models, Raven concludes that interpersonal influence can be examined in a series of steps from both the perspective of the agent and the target. “The model examines the motivations for influence or avoidance of influence, over and above the extrinsic motivation, an assessment of the available power resources, a cost-benefit analysis of the use of these various resources, the use of various preparatory and stage setting devices, the implementation of power strategy, assessment of the effects of the strategy, and feedback and re-evaluation of the power situation both for the agent and target” (p.239). Raven developed the model as a guide for research to use for analyzing on-going interactive conditions. Also, he felt it could serve as a guide to those in positions of influence, to help them better understand the bases for their own actions and the possible alternatives. It can also be useful to targets to give them a better
Barbuto (2000) proposed another model of influence, *The Framework for Understanding Follower Compliance*. He puts forward a carefully laid out framework to help clarify the connection between a leader’s behavior and influence. He then identifies contributing factors in the influence process to assist in the explanation of why followers comply with a leader’s directives. The model is from the perspective of the target. Barbuto does not propose a separate model from the perspective of the agent. His model examines the characteristics of the leader, the follower, and the situation which together result in the target’s compliance or noncompliance to the agent’s influence attempt. The model begins with the input triggers, a set of ten variables described from the target point of view. These triggers result from a leader’s intended or unintended inducements and explain the types of interactions that followers have from them. Examples of the triggers are expertise and goal identification. Three major categories of intervening variables are then identified which might affect the influence attempt. Barbuto groups these in three categories with five factors in each: leader’s bases of power, target’s motivation, and target’s resistance to requests. The resulting action would be the follower’s outcome to the influence, either compliance or non-compliance (Barbuto, 2000).

Barbuto (2000) provides a thorough review of the literature in describing the influence triggers, categorizing these as power-derived triggers, relations-derived triggers, and values-derived triggers. He puts forth a case for inclusion of
these triggers in the model. The first segment of intervening variables is based on Raven’s (1959) original bases of power, which certainly affect the degree to which a follower carries out an influence directive. Barbuto explains the second segment of the follower’s resistance levels through the use of another model, Barbuto’s (2000) concentric zones of resistance, the *Target’s Resistance to Behavioral Directives*. This model built upon a long existing framework by Barnard (1938) suggesting two zones of resistance. The center of Barbuto’s target resistance model represents the preference zone and resistance increases as behaviors or goals, pictorially represented by concentric circles, extend further from the center. If the behaviors in response to a directive are plotted on the circle, the further a behavior is from the “bulls-eye” target, greater the resistance in complying with that influence behavior. If the leader’s requests fall into the three inner circles, or zones, less inducement is necessary to gain compliance. If behaviors fall outside of the circles (in the non-influence zone), the target would not be willing to perform these behaviors with any amount of inducement. The zones are said to help explain why some targets require more inducements than others to perform specific tasks. Barbuto describes the third set of intervening variables in the framework as the target’s motivation. The five sources of motivation used in the framework were originally developed by Leonard et al. in 1999 and later modified and used to predict leaders’ behaviors by Barbuto and School (1998; 1999). The modified framework recognizes the five sources of motivation as intrinsic process, instrumental, self-concept external, self-concept internal, goal and internalization. These sources of motivation are felt to help
explain how the success or failure of particular influence triggers is dependent on a target’s salient motives in acting as an incitement to action (Barbuto, 2000).

The outcome level of Barbuto’s proposed model is whether the influence attempt results in compliance or non-compliance. Barbuto perceives the development of, and clear differentiation among, specific influence triggers as the most significant contribution in his model. These offer an alternative explanation of the influence process from the agent’s perspective. He recognizes his extension of Barnard’s (1938) zones of indifference as another substantive contribution. The zones of indifference represent target's resistance to behavioral directives where resistance increases as behaviors or goals fall further from the center or the preference zone. He commends the Hinkin and Schriesheim (1989) measurement tool to assess Raven’s (1959) bases of social power and anticipates that his proposed model could provide the framework for developing a measure to better understand the influence process and examine follower compliance in organizations (Barbuto, 2000).

More recently, Noble (2007) extended the Barbuto model. The framework basically adds the target’s internal or external locus of control as an intervening variable. The framework also views commitment and level of compliance through the perspective of the agent. The author considers the addition of the locus of control as providing a substantive contribution in understanding the influence process and target commitment and compliance to influence attempts. Noble contends that the level of control an individual has over their own circumstances may mitigate against their sources of motivation and zones of
indifference. He asserts that the agent’s base of power and use of a particular influence tactic when attempting to influence the target will have a direct bearing on the success (Noble, 2007).

Quite interestingly, another model came from an unlikely source, the Canadian Forces Leadership Institute (CFLI, 2008). While this model is not completely derived from a scholarly vantage, it draws from a sound theoretical base and may have practical and research implications. The model can be useful to add innovation to a different line of thinking. This is important because a model specifically for physicians would have distinctive considerations. The basic process model of power and values-based influence is built upon Yukl’s Multiple-Linkage Model of leadership and group effectiveness. The CFLI model consists of four major structural elements: leader variables, situational variables, individual and group capabilities, behaviors, and performance, and critical outcomes. Fundamentally, the model illustrates the essential processes by which the intent or purpose of the leader results in important outcomes. The model demonstrates the related processes of how to use position power effectively and how to establish or improve one’s capabilities for personal influence. Importantly, this model supports situational variables and conduct values/integrity as moderators in the influence process which differs from other proposed models (Canadian Forces Leadership Institute, 2008).

An effective leadership model for physician influence demands special considerations. Examining multiple dimensions is necessary to capture the complexities of the issue. Most importantly to consider is the fact that the nature
of the work has patient outcomes at stake. The highly educated physician must also possess special leadership qualities in order to effectively influence others as a leader. Schriesheim and Hinkin (1990) examined the influence subscales originally set forth by Kipnis et al. (1980) and further refined these to improve their psychometric properties. Their work has been very important to the field in identifying six, psychometrically sound influence tactics. Later, Yukl and Chavez (2002), reviewed the major research findings on the effectiveness of various proactive influence tactics. They identify a total of eleven distinct proactive influence tactics and they identify criteria often utilized to assess the effectiveness of influence behavior, namely, commitment, compliance and resistance as outcome measures, (Yukl & Chavez, 2002).

As previously stated influence is often viewed as the cornerstone to effective leadership and is important in the development of an effective leadership model for physicians. Questions abound on whether influence tactics would be identical for every physician leader, for instance would a trauma unit physician need to influence in a significantly different manner than a physician dealing with a new mother at a well-baby visit? In fact, there is an extremely broad spectrum of situational difference necessitating an influence attempt. In addition, there is a broad host of constituents a physician may deal with on a daily basis. The environment is often intense, fast-paced and pressured. The current health care environment is undergoing rampant change. This myriad of change presents a definite challenge for the physician to navigate. Effective physician influence
under such a system is vital. Indeed there is a complex interaction of numerous factors which would ultimately lead to the success or failure of influence efforts.

Investigating and building upon existing leadership models can assist in the development of an effective model for physician leadership influence. The trait theory of leadership provides a useful approach. Trait perspectives embrace the concept that effective leaders possess certain traits which set them apart from others. Recent studies have been able to identify specific traits which correlate with effective leadership outcomes (House and Aditya, 1997; Kirkpatrick and Locke, 1991; Yukl, 1998). These traits include: energy and adjustment or stress tolerance; prosocial power motivation; achievement orientation; emotional maturity; self-confidence; integrity; perseverance or tenacity; cognitive ability, intelligence and social intelligence; task relevant knowledge; and flexibility. These traits are important for physician leaders and would moderate the influence attempt. Importantly, as in the Canadian Military Forces model, integrity would certainly moderate the influence attempt. Hence, the proposed leadership model would be important to a physician leadership model.

A linkage to these traits is another leadership perspective pertinent to a physician model, the authentic leadership model. Authentic leadership is a moral model of leadership which embraces ownership of one’s personal experiences and acting in a manner which is true to one’s self. High ethical decision making, integrity and role modeling are important concepts. This model emphasizes psychological well being and development of the followers. Self-efficacy is a strong premise of the model, as well as hope, optimism and resilience. There is a
crossover from this model, of leader traits also necessary for physicians, significantly, the integrity and ethical decision making which are included within the trait approach and also identified in the Canadian Military Model (Avolio and Gardner, 2005; CFLI, 2008).

The influence model proposed for physicians draws from, and builds upon, several existing models (Appendix 4). The model is from the physician perspective as an agent. The model begins with the influence tactics, examines several likely moderators and results in outcomes of the influence attempt. The influence tactics form the base or input element of the model. The influence tactics addressed are rationality, exchange, ingratiation, pressure, coalition, and upward appeal. These are the six influence subscales found to be psychometrically sound by Schriesheim and Hinkin (1990).

The framework continues with the various moderators or intervening variables. Four intervening variables are identified: bases of power, leadership traits, influence direction, and the situation. Foremost among these is an important intervening variable for understanding the influence process, the leader’s base of social power. The bases of power used in the model are the original French and Raven (1959) bases of power: reward power, coercive power, legitimate power, expert power, and referent power. Later, Hinkin and Schriesheim (1989) reconceptualized this taxonomy to improve the theoretical definitions to make them more practical for research. In further studies, confirmatory factor analysis reinforced the distinctiveness between the constructs of power and influence (Hinkin and Schriesheim, 1990). The power bases used
for the proposed Physician Influence Model include those conceptualized by Hinkin and Schriesheim and are defined as follows:

*Reward power* is the ability to administer to another things he or she desires or to remove or decrease things he or she does not desire.

*Coercive power* is the ability to administer to another things he or she does not desire or to remove or decrease things he or she does desire.

*Legitimate power* is the ability to administer to another feelings of obligation or responsibility.

*Referent power* is the ability to administer to another feelings of personal acceptance or approval.

*Expert power* is the ability to administer to another information, knowledge, or expertise.

(Hinkin and Schriesheim, 1989, p. 362).

Another important intervening variable would be the direction of the influence. This would be indicative of the power level of the target in relation to the physician agent. Influencing those at a greater power level than the physician would result in upward influence, those of an equal power basis would result in lateral influence and those of a lower power level would result in downward influence.

Physician leader traits would also play a moderating role in the influence process. Examples of the leader traits would include personality, gender, age, self-confidence, intelligence, social intelligence, and stress tolerance. Several studies have recognized that gender plays a role in one’s ability to use social
power and influence (Elias, 2004; Elias and Loomis, 2004; Elias and Cropanzano, 2006; Keshet, Kark, Pomerantz-Zorin, Koslowsky and Schwarzwald, 2006). In the medical arena the traits would also include ethics and integrity as important traits. These traits can also be a source of referent power for the physician.

Lastly, the situation at hand, or situational variables, would play a role in moderating the effect of the influence attempt. Raven (1988a) suggests that the use of power tactics is contingent on the situation. The situation or the task at hand, would affect, to a large degree, the influence tactic used and the effectiveness of the tactic for physicians. For instance, in a trauma unit caring for a patient in an extreme emergency, the situation would necessitate the use of the assertiveness tactic along with legitimate power by the physician, and perhaps even coercive power, in the attainment of the best outcome for the patient. Patient lives would be at risk and immediate responses are required. In contrast, a different situation would necessitate an altogether different approach. For instance, if a physician wanted to convince the hospital CEO to purchase a new da Vinci® robot-assisted surgical device, rationality and upward appeal along with expert power might better facilitate a positive outcome. It would be quite another matter altogether if the physician was trying to convince or influence a cardiac patient to stop smoking and exercise more. The situations would vary widely across health care specialties and health care settings.

The outcomes of the model, as suggested by Yukl (1989), would be the three qualitatively distinct effects - commitment, compliance, and resistance. A further level of outcome variables which could eventually incorporate and
measure such results as patient outcomes, medical errors, commitment of the multi-disciplinary team, effectiveness of treatments, and even financial results should also be incorporated to be of more practical value in the actual practice setting.

Overall, the physician influence model will serve as a framework for future research studies in order to ultimately measure these more practical outcome variables. It can provide a structure for scientific analysis to measure outcomes. A functional model with a conceptual schema could enhance/spark future research. It can ultimately help physicians identify and implement appropriate leadership influence tactics, face challenges, and take appropriate actions. Effective physician leadership development, based on sound scientific research, may eventually result in improved quality of health care, reduction in medical errors, and enhanced cost effectiveness. Specifically, we need to measure these important outcome variables to determine that care provided is directed and focused in the most effective manner. Research in this discipline will help to enhance the successful leadership skills of the physician within a collaborative framework and enhance scholarship in health care leadership. It will also serve as a resource to aid the medical profession in developing both leadership and effective influence, both of which are necessary in addition to clinical expertise.

The present study will focus on the input level (Influence Tactic) of the Physician Influence Model and how the influence direction (Upward, Downward, or Lateral), and level of power of the physician constituents act as mediators.
Definitions of Terminology (Operationalization)

Providing basic definitions of constructs will assist in the consistency and understanding of the terminology used in the study. Five of the definitions for the influence tactics used in this study will be exactly as those defined in the Kipnis and Schmidt (1982) POIS subscales. The sixth tactic, ingratiation, was defined with the exact wording as Schriesheim and Hinkin (1990) devised. These definitions were chosen since the Schriesheim and Hinkin Revised POIS based their definitions on these and this is the tool which will be utilized in this study. Care was taken to keep the definitions precisely distinct, as follows:

*Ingratiation* – The person seeks to get you in a good mood or to think favorably of him or her before asking you to do something.

*Exchange* – The person makes an explicit or implicit promise that you will receive rewards or tangible benefits if you comply with a request or support a proposal, or reminds you of a prior favor to be reciprocated.

*Rationality* – The person uses logical arguments and factual evidence to persuade you that a proposal or request is viable and likely to result in the attainment of task objectives.

*Assertiveness* – Weak and non-obtrusive influence tactics to establish oneself in the favor of others.

*Upward Appeals* – The person seeks to persuade you that the request is approved by higher management, or appeals to higher management for assistance in gaining your compliance with the request.
Coalitions – The person seeks the aid of others to persuade you to do something or uses the support of others as an argument for you to agree also.

The definitions for the five bases of power (French & Raven, 1959) are included previously in the body of this paper (p.88). The power bases used for this study are those proposed in the Physician Influence Model. They include the power bases conceptualized by Hinkin and Schriesheim.

Physicians deal with a variety of stakeholders. For the purpose of this study the stakeholders are referred to as constituents and have been divided into the following thirteen categories. Nine of these were identified by the primary researcher and the additional four categories were added based on a preliminary study. While the list of stakeholders is not inclusive of all those a physician may interact with, it gives a broad platform for constituents at differing power levels to provide a basis for upward, lateral, or downward influence. The list includes a range of constituents frequently encountered and will be substantiated by a preliminary analysis. The basic definitions of physician constituents were developed by the present author in conjunction with some definitions from prominent medical dictionaries or medical encyclopedias as noted. A variety of well-regarded sources were utilized since no one source had definitions for all of the identified constituents.

Acute care patients – patients the physician would deal with in an emergency (extremely serious) situation; patients experiencing sudden illness or trauma; generally occurring in the pre-hospital, hospital, or
emergency or trauma department and is usually short-term (Taber’s Cyclopedic Medical Dictionary, 21st Ed., 2009).

**Non-acute patients** – patients the physician would deal with in a non-emergency situation, such as those seen in office visits or in hospital rounds with non-urgent severity.

**Pediatric patients** – infants and children aged 17 and under.

**Chronically ill patients** – patients the physician deals with who have a chronic illness; a health-related state lasting a long time (Stedman’s Online Medical Dictionary, 27th Ed., 2009).

**Top-Level Hospital Administrators** – individuals whose job it is to manage the affairs of a hospital; those professionals who choose to be a part of upper management in organized hospitals (Birdsall, 2005).

For the purpose of this study **Top Level Hospital Administrators** will include Chief Executive Officer (CEO), Chief Operating Officer (COO), Chief Financial Officer (CFO), Chief Medical Officer (CMO), and Chief of Staff and above.

**Mid-Level Administrators** will include all other administrators such as Pharmacy Director, Head Nurse, etc.

**Medical Students** – refers to physician interactions with medical students.

**Residents** – refers to a physician in training who has a medical license but is not board certified in a specialty.

**Colleagues** – refers to interactions with other physicians.
Subordinates in the professional category – professionals whose occupation requires extensive education or specialized training and a college degree, such as registered nurses, physical therapists, psychologists, pharmacists, etc.

Subordinates in the non-professional category – subordinates whose occupation does not require extensive specialized training such as a patient care aides, secretaries, patient transporters, etc.

Third party payors – representatives of insurance companies, Health Maintenance Organizations, Medicare or Medicaid.

Family Members of Patients – relatives of the patients.

Research on influence often focuses on the tactics utilized by an individual to influence others. The agent can be defined as the individual influencing others, whereas the target is the individual at whom the influence is aimed. This study will be conducted from the perspective of the agent in order to minimize self-report biases. This is supported by French and Raven (1959) who defined influence as a force one person (the agent) exerts on someone else (the target).

Hypothesized Relationships

While influence and power have been researched extensively in the organizational behavior, psychology and sociology fields, this has been infrequently investigated in regards to physician leaders. Some outcome variables may eventually be able to be measured, in part, through the assessment of such relationships. For instance, by determining whether certain tactics would lead to
better patient adherence to physician orders. As such, hypotheses need to be formulated regarding the relationships between the use of influence tactics and the level of power of the constituents a physician deals with.

Based upon a number of the previous theories and literature, several hypotheses can be developed regarding the relationship between physician influence and the power level of those he/she deals with on a regular basis. One of the underlying premises of a power relationship is that it plays a significant role in decision making. Many scholars have recognized that power plays a role in top management decision making (Finkelstein, 1992; Murray, 1978; Eisenhardt and Bourgeois, 1988; Mintzberg, 1983; Bower and Doz, 1979; etc.) In 1972, Child documented that power is fundamental to strategic choice and argued that by adequately measuring power one could help predict other behaviors (Child, 1972). Several studies have supported the premise that the type of influence tactic used will vary with the power of the target person (Kipnis, Schmidt, and Wilkinson, 1980; Kipnis and Schmidt, 1983; Ringer and Boss, 2000). Several studies have investigated the differences in forcefulness, or controllingness, of the tactic measured against the power level of the target. These have avowed that more forceful tactics are used against weaker targets (Schriesheim, Castro, and Yammarino, 2000; Case, Dosier, Murkinson, and Keys, 1998; van Knippenberg, van Knippenberg, Blaauw, and Vermunt, 1999, etc.). Yukl, Kim and Falbe (1996) report that a determinant of influence outcomes is the agent power in relation to the target person. Thus, for the purpose of obtaining evidence to
support the association between the level of power of the constituent and the type of influence tactic utilized by physicians, the following relationships are proposed:

**Primary Hypothesis (Hypothesis 1):** Certain influence tactics will be used by physicians against certain influence targets depending on the forcefulness of the tactic.

In addition to this purported relationship several secondary supporting hypotheses are also proposed. These hypothetical relationships can be inferred from previous research investigations as well, and can also help define the nature of this primary relationship. It is commonly known that the physician deals with many individuals in the course of their practice, from patients to hospital administrators to nurses, to third party payors and many others. This interface with numerous others and variety of constituents has also been documented in the literature (Falcone, 2008; Eskin, 1980; Berwick and Nolan, 1998; Chaudry, Jain, McKenzie, and Schwartz, 2008; Fairchild, Benjamin, Gifford, and Hout, 2004; etc.). Furthermore, the personal power level of these constituents will vary in relation to the physician as can be inferred from the literature (Schaffer and Cassell, 1978; Duran-Arenas, and Kennedy, 1991, etc.) Physicians find themselves in complex power relationships with subordinates, peers and superiors (Chervenak, McCullough, and Baril, 2005) thus, the following is proposed:
Hypothesis 2: The level of power among the different physician constituents varies.

Working within this system of complex relationships, the physician must necessarily navigate among the various constituents. It has been suggested that individuals with a high need for power increase their attempts to influence their environment (Porter, Allen, and Angle, 1981). The choice of influence tactics employed is affected by the level of power of those an agent interacts with. Influence strategies have different levels of forcefulness associated with them. More forceful strategies are used against weaker targets. Empirical support has been found for this prediction (Kipnis, Schmidt, and Wilkinson, 1980; Yukl and Falbe, 1990; Yukl and Tracey, 1992; Stahelski and Paynton, 1995; Hinkin and Schriesheim, 1989; Yukl, Falbe, and Youn, 1993; etc.). Furthermore, Yukl, Kim, and Falbe (1996) recognized that possessing certain forms of power make it easier to gain compliance from people. Thus, the following is proposed:

Hypothesis 3: The influence tactics utilized by physicians most frequently vary, depending on the level of power of the target in relationship to the physician.

Building upon these aforementioned premises, it stands to reason that different influence tactics will be used for the different power levels. Previous investigative studies provide evidence for how the tactics would differ among power lines. In their seminal work on influence, Kipnis, Schmidt and Wilkinson
(1980), distinguished eight influence factors and substantiated through factor analysis that certain tactics were used more frequently at specific status levels (superior, co-worker, and subordinate). They found that assertiveness, ingratiation, rationality, and sanctions emerged at each target status level (Kipnis, Schmidt and Wilkinson, 1980). Analysis by Yukl and Tracey (1992) found that inspirational appeal, ingratiation, and pressure were used most often when influencing others in downward direction. In another study by Yukl and, Falbe and Youn (1993) inspirational appeals were found to be used combined with another tactic in downward influence attempts, and rational persuasion was utilized most predominantly in both upward and downward influence attempts. Yukl and Tracey (1992) assert that inspirational appeal, ingratiation, and pressure were used most often in the downward direction. Garko (1991) found that physicians had a greater likelihood of using assertiveness, bargaining, coalition, higher-authority, and sanctions when influencing subordinates who communicated in an unattractive style. More forceful strategies tend to be used against weaker targets. The Tepper and Schriesheim (1991) and van Knippenberg, van Knippenberg, Blaauw, and Vermunt (1999) studies provide considerations for use of influence at differing power levels depending on the forcefulness of the tactic. Friendliness, ingratiation, and exchange were found to be less forceful in both studies. Assertiveness was rated most forceful (hard) in both studies and coalitions was also rated as a more forceful tactic. Considering that the Schriesheim and Hinkin revised POIS (1990) subscales with the six
identified tactics will be used for this study, and in light of the aforementioned considerations from the literature, the following are hypothesized:

Hypothesis 4: The social influence tactics utilized most frequently by physicians when interacting with targets with a low level power base (downward) are assertiveness and coalitions.

Yukl and Tracey (1992) found that when influencing in a lateral direction personal appeal, exchange, coalitions, and legitimating were the most frequently utilized tactics. Kipnis, Schmidt and Wilkinson (1980) found assertiveness, ingratiation, rationality, and sanctions were utilized at all target status levels. Later Yukl, Falbe, and Youn (1993) hypothesized that ingratiation is used more often in a downward and lateral direction. In a field study conducted by Yukl and Tracey (1992), personal appeal, exchange, and legitimating were used most frequently in a lateral direction. Tepper and Schriesheim (1991) ranked the rationality and upward appeals more moderately while van Knippenberg, et al. (1999) ranked the rationality as a soft tactic, there was no rating by them for the upward appeal. Considering the factors from above, the following is proposed:

Hypothesis 5: The social influence tactics utilized most frequently by physicians when interacting with targets with an equal level (lateral) power base are upward appeal and (reason) rationality.
Additional evidence indicated differences in the use of influence tactics when trying to influence someone at a higher level of power, or in an upward direction. Kipnis, Schmidt and Wilkinson (1980) recognized in their analysis that upward appeal, blocking, and exchange of benefits were tactics which only emerged in influence efforts directed toward superiors. Yukl and Tracey (1992) found that when influencing in an upward direction, rational persuasion and coalitions tactics were used most frequently. Yukl Falbe and Youn (1993) found that rational persuasion was utilized most predominantly in both upward and downward influence attempts. Garko, (1993a; 1993b) asserts that physician executives use different persuasive styles when interacting with superiors and that those styles differ depending on the attractive or unattractive communication styles of the superior. Furthermore, he emphasizes that the physician managers’ overall leadership effectiveness is closely linked to his/her ability to exercise upward influence (Garko, 1990). Friendliness and exchange had the least forcefulness ranking in both the Tepper and Schriesheim (1991) and van Knippenberg, van Knippenberg, Blaauw, and Vermunt (1999) studies. Hence, and lastly, the following is hypothesized: (Table 1 sums up the hypothesized relationships, p. 102).

**Hypothesis 6:** The social influence tactics is utilized most frequently by physicians when interacting with targets with a high level (upward) power base are friendliness and exchange.
Table 1.

Hypothesized Relationships.

<table>
<thead>
<tr>
<th>Level of Power of Target</th>
<th>Degree of Forcefulness of Tactic</th>
<th>Hypothesized Influence Tactics</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Low</td>
<td>Ingratiation, Exchange</td>
</tr>
<tr>
<td>Medium</td>
<td>Neutral</td>
<td>Upward Appeal, Reason (Rationality)</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
<td>Assertiveness, Coalitions</td>
</tr>
</tbody>
</table>
CHAPTER 4

RESEARCH DESIGN, METHODOLOGY, AND FINDINGS

Introduction to Research Design

A field study was conducted to investigate patterns of influence used by physicians among a variety of constituents. Specifically, the association between a physician’s use of influence tactics and the level of power of the constituent was examined to offer insights into physician influence and leadership. Preliminary studies identified a listing of the constituents a physician deals with on a routine basis and then the level of power of each of these constituents was investigated. In the main study participants from each of four groups were asked to complete a questionnaire. The groups were originally selected to include one constituent group from a higher power level than the physician (for upward influence), one constituent group with an equal power level (for lateral influence), and two groups with a lower level of power (for downward influence). The study was carried out in a major medical system in a large, metropolitan city. The study was submitted for, and gained approval from, the University of Miami Institutional Review Board (IRB) Human Subjects Research Office as an exempt behavioral science study (Appendix 11).
Determination of the Level of Power of Each of the Physician Constituents

Procedure

Two pilot investigations were conducted, one to help ascertain the constituents physicians deal with on a frequent basis, and one to identify the level of power held by each of the identified constituents in comparison to the physician. These preliminary studies were designed to answer the initial research question: What is the level of power among the various physician constituents in relationship to the power level of the physician? The constituents were determined in two ways, first by asking five physicians to recall and list all of the constituents they interacted with in the preceding week. Secondly, five other physicians were asked to look at a list of nine constituents, which were identified by the researcher, and then to consider whether there were any others they would include in this listing.

The level of power of the constituents was determined based on physician perceptions through the use of a short questionnaire. The purpose of this questionnaire was to determine the level of power among various physician constituents. The instrument took approximately five minutes to complete (Appendix 5). This was conducted as a preliminary study to eventually help determine leadership behaviors and social influence tactics among physicians and to verify the direction of influence among each of the constituents in relation to the physician. The questionnaire (or instrument) consisted of two sections. The first portion of the survey (Part A) consisted of a listing of the constituents
physicians routinely deal with on a day-to-day basis. The subjects were asked to indicate the degree of power they felt each of the identified individuals would have in relation to themself when they were attempting to influence them (the identified constituents) in a desired fashion, i.e., getting them to do what they would like them to do. They were asked to place an X in the appropriate box and to choose “Not Applicable” (N/A) if the participant physician did not deal with that constituent. This section of the survey asked the physicians to rate each of the constituents based on a 0 to 5 Likert-type scale where:

0 = The constituent has no power in relation to the physician.
1 = The constituent has very little power in relation to the physician.
2 = The constituent has some power, but less power than the physician.
3 = The constituent has equal power in relation to the physician.
4 = The constituent has greater power than the physician in some situations.
5 = The constituent generally has greater power than the physician.

The second portion of the survey (Part B) asked the physicians to rank the identified constituents according the level of power that the physician completing the survey believed each of the constituents have when dealing with physicians. They were asked to place a number 1 next to the constituent with the least power, a 2 next to the constituent with the second lowest level of power and so forth, so
that they would place a number 13 next to the constituent with the greatest degree of power in relationship to the physician. They were instructed to please be sure to use each number (1-13) only once.

Sample

Initially, ten physicians were asked for their input in order to determine the listing of the constituents physicians deal with on a frequent basis. This was accomplished in casual, face-to-face interactions with the researcher. The physicians included physicians from a variety of practice settings, including private practice physicians, community hospital physicians and physicians from a large, multi-system university health care organization. This was conducted to finalize the listing of constituents prior to the preliminary investigation.

Next, the short preliminary questionnaire was completed by 20 physicians from a variety of practice settings in a large metropolitan community (Miami, Florida). Specific demographics on the sample were not collected as this was a preliminary study to determine the level of power of each of the identified constituents when dealing with the physician, from the perspective of the physician. The data were collected in face-to-face interactions at medical meetings/seminars in a group setting, as well as individually in face-to-face interactions with the researcher. A sample of convenience was utilized. Most behavioral and social science studies use convenience samples and such studies have been found to be very useful for detecting relationships among different phenomena (Fowler, 1984). The clear advantage of this was ease of collection
and it was considered to be very useful in combating the notoriously low survey response rate of physicians (Harbaugh, 2002; Delnevo, 2004; Cummings, Savitz, and Konrad, 2001; Bostick, Pirie, Luepker, and Kofron, 1992).

Results

As determined by the initial preliminary study, thirteen constituent groups which physicians deal with frequently were examined and are identified below. Based on the input from the participants the following constituents were included in the study and these are defined earlier (p. 93):

- Acute Care Patients
- Non-acute Patients
- Pediatric Patients
- Chronically Ill Patients
- Top-Level Hospital Administrators
- Mid-Level Administrators
- Medical Students
- Residents
- Colleagues
- Subordinates in the Professional Category
- Subordinates in the Non-professional Category
- Third Party Payors
- Family Members of Patients
The level of power of the constituents was determined by examining the results of the Physician Power Questionnaire. For the first portion of the survey the mean and standard deviation for each of the items in this portion of the survey was computed and then used to rank the average degree of power among each physician constituent. The findings, based on the means, were ordered from lowest to highest to reflect the ratings and rankings (Table 2). Next, correlations were computed among the perceived power levels of the thirteen constituents. Further analysis was then conducted using a correlated t-test comparison to determine the significant between constituent effects.

The significance of the correlation coefficients among the four groups analyzed in the main portion of the study (Physician Colleagues, Registered Nurses, Top Level Administrators, and Patients) used a Bonferroni approach to control for Type I error across ten correlations. Consequently, a correlation was deemed statistically significant only if it was significant at the 0.01 level (two-tailed). The results of the correlational analyses presented in Table 3 show that two out of ten correlations were statistically significant. In general, these results suggest that correlated pairwise comparisons were necessary. The SPSS program could not compute these. Hence, Correlated Sample t-Tests were computed for each of the pairs following McNemar (1969). These computations are shown in Appendix 12, while the t-Test results are shown in Table 4. The results supported the expected relative power levels between the following constituents:
• Top Level Administrators and Patients, where the administrators were greater than the patients (t = 1.732).

• Physician Colleagues and Registered Nurses, where the physicians were greater than the nurses (t = 1.90).

• Physician Colleagues and Patients, where the physicians were greater than the patients (t = 3.0).

• The power level of the Nurses was equal to the Patients (t = 1.502).

The findings were not significant for t-Tests between the Top Level Administrators and Physician Colleagues (t = 0.134), or between the Top Level Administrators and the Nurses (t = .976). Thus, the findings did not support the anticipated three levels of power. Based on these findings the constituents were divided into two groups for lateral and downward influence:

1. Constituents with low power base (for downward influence) - including the nurses and the patients.

2. Constituents with high power base (for lateral influence) - including the colleagues and the top level administrators.

The results for the second portion of the preliminary study could not be used as anticipated. Most of the physicians surveyed did not rank all 13 constituents, since they placed a Not Applicable (N/A) next to the constituents that they did not personally deal with. Due to this, the average of the mean
rankings was not meaningful. Rather the data were qualitatively analyzed for those constituents the physicians ranked at the highest levels (at a greater power level than themselves), and at the lowest power levels. Acute Care Patients ranked in one of the lowest two categories on 15 occasions; Pediatric Patients 7 times; Non-Professional Subordinates, Medical Students, and Chronic Care Patients were also ranked at a low level. On the other end, Top Level Hospital Administrators were frequently ranked in the highest or second to highest category (22 occasions), and Third Party Payors were also frequently ranked at the highest two levels. Four physicians ranked no constituent at a higher power level than the physician in the Physician Power Survey.
Table 2.
Constituent Ratings and Rankings.

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric Patients</td>
<td>1.429</td>
<td>1.158</td>
<td>1</td>
</tr>
<tr>
<td>Acute Care Patients</td>
<td>1.611</td>
<td>1.851</td>
<td>2</td>
</tr>
<tr>
<td>Medical Students</td>
<td>1.778</td>
<td>1.734</td>
<td>3</td>
</tr>
<tr>
<td>Non-professional Subordinates</td>
<td>2.150</td>
<td>1.694</td>
<td>4</td>
</tr>
<tr>
<td>Non-Acute Care Patients</td>
<td>2.300</td>
<td>1.129</td>
<td>5.5</td>
</tr>
<tr>
<td>Chronic Care Patients</td>
<td>2.300</td>
<td>1.218</td>
<td>5.5</td>
</tr>
<tr>
<td>Medical Residents</td>
<td>2.333</td>
<td>1.782</td>
<td>7</td>
</tr>
<tr>
<td>Family Members of Patients</td>
<td>2.550</td>
<td>1.146</td>
<td>8</td>
</tr>
<tr>
<td>Professional Subordinates</td>
<td>2.650</td>
<td>1.182</td>
<td>9</td>
</tr>
<tr>
<td>Mid-level Hospital Administrators</td>
<td>2.900</td>
<td>1.071</td>
<td>10</td>
</tr>
<tr>
<td>Physician Colleagues</td>
<td>3.050</td>
<td>.759</td>
<td>11</td>
</tr>
<tr>
<td>Top Level Hospital Administrators</td>
<td>3.100</td>
<td>1.553</td>
<td>12</td>
</tr>
<tr>
<td>Third Party Payors</td>
<td>3.389</td>
<td>1.754</td>
<td>13</td>
</tr>
</tbody>
</table>

* Based on the mean score shown.
Table 3.
Correlation Matrix.

<table>
<thead>
<tr>
<th></th>
<th>Nonacute</th>
<th>Toplevel</th>
<th>Colleagues</th>
<th>Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonacute</td>
<td>Pearson Correlation</td>
<td>1.000</td>
<td>-.168</td>
<td>.350</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.478</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toplevel</td>
<td>Pearson Correlation</td>
<td>-.168</td>
<td>1.000</td>
<td>.085</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.478</td>
<td></td>
<td>.722</td>
</tr>
<tr>
<td>Colleagues</td>
<td>Pearson Correlation</td>
<td>.350</td>
<td>.085</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
<td>.130</td>
<td>.722</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>Pearson Correlation</td>
<td>.596</td>
<td>-.123</td>
<td>.607</td>
</tr>
<tr>
<td>Subordinate</td>
<td>Sig.</td>
<td>.006</td>
<td>.604</td>
<td>.005</td>
</tr>
</tbody>
</table>
Table 4.

Correlated t-Tests.

<table>
<thead>
<tr>
<th></th>
<th>Hypothesized Relationship</th>
<th>t-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Administrators &gt; Colleagues</td>
<td>0.134</td>
</tr>
<tr>
<td>2</td>
<td>Administrators &gt; Nurses</td>
<td>0.976</td>
</tr>
<tr>
<td>3</td>
<td>Administrators &gt; Patients</td>
<td>1.732*</td>
</tr>
<tr>
<td>4</td>
<td>Colleagues &gt; Nurses</td>
<td>1.90*</td>
</tr>
<tr>
<td>5</td>
<td>Colleagues &gt; Patients</td>
<td>3.0*</td>
</tr>
<tr>
<td>6</td>
<td>Nurses ≠ Patients</td>
<td>1.52a</td>
</tr>
</tbody>
</table>

* p < .05 (1-tailed)

a The tested two-tailed hypothesis is that of nurses and patients not being equal (> or <). Rejecting this due to the nonsignificant t-value (1.52) equates to finding that nurses and patients have equal power.
Discussion

The results support a differential power association among the physician constituents. However, the power association was not as predicted. The data supported only high and low power levels. The data do not support a middle ground. The physicians surveyed did not perceive an upward level of power in relation to themselves and perceived themselves to be equal to the administrators. In assessing the high versus low relationships between the groupings some differences were more significant than others. The difference between the physicians and the patients was the strongest, resulting in the highest (3.0) of the t-Tests. It is also noteworthy that 20% of the physicians surveyed felt that none of the constituents rated higher than themselves in the power relationships. As noted earlier, the relationships among the physicians and the constituents do not reflect a typical employer/employee relationship. Even the physician-patient relationship is not characteristic of a client based association. Also, the scientific knowledge base and educational level attained by physicians may set them apart, and would have strong implications for influence attempts.

Also notable are those constituents who were rated by the physicians at the lowest levels, the pediatric and acute care patients, as these populations have often been described as among the most vulnerable (McGlynn, 1997; Wadhwa, 1997; U.S. Department of Health and Human Services, 2003; IOM, 1993, 1996; National Institutes of Health, 1998). This should affect how these constituents are influenced by the physicians, as well as how the constituents, in turn, relate to the
physician. The medical students also ranked at a low level. As previously
discussed, such hierarchical differences have been associated with medical errors
(Sutcliffe et al., 2004).

Overall, the findings are important since they suggest that physicians may
use inappropriate influence strategies for gaining compliance since they do not
see themselves as having many upward power relations. Rather physicians
perceive themselves to be on an equal footing, or perhaps even superior to, the top
level administrators. Thus, the administrators may not respond well to the
influence tactics utilized by physicians.

Determination of the Social Influence Tactics Among Physician Constituents

Procedure

The data for this study were collected from four of the physician
constituency groups which were originally selected to represent different power
conditions: two were to represent the downward influence direction, and one
each from the lateral, and upward influence direction. However, as the
preliminary results indicated there were only high and low groups recognized.
The four constituent groups were surveyed for further analysis to answer the
major research hypothesis which was that certain influence strategies would be
used by physicians against certain influence targets. The groups were analyzed to
determine the social influence tactics utilized by physicians from the perspective
of the targets at differing power levels. The four groups selected to be surveyed
were (1) Top-level Hospital Administrators (now representing lateral influence),
(2) Registered Nurses and (3) Patients (for downward influence), and (4)
Physician Colleagues (for lateral influence). Two groups were originally selected
for the downward influence condition given that the patients represent a client
relationship, whereas, the nurses would represent a more typical downward
influence target. Also, the patients had been expected to be at an even lower
threshold in the level of power than the nurses.

All four groups were asked for demographic information including age,
gender and race of the respondent, and then were asked to identify the gender and
clinical specialty of the physician they were considering. All respondents were
given the identical questionnaire for completion. The questionnaire utilized was
the Schriesheim and Hinkin (1990) revised POIS. The questionnaire consists of
18 questions, three for each of the six influence tactics. The questions were asked
in the exact order and wording of the Schriesheim and Hinkin tool except the
pronouns were changed to reflect the target perspective. The participants were
read aloud a voluntary verbal consent script (Appendix 8 and Appendix 9 ).
Verbal instructions (in addition to written directions) were provided prior to
administration of the questionnaire. The physician, nurse and administrator
participants were asked to think of a physician that they dealt with frequently in
their work or practice in answering the questions; and the patients were asked to
consider a physician they had been to most frequently in the past six months. The
researcher was available to answer questions at all sessions. The questionnaire was primarily self-administered in face-to-face sessions, though for the Top Level Executive group, some were gathered via e-mail.

On the questionnaire (Schriesheim and Hinkin Revised POIS) item numbers 1, 4, and 7 measured ingratiation. Items numbers 2, 9, and 18 measured coalition. Items numbered 3, 8, and 11 measured reason (or rationality). Item numbers 5, 15, and 17 measured upward appeal. Item numbers 6, 10, and 13 measured exchange. And item numbers 12, 14, and 16 measured assertiveness. Appendix 10 identifies which of the items measure each of the six tactics.

The participants were informed that the questionnaires would remain anonymous, and that the names of the participant and the physician as an agent would not be recorded. Anonymity and confidentiality were emphasized and the respondents were assured that only a composite summary of the data was being sought and no information regarding an individual physician was of concern. Participants were informed that the study is for research purposes only. Each respondent was assured that the questionnaires would remain anonymous and that their individual responses would remain confidential. No names were recorded for the 12 questionnaires returned by e-mail or facsimile.

The questionnaires included demographic information including age, race, and gender, and then the respondent was asked to give a brief description of the physician they were considering, including the gender and the clinical specialty of the physician (Appendix 7). The subjects were asked to indicate on a five point
scale the frequency with which the physician they were thinking of used each of
the influence tactics when trying to get them to comply with a request. The scale
was measured as follows:

1 = I can not recall him or her ever using this tactic with me.
2 = He or she very seldom uses this tactic with me.
3 = He or she occasionally uses this tactic with me.
4 = He or she uses this tactic often with me
5 = He or she uses this tactic very often or always with me.

Sample

The sample consisted of 30 individuals in each of the four groups, for a
total sample of 120. The sample was collected at a large, university, multi-
complex, medical center located in a large metropolitan community (Miami,
Florida). The sample was a sample of convenience collected primarily by the
researcher in face-to-face meetings/seminars/classrooms in an individual or group
setting. However, a few (12) were collected electronically by e-mail or facsimile
for the Top Level Administrator group.

All questionnaires were collected and all data were analyzed by the
researcher. The study was stratified among the groups with an equal number of
participants in each of the four groups. As stated, the total sample consisted of
120 questionnaires, 30 in each group. Questionnaires which were completed incorrectly or with missing data were eliminated. The sample characteristics are summarized in Table 5.

The Registered Nurse sample consisted of 30 nurses. The sample was collected from nurses at a large university hospital, and from students enrolled in nursing courses for Advanced Registered Nurse Practitioner or Master of Science in Nursing, or for Doctorate in Nursing Practice. The original sample for this group was too large (52) so 30 were randomly selected for inclusion. Eight additional surveys for this group were not included due to missing or incorrectly completed data. All but two of the nurses included in the sample were currently working across a variety of nursing positions. The average age of the sample was 44.23 years old with the ages ranging from 24 to 61. Males comprise 13.3% of the sample. The composition of the ethnicity of the sample was 33.3% Caucasian, 30% Hispanic, 26.6% African American, 0% Asian, and 10% other. The physicians under consideration by the Registered Nurses were from a variety of 14 different clinical specialties with General Practitioners (7), and Hematologists (5) represented more frequently, and 76.7% of the physicians under consideration were male.

The patient sample consisted of 30 patients selected randomly from an initial sample of 33 and three additional surveys were excluded due to missing or incorrectly completed data. The sample was collected from patients in the waiting rooms in a variety of clinics at a large university medical center and from employees or students who had recently seen a physician within the system. The
average age of the sample was 48.86 years old, with the ages ranging from 21 to 87. Males comprise 26.7% of the sample. The ethnicity of the sample was 53.3% Caucasian, 33.3% Hispanic, 0% African American, 6.7% Asian, and 6.7% other. The physicians under consideration by the patients were from nine different clinical specialties with General Practitioners (19) represented most frequently, and 76.7% of those under consideration were male.

The top-level administrator sample consisted of 30 executives. Three additional surveys were excluded due to the fact that the participants identified job titles not considered appropriate for this group. The sample was collected from health care executives at a large university hospital system. Only individuals in specific executive job positions were approached for participation. These positions included Chief Executive Officer (CEO), Chief Operating Officer (CEO), Chief Financial Officer (CEO), Dean, Associate Dean, Associate Vice President, and Chief of Staff (or variations of these titles). Eighteen of the sample were collected through face-to-face interactions either on an individual basis or in an Executive Healthcare Administration program. The remaining 12 surveys were collected by e-mail through a personal appeal. Thirty eight e-mails were sent to top-level executives resulting in approximately a 32% response rate. The average age of the top-level administrator sample was 49.9 years old, with the ages ranging from 29 to 73. Males comprised 53.3% of the sample. The ethnicity of the sample was 60% Caucasian, 26.7% Hispanic, 3.3% African American, 3.3% Asian, and 6.7% other. The physicians under
consideration by the top-level administrators were from a variety of 17 different clinical specialties with General Practitioners (8) represented most frequently, and 93.3% of those under consideration were male.

The physician colleague sample consisted of 30 physicians. The initial sample for this group was too large (41) so 30 were randomly selected for inclusion. Four additional surveys for this group were not included due to missing data or incorrectly completed surveys and six were not included since they had been completed by Medical Students or Residents, which were not considered part of this group. The sample was collected from physicians at a large university hospital, and from students enrolled in an Executive MBA program. All of the physicians were currently working across a variety of positions and specialties. The average age of the sample was 43.53 years old, with the ages ranging from 29 to 70 years old. Males comprise 53.3% of the sample. The ethnicity of the sample was 30% Caucasian, 33.3% Hispanic, 13.3% African American, 13.3% Asian, and 10% other. The physicians under consideration by the physician colleagues were from a variety of 12 different clinical specialties with Psychiatrists (8), General Practitioners (4), and Surgeons (4) represented more frequently, and 76.7% of those under consideration were male.
Table 5.

Sample Characteristics.

<table>
<thead>
<tr>
<th>Group</th>
<th>Age Mean Range</th>
<th>Gender Number Percentage</th>
<th>Race ¹ Number Percentage</th>
<th>Physician Gender Number Percentage</th>
<th>Clinical Specialty ² Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Nurses</td>
<td>44.23 24 - 61</td>
<td>M - 4 (13.3%) F - 26 (86.7%)</td>
<td>1 = 10 (33.3%) 2 = 9 (30%) 3 = 8 (26.6%) 4 = 0 (0%) 5 = 3 (10%)</td>
<td>M - 23 (76.7%) F - 7 (23.3%)</td>
<td>1 = 7 2 = 1 3 = 3 5 = 1 12 = 5 13 = 1 14 = 1 20 = 1 21 = 1 24 = 2 25 = 1 26 = 2 27 = 2 28 = 2</td>
</tr>
<tr>
<td>Patients</td>
<td>48.86 21 - 87</td>
<td>M - 8 (26.7%) F - 22 (73.3%)</td>
<td>1 = 16 (53.3%) 2 = 10 (33.3%) 3 = 0 (0%) 4 = 2 (6.7%) 5 = 2 (6.7%)</td>
<td>M - 23 (76.7%) F - 7 (23.3%)</td>
<td>1 - 19 2 = 1 8 = 2 11 = 1 14 = 1 16 = 2 19 = 1 22 = 2 23 = 1</td>
</tr>
<tr>
<td>Physician Colleagues</td>
<td>43.53 29 - 70</td>
<td>M - 16 (53.3%) F - 14 (46.7%)</td>
<td>1 = 9 (30%) 2 = 10 (33.3%) 3 = 4 (13.3%) 4 = 4 (13.3%) 5 = 3 (10%)</td>
<td>M - 23 (76.7%) F - 7 (23.3%)</td>
<td>1 = 4 2 = 1 3 = 1 5 = 1 8 = 4 9 = 1 10 = 2 12 = 8 13 = 1 14 = 4 24 = 2 25 = 1</td>
</tr>
<tr>
<td>Top-Level Administrators</td>
<td>49.9</td>
<td>M - 16 (53.3%)</td>
<td>1= 18 (60%)</td>
<td>M - 28 (93.3%)</td>
<td>1 = 8</td>
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<td>28 - 73</td>
<td>F - 14 (46.7%)</td>
<td>2 = 8 (26.7%)</td>
<td>F - 2 (6.7%)</td>
<td>2 = 1</td>
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<tr>
<td></td>
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<td>3 = 1 (3.3%)</td>
<td>4 = 1 (3.3%)</td>
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<td>3 = 1</td>
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<td>15 = 3</td>
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<td></td>
<td></td>
<td></td>
<td>18 = 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22 = 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29 = 1</td>
</tr>
</tbody>
</table>

1 = Caucasian  
2 = Hispanic  
3 = African American  
4 = Asian  
5 = Other

2 = Internal Medicine/ General Practitioner/Family Practice  
2 = Orthopedic Surgery  
3 = Critical Care/Intensivist  
4 = Ear/Nose/Throat  
5 = Hematology  
6 = Pulmonary Medicine  
7 = Gastro-Intestinal  
8 = Obstetrics and Gynecology  
9 = Geriatrics  
10 = Neurology  
11 = Cardiology  
12 = Psychiatry  
13 = Emergency Medicine  
14 = Surgery  
15 = Cardio/Thoracic Surgery  
16 = Ophthalmology  
17 = Ophthalmic surgery  
18 = Endocrinology  
19 = Dermatology  
20 = Electrophysiology  
21 = Neurology  
22 = Transplant Surgery  
23 = Rheumatology  
24 = Pediatrics  
25 = Nephrology  
26 = Infectious Disease  
27 = Trauma Surgery  
28 = Anesthesiology  
29 = Radiology
Methods of Analysis

This portion of the study is the analytic portion to answer the research question of whether different social influence tactics are utilized by physicians depending on the level of power of the target or constituent. Determination of favored tactic of influence and level of target was statistically analyzed using SPSS (Green & Salkind, 2008). The analyses were conducted to determine perceived differences in physician influence strategies based upon level of power in relation to the physician. The influence tactics were measured from the target perspective. The independent variable was the group analyzed (power level). Initially analyses were conducted independently of the empirical evidence by using four groups representing three different power levels, as mentioned above (the Top Level Administrators for upward influence, the Physician Colleagues for lateral influence, and the Registered Nurses and Patients for downward influence). The dependent variables were the six influence tactics: ingratiation, coalition, reason, upward appeal, exchange, and assertiveness. The data were analyzed to determine significant differences between the different target's mean scores. First, internal consistency reliabilities were computed (using Cronbach's coefficient alpha). Next, the data were summed into scale scores and analyzed using one-way multivariate analysis of variance (MANOVA) - to test whether there are differences across groups and tactics. Lastly, six one-way ANOVA's and paired comparisons were conducted, as follow-up analyses to the MANOVA. Statistics were interpreted in order to draw conclusions related to the hypotheses.
Next, the data were examined using only two groups based on the empirical evidence from the preliminary study. The four groups were combined into two -- reflecting a high level of influence and a lower level of influence. Once again the independent variable was the group analyzed (power level). However, in this case the Physician Colleagues and the Top Level Administrators were combined into one group for the higher power level, and the Nurses and the Patients were combined to form the lower power level group. The dependent variables were the six influence tactics. The data from the combined groups using the total scale scores were analyzed using one-way multivariate analysis of variance (MANOVA). T-Tests were then performed to draw conclusions concerning the hypotheses.

Results

All six of the influence tactic scales have adequate internal consistency reliabilities. Each tactic was measured using the three items in the tactic's scale. George and Mallery's (2003) recommendations were utilized to evaluate the reliability levels for the coefficient alphas: “> .9 = Excellent, > .8 = Good, > .7 = Acceptable, > .6 = Questionable, > .5 = Poor, and < .5 = Unacceptable” (p. 231). In this study the coalition tactic has the lowest coefficient alpha at .61. Since this was in the questionable range, the researcher tried dropping one of the variables (item 18) with the lowest inter-item correlation (.255). However, this did not improve the reliability statistics in any significant way. In fact, the alpha dropped to a poor level (.54). Therefore, the original three items
were kept for the ingratiation tactic. The coefficient alphas for the ingratiation and exchange tactics were low but probably acceptable at .64 and .65 respectively. The reason and upward appeal tactics had alphas within the high acceptable range (.77 and .76). Lastly, the assertiveness tactic, with an alpha of .90, lies in the excellent range, signifying excellent internal consistency of the three items in the scale. Table 6 presents the results for these dimensions.
Table 6.

Scale Internal Consistency Reliabilities.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Item #'s</th>
<th>Cronbach's Coefficient Alphas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coalition</td>
<td>(2, 9, 18)*</td>
<td>.61</td>
</tr>
<tr>
<td>Influence Tactic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coalition</td>
<td>(2, 9)</td>
<td>.57</td>
</tr>
<tr>
<td>Ingratiation</td>
<td>(1, 4, 7)</td>
<td>.64</td>
</tr>
<tr>
<td>Exchange</td>
<td>(6, 10, 13)</td>
<td>.65</td>
</tr>
<tr>
<td>Reason</td>
<td>(3, 8, 11)</td>
<td>.77</td>
</tr>
<tr>
<td>Upward Appeal</td>
<td>(5, 15, 17)</td>
<td>.76</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>(12, 14, 16)</td>
<td>.90</td>
</tr>
</tbody>
</table>

* All three items maintained for final analyses.
Results (Continued)

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the effect of influence direction representing the four a priori samples - Top Level Hospital Administrators for upward influence, Physician Colleagues for lateral influence, and two samples for the downward influence condition, (Registered Nurses and Patients), on the six dependent variables - Ingratiation, Coalition, Reason, Upward Appeal, Exchange, and Assertiveness. Significant differences were found among the four groups on the dependent measures. Wilks' Lambda ($\Lambda$) = .689, $F(18, 314.44) = 2.46, p < .001$. The multivariate $\eta^2 = .117$ indicates that 12% of the multivariate variance of the dependent variables is dependent on the group factor. Table 7 contains the means and standard deviations on the dependent variables for the four groups across each of the influence tactics. Table 8 shows this same data for each group but with the means arranged in descending order.

Given the highly significant overall effects, six one-way ANOVA’s were examined next (one for each of the dependent variables). This allowed the evaluation of the relationships between the tactic and the groups. As shown in Table 9, clear support was demonstrated for differences across the groups for three of the tactics; marginal support was found for differences across two of the tactics; and no support for one tactic. The ANOVA for the ingratiation tactic was marginal, $F (3, 116) = 2.28, p < .08$. The strength of the relationship between the ingratiation tactic and the group, as assessed by $\eta^2$, was marginal, with the group accounting for 6% of the variance in ingratiation. The ANOVA for the coalition
tactic was not supportive, $F(3, 116) = .98$, $p < .40$. Also, the strength of the relationship between the coalition tactic and group membership, was not significant as the group accounted for 2% of the variance in the dependent coalition variable. The ANOVA for the reason tactic clearly supported expectations, $F(3, 116) = 3.62$, $p < .01$. The strength of the relationship between the reason tactic and the group was strong, with group accounting for 9% of the variance in the dependent reason variable. The ANOVA for the upward appeal tactic provided marginal support, $F(3, 116) = 2.36$, $p < .07$. The strength of the relationship between the upward appeal tactic and group membership accounted for only 6% of the variance in the dependent upward appeal variable. The ANOVA for the exchange tactic was clearly supportive, $F(3, 116) = 4.77$, $p < .001$. The strength of the relationship between the exchange tactic and the group was strong, with the group accounting for 11% of the variance in the dependent exchange variable. Lastly, The ANOVA for the assertiveness tactic was clearly supportive, $F(3, 116) = 6.53$, $p < .001$. The strength of the relationship between the assertiveness tactic and the group was strong, with the group accounting for 14% of the variance in the dependent assertiveness variable.

Follow-up tests were conducted to evaluate pairwise differences among the group tactic means. These analyses were performed using the Scheffe Test to identify exactly where significant differences exist. The Scheffe test was chosen as it is one of the safest techniques since it provides increased protection from Type I errors. In order to provide this protection, the Scheffe test requires a greater sample means differentiation before the test concludes that there is a
significant difference (Gravetter and Wallnau, 2005). As shown in Table 10, there were no directional effects for Ingratiation, Coalition, or Upward Appeal. There was a significant difference between the means for Reason, where Group 4 (Patients) was greater than Group 1 (Nurses). The analyses also revealed that Group 2 (Physician Colleagues) was significantly greater than Group 4 (Downward Patients) for the Exchange tactic. Furthermore, several significant differences emerged for the Assertiveness tactic. Significant differences included Group 1 versus Group 4; Group 2 versus Group 4; and Group 3 versus Group 4; where Groups 1, 2, and 3 are all greater than Group 4.

Finally, the data were examined using only two groups based on the empirical evidence from the preliminary study. A two-tiered multivariate analysis of variance (MANOVA) was conducted to determine the effect of high and low level influence. Table 11 shows the means and standard deviations for the two groups. T-Tests were then conducted in order to draw conclusions related to the hypotheses. Wilks' Lambda (Λ) = .878, $F(6, 113) = 2.622$, $p < .020$. The multivariate $\eta^2 = .122$ indicates that 12.2% of the multivariate variance of the dependent variables is dependent on the group intercept. The test was not significant for the ingratiation ($t = .612$, $p < .05$) or coalition tactics ($t = .612$, one-tailed $p < .05$). The significance level for a one-tailed t-Test was $t=1.64$. Thus, for the other four tactics, significant differences between the groups were established. When the groups were combined reasoning surfaced as the most frequently used tactic for both groups though there was a significant difference between the groups. The t-Test for reason was 2.138, for upward appeal 1.965,
exchange 2.496, and assertiveness 2.195. Moreover, if the threshold for significance was lowered to $p < .10$ level, then the t-value for the coalition tactic (1.562) also became significant as the value required for statistical significance decreased to 1.28. Thus, the t-Test for the coalition tactic emerges as suggestive. The results of the t-Tests shown in Table 12 are for the two level power group analyses (high and low power).
Table 7.

Means and Standard Deviations on the Dependent Variables for the Four Groups.

<table>
<thead>
<tr>
<th>Tactic</th>
<th>Group*</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingratiation</td>
<td>1</td>
<td>9.23</td>
<td>3.15</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9.70</td>
<td>2.82</td>
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<tr>
<td></td>
<td>3</td>
<td>8.13</td>
<td>2.67</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>10.10</td>
<td>3.58</td>
</tr>
<tr>
<td>Coalition</td>
<td>1</td>
<td>6.80</td>
<td>3.10</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7.07</td>
<td>2.84</td>
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<td></td>
<td>3</td>
<td>6.33</td>
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<td>5.83</td>
<td>3.49</td>
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<td>3</td>
<td>11.67</td>
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<td>Assertiveness</td>
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<td>Mean</td>
<td>Standard Deviation</td>
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<td></td>
<td>1</td>
<td>6.50</td>
<td>4.07</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5.60</td>
<td>3.22</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>6.20</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3.17</td>
<td>0.59</td>
</tr>
</tbody>
</table>

* Groups:  
1 = Registered Nurses  
2 = Physician Colleagues  
3 = Top Level Administrators  
4 = Patients
Table 8.
Means and Standard Deviations on the Dependent Variables Arranged By Group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Tactic</th>
<th>Mean*</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Registered Nurses</td>
<td>Reason</td>
<td>9.53</td>
<td>3.29</td>
</tr>
<tr>
<td></td>
<td>Ingratiation</td>
<td>9.23</td>
<td>3.15</td>
</tr>
<tr>
<td></td>
<td>Coalition</td>
<td>6.80</td>
<td>3.10</td>
</tr>
<tr>
<td></td>
<td>Assertiveness</td>
<td>6.50</td>
<td>4.07</td>
</tr>
<tr>
<td></td>
<td>Upward Appeal</td>
<td>6.33</td>
<td>3.75</td>
</tr>
<tr>
<td></td>
<td>Exchange</td>
<td>4.07</td>
<td>1.78</td>
</tr>
<tr>
<td>2. Physician Colleagues</td>
<td>Reason</td>
<td>11.30</td>
<td>3.72</td>
</tr>
<tr>
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<td>Ingratiation</td>
<td>9.70</td>
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</tr>
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<td></td>
<td>Coalition</td>
<td>7.07</td>
<td>2.84</td>
</tr>
<tr>
<td></td>
<td>Upward Appeal</td>
<td>5.90</td>
<td>2.93</td>
</tr>
<tr>
<td></td>
<td>Assertiveness</td>
<td>5.60</td>
<td>3.22</td>
</tr>
<tr>
<td></td>
<td>Exchange</td>
<td>5.23</td>
<td>2.87</td>
</tr>
<tr>
<td>3. Top Level Administrators</td>
<td>Reason</td>
<td>11.17</td>
<td>2.99</td>
</tr>
<tr>
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<td>Ingratiation</td>
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<td>2.67</td>
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<td>Coalition</td>
<td>6.33</td>
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<td></td>
<td>Assertiveness</td>
<td>6.20</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>Upward Appeal</td>
<td>5.67</td>
<td>3.21</td>
</tr>
<tr>
<td></td>
<td>Exchange</td>
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<td>1.76</td>
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<tr>
<td>Group</td>
<td>Tactic</td>
<td>Mean*</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------</td>
<td>-------</td>
<td>-------------------</td>
</tr>
<tr>
<td>4. Downward Patients</td>
<td>Reason</td>
<td>12.23</td>
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</tr>
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<td>Ingratiation</td>
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<td>Coalition</td>
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</tr>
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<td></td>
<td>Upward Appeal</td>
<td>4.27</td>
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<td>.96</td>
</tr>
<tr>
<td></td>
<td>Assertiveness</td>
<td>3.17</td>
<td>.59</td>
</tr>
</tbody>
</table>

* Listed in descending order
Table 9.

One-way ANOVA's - Test of Effects for the Four Groups.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>F (df)</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingratiation</td>
<td>2.29 (3)</td>
<td>.08</td>
<td>.06</td>
</tr>
<tr>
<td>Coalition</td>
<td>.98 (3)</td>
<td>.40</td>
<td>.02</td>
</tr>
<tr>
<td>Reason</td>
<td>3.62 (3)</td>
<td>.01</td>
<td>.09</td>
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<tr>
<td>Upward Appeal</td>
<td>2.36 (3)</td>
<td>.07</td>
<td>.06</td>
</tr>
<tr>
<td>Exchange</td>
<td>4.77 (3)</td>
<td>.00</td>
<td>.11</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>6.52 (3)</td>
<td>.00</td>
<td>.14</td>
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</table>
Table 10.

Multiple Comparison Scheffe Tests for the Four Groups.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Group</th>
<th>Group</th>
<th>Mean Difference</th>
<th>Sig.</th>
</tr>
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</tr>
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<td></td>
<td>1</td>
<td>3</td>
<td>1.10</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>4</td>
<td>-.87</td>
<td>.76</td>
</tr>
<tr>
<td></td>
<td>2</td>
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<td>.95</td>
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<td></td>
<td>2</td>
<td>3</td>
<td>1.57</td>
<td>.28</td>
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<td>2</td>
<td>4</td>
<td>-.40</td>
<td>.97</td>
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<td></td>
<td>3</td>
<td>1</td>
<td>-1.10</td>
<td>.59</td>
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<td>.87</td>
<td>.76</td>
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<td>3</td>
<td>1.97</td>
<td>.11</td>
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<tr>
<td>Coalition</td>
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<td>-.27</td>
<td>.99</td>
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<td>1.23</td>
<td>.47</td>
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<td></td>
<td>3</td>
<td>1</td>
<td>-.47</td>
<td>.95</td>
</tr>
<tr>
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<td>.67</td>
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<td>-.50</td>
<td>.94</td>
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<td>.28</td>
</tr>
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<td>4</td>
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<td>.02</td>
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<td>4</td>
<td>-1.07</td>
<td>.65</td>
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<tr>
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<td>4</td>
<td>1</td>
<td>2.70*</td>
<td>.02</td>
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<tr>
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<td>4</td>
<td>3</td>
<td>1.07</td>
<td>.65</td>
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<td>Upward Appeal</td>
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<td>.43</td>
<td>.96</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>4</td>
<td>2.07</td>
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<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
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<td>-1.40</td>
<td>0.10</td>
</tr>
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<td>2</td>
<td>1.17</td>
<td>1.10</td>
<td>1.90*</td>
<td>0.16</td>
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<tr>
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<td>0.80</td>
<td>1.00</td>
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<td>4</td>
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<td>-1.90*</td>
<td>-0.80</td>
<td>0.56</td>
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<td>Assertiveness 1</td>
<td>0.90</td>
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<td>-0.60</td>
<td>2.43*</td>
<td>0.76</td>
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<td>0.60</td>
<td>3.03*</td>
<td>0.99</td>
</tr>
<tr>
<td>4</td>
<td>-3.33*</td>
<td>-2.43*</td>
<td>-3.03*</td>
<td>0.00</td>
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</table>

* The mean difference is significant at the .05 level or better.
Table 11.
Means and Standard Deviations for Two Levels of Power.

<table>
<thead>
<tr>
<th>Tactic</th>
<th>Power Level</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingratiation</td>
<td>Low</td>
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<td>2.971</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>9.117</td>
<td>3.289</td>
</tr>
<tr>
<td>Coalition</td>
<td>Low</td>
<td>6.933</td>
<td>2.951</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>6.083</td>
<td>3.010</td>
</tr>
<tr>
<td>Reason</td>
<td>Low</td>
<td>10.417</td>
<td>3.595</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>11.700</td>
<td>2.948</td>
</tr>
<tr>
<td>Upward Appeal</td>
<td>Low</td>
<td>6.117</td>
<td>3.340</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>4.967</td>
<td>3.064</td>
</tr>
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<td>Exchange</td>
<td>Low</td>
<td>4.650</td>
<td>2.441</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>3.733</td>
<td>1.460</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>Low</td>
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<td>3.670</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>4.683</td>
<td>3.127</td>
</tr>
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</table>
Table 12.

MANOVA and Correlated t-Tests for Two Levels of Power.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>$F$ (df)</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
<th>t-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingratiation</td>
<td>.374 (1)</td>
<td>.542</td>
<td>.003</td>
<td>.612</td>
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<td>Coalition</td>
<td>2.440 (1)</td>
<td>.121</td>
<td>.020</td>
<td>1.562* a</td>
</tr>
<tr>
<td>Reason</td>
<td>4.572 (1)</td>
<td>.035</td>
<td>.037</td>
<td>2.138*</td>
</tr>
<tr>
<td>Upward Appeal</td>
<td>3.862 (1)</td>
<td>.052</td>
<td>.032</td>
<td>1.965*</td>
</tr>
<tr>
<td>Exchange</td>
<td>6.231 (1)</td>
<td>.014</td>
<td>.050</td>
<td>2.496*</td>
</tr>
<tr>
<td>Assertiveness</td>
<td>4.820 (1)</td>
<td>.030</td>
<td>.039</td>
<td>2.195*</td>
</tr>
</tbody>
</table>

* p < .05 (1-tailed)

a Suggestive - Significant at p < .10 (1-tailed)
CHAPTER 5

DISCUSSION AND CONCLUSION

Level of Support for Hypotheses

Using survey data collected from Registered Nurses, Physician Colleagues, Patients, and Top-Level Administrators, this research sought to examine the use of influence tactics used by physicians across three strata of power. However, some of the results were counter to expectations. Perhaps most significantly, the preliminary study did not support three levels of power. Rather, two power levels emerged. The researcher initially investigated differences among the three levels of power as an a priori analysis. Next, as indicated by the preliminary study, two groups were examined: data for the Registered Nurses and Patients were combined to represent the low influence level and the Top-Level Administrators and Physician Colleagues were combined to represent the high level data. All data were collected from the target perspective. The results indicate that physicians use a variety of tactics in influencing others and there were several differences found between the groups analyzed. Importantly, there were clearer directional differences when the two groups of power were compared. The results were more supportive of the hypothesis using the two empirically-supported group analyses. The summary below will examine the stated hypotheses against the results.
Primary Hypothesis (Hypothesis 1): Certain influence tactics will be used by physicians against certain influence targets depending on the forcefulness of the tactic.

The primary hypothesis was robustly supported when analysis included only two groups of power as indicated by the preliminary study. Certain tactics were used differently by physicians against certain influence targets. For the a priori study utilizing the expected three levels of power, three of the tactics had significant differences across the means in the ANOVAs (exchange, reason, and assertiveness), and two of the tactics demonstrated marginal support for differences across the groups (ingratiation and upward appeal). Coalitions did not demonstrate support for differences across the groups. Further analyses by the Scheffe Test demonstrated differences among the groups for exchange, assertiveness and reason. However, while there were differences among the groups, they were not directionally consistent. For instance, there were demonstrated differences in the means for the assertiveness tactic in Group 1 (Nurses) and Group 4 (Patients), though both of these were seen as downward influence segments. So, while the tactics were used differently by the physicians toward the three levels of power, this was not necessarily based on the forcefulness of the tactic. When the analyses were conducted using the data-based two levels of power groups, clearer directional differences were evident. There were significant differences for the reason, upward appeal, exchange and
assertiveness tactics, and suggestive differences for coalitions. Overall, the primary hypothesis was upheld when testing between the two verified power groups, high and low.

**Hypothesis 2:** The level of power among the different physician constituents varies.

This hypothesis was upheld but it was not as anticipated. While the results did demonstrate power differences, the data supported only two power levels, high and low. The most significant difference was between the physicians and the patients. Significant results also demonstrated that the Top Level Administrators were greater than the Patients; the Physicians were greater than both the Patients and the Nurses; and the top Level Administrators were greater than the Patients. The Top Level Administrators were not perceived to be greater than the Physicians. Importantly, these might constitute a factor in the relational power/influence interactions among the physician and his/her constituents. Also, while the physicians often ranked the Third Party Payors as having greater power in the relationship, the relationship is unusual in that it is primarily based on written and telephone communications and rarely involve face to face verbal interactions, which certainly may have an impact on the influence relationships.

**Hypothesis 3:** The influence tactics utilized by physicians most frequently vary, depending on the level of power of the target in relationship to the physician.
Hypothesis 3 was supported when tested between the two power levels. Interestingly, ingratiation was used frequently across both groups with no directional differences between the power levels. There were clear directional differences for the other five tactics when testing between two power levels. However, when testing using the anticipated three power levels, there was less support for the directional differences. There were nominal differences for three of the tactics across the three groups. This was supported by differences in the means on the one-way ANOVAs for the exchange, reason, and assertiveness tactics.

**Hypothesis 5:** The social influence tactics utilized most frequently by physicians when interacting with targets with a low level power base (downward) are assertiveness and coalition.

**Hypothesis 6:** The social influence tactics utilized most frequently by physicians when interacting with targets with an equal level (lateral) power base are upward appeal and reason (rationality).

**Hypothesis 7:** The social influence tactics utilized most frequently by physicians when interacting with targets with a high level (upward) power base are ingratiation and exchange.
The hypothesized relationships for use of influence tactics against certain influence targets based on the level of power of the target and degree of forcefulness of the tactic were only partially upheld when using three levels of power. Table 12 shows the data matrix of all these relationships when using the a priori three levels of power. From the target perspective, all groups identified the physician as using rationality and ingratiation most frequently. Ingratiation is considered to have a low level of forcefulness and reason is ranked at a moderate level of forcefulness. For the ingratiation tactic there were no significant differences among the means for the groups. Though reason was used by the physicians against all targets, there was a significant difference in the way it was used across the groups, where it was used to a greater degree toward the patient (Group 4) than toward the nurses (Group 1). Both of these target groups were investigated for the downward influence condition. Though exchange was not used most frequently toward any of the targets, the between group effects were significant. Exchange was used to a significantly greater extent toward the physician colleague (lateral) group than toward the patients (downward). Lastly, the assertiveness tactic showed significant differences among each of the target groups analyzed. Assertiveness was utilized to a significantly greater extent toward the Registered Nurses, the Physician Colleagues, and the Top-level Administrators than it was toward the Patients.

When analyzing the data for the two power levels, greater differences between the groups became apparent. The assertiveness, exchange, upward appeal and coalition (suggestive differences) tactics were used significantly more
by the physicians against the weaker targets (low level). The assertiveness and coalitions were used as hypothesized. The ingratiation and exchange tactics were not used towards the higher level targets as hypothesized. Reason was the only tactic used significantly more by the physicians toward targets at the higher level of power. Table 13 summarizes these relationships. The results demonstrated stronger differences between the power levels and a more close alignment with the hypothesized relationships. Noteworthy, are the hypothesized tactics for the lateral influence which are exactly consistent with the high level when analyzing the two groups. This is consistent with the preliminary study in that the physicians perceive themselves to be on equal power level as the administrators and use tactics generally thought to be more effective for lateral influence.

Overall, there was mixed support for the hypotheses. Despite the fact that these differences existed, the patterns of influence tactics across power directions were not fully as expected. In addition, even when measuring at only two levels of power, the directional differences were not consistent. Largely, the power differences were not as predicted and the between group influence tactics did not follow anticipated directions.
Table 13.

Results For Three Power Levels.

<table>
<thead>
<tr>
<th>Influence Tactics</th>
<th>Forcefulness of Tactics(^1)</th>
<th>Target Power(^2)</th>
<th>Low Nurses</th>
<th>Low Patients</th>
<th>Neutral Physician</th>
<th>High Top-Level Admin.</th>
</tr>
</thead>
<tbody>
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<td>1.</td>
<td>Ingratiation Mild</td>
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<td></td>
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</tr>
<tr>
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<td>(1.583)</td>
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<td>9.23</td>
<td>10.10</td>
<td>9.70</td>
<td>8.13</td>
</tr>
<tr>
<td>2.</td>
<td>Exchange Mild</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.553)</td>
<td></td>
<td>4.07</td>
<td><strong>3.33</strong></td>
<td><strong>5.23</strong></td>
<td>4.13</td>
</tr>
<tr>
<td>3.</td>
<td>Reason Mid-Level (Rationality)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.1433)</td>
<td></td>
<td><strong>9.53</strong></td>
<td><strong>12.23</strong></td>
<td>11.30</td>
<td>11.17</td>
</tr>
<tr>
<td>4.</td>
<td>Upward Appeal Mid-Level</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.864)</td>
<td></td>
<td>6.33</td>
<td>4.27</td>
<td>5.90</td>
<td>5.67</td>
</tr>
<tr>
<td>5.</td>
<td>Coalition Strong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.996)</td>
<td></td>
<td>6.80</td>
<td>5.83</td>
<td>7.07</td>
<td>6.33</td>
</tr>
<tr>
<td>6.</td>
<td>Assertiveness Strong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.398)</td>
<td></td>
<td><strong>6.50</strong></td>
<td><strong>3.17</strong></td>
<td><strong>5.60</strong></td>
<td><strong>6.20</strong></td>
</tr>
</tbody>
</table>

\(^1\) Based on Tepper and Schriesheim (1991) values.

\(^2\) Means and Standard Deviations

* Significant Between Group Values in Boldface
Table 14.

Results For Two Power Levels.

<table>
<thead>
<tr>
<th>Influence Tactics</th>
<th>Forcefulness of Tactics</th>
<th>Target Power*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>1. Ingratiation</td>
<td>Mild</td>
<td>9.467</td>
</tr>
<tr>
<td></td>
<td>(1.583)</td>
<td>2.971</td>
</tr>
<tr>
<td>2. Exchange</td>
<td>Mild</td>
<td>4.650</td>
</tr>
<tr>
<td>a</td>
<td>(1.553)</td>
<td>2.441</td>
</tr>
<tr>
<td>3. Reason</td>
<td>Mid-Level</td>
<td>10.417</td>
</tr>
<tr>
<td>(Rationality)</td>
<td>(2.1433)</td>
<td>3.595</td>
</tr>
<tr>
<td>4. Upward Appeal</td>
<td>Mid-Level</td>
<td>6.117</td>
</tr>
<tr>
<td>a</td>
<td>(2.864)</td>
<td>3.340</td>
</tr>
<tr>
<td>5. Coalition</td>
<td>Strong</td>
<td>6.933</td>
</tr>
<tr>
<td>b</td>
<td>(2.996)</td>
<td>2.951</td>
</tr>
<tr>
<td>6. Assertiveness</td>
<td>Strong</td>
<td>6.050</td>
</tr>
<tr>
<td>a</td>
<td>(3.398)</td>
<td>3.670</td>
</tr>
</tbody>
</table>

* Means and Standard Deviations

a Significant between group differences - p < .05 (1-tailed)

b Suggestive
Discussion

The preliminary study indicated an unanticipated finding, setting the stage for a divergence in the hypotheses. Specifically, the data supported only two power level groups (downward and lateral), not the expected three. Notably, the physicians did not perceive the administrators to be their superiors at an upward influence level. Hence, the data from the preliminary study did not support an upward condition. Therefore, the data were first analyzed using the three anticipated power levels, upward, downward, and lateral as a priori study. Then the data were then analyzed for two power levels as indicated by the empirical evidence. These groups included the nurses and patients for the downward influence condition and the physician colleagues and top level administrators for the lateral condition. The findings did demonstrate a differential usage of influence tactics by physicians with certain influence targets based on the power level of the target. However, the use of tactics across the groups did not support the hypothesized relationships based on the forcefulness of the tactic. There were significant directional differences in the usage of the influence tactics between the high and low levels of power.

To summarize the level of support for the hypotheses, the main hypothesis indicated that certain influence tactics would be used by physicians against certain influence targets depending on the forcefulness of the tactic. This was robustly upheld when measuring for the two groups. There was mixed support for the secondary, or supporting hypotheses. Hypothesis 2, that the level of power among the different physician constituents varies, was upheld but in a different
way than predicted. Rather than the anticipated three groups, for upward, lateral, and downward power groups only two groups emerged, downward and lateral influence. As previously stated the physicians perceived themselves to be on an equal footing with the top level administrators. The influence tactics utilized by physicians most frequently did vary, depending on the level of power of the target in relationship to the physician as hypothesized, but this hypothesis was more vigorously supported when measuring for the two power levels, rather than the three. It was hypothesized that the social influence tactics utilized most frequently by physicians when interacting with targets with a low level power base (downward) would be assertiveness and coalitions. This hypothesis was not supported, rather ingratiation and reason were used most frequently. For the lateral condition, it was hypothesized that upward appeal and (reason) rationality would be used most frequently by the physicians. This was exactly upheld when measuring for the two power levels. Lastly, it was hypothesized that the social influence tactics utilized most frequently by physicians when interacting with targets with a high level (upward) power base are friendliness and exchange. When measuring for only two power groups, as indicated by the empirical evidence from the preliminary study, there was not an upward power level as the physicians perceived the top level administrators to be equal to themselves in terms of power.

Although the results of the analyses provide mixed support for the hypotheses, the findings do merit further discussion. First, rather than the anticipated directional differences, physicians tend to most frequently use similar
tactics of influence against all targets. Ingratiation and reason were used most frequently with all of the groups analyzed. The differences between the use of tactics do not consistently follow the directional differences recognized in other studies. Also, the physicians tend to use a variety of tactics. In her dissertation, Waldera (1988), found that individuals high in power tend to use a variety of tactics. Physicians perceive themselves, and indeed many would consider them to be, high in power. Moreover, physicians do not perceive others to be in a greater power position than themselves. This perceived power differential, the high level of education attained, and the atypical work relationship (non employer/employee) may account for the differences in use of influence tactics. Also, the high level of self-esteem which has been previously reported among the physician population (Harvard Health Publication Harvard Medical School, 2007; Goodpastor and Montoya, 1996; Carmel and Glick, 1996) may increase their confidence in utilizing a variety of tactics. A perception of high power may provide a strong sense of control and individuals in high power positions may be more likely to wield influence and also to use a variety of influence tactics (Ringer and Boss, 2000).

This study demonstrates that physicians do not conform to the previously reported influence directional effects. Other studies examine the three levels of influence power, upward, lateral, and downward (Kipnis, et al., 1980; Yukl, Kim, and Falbe, 1996; Yukl and Falbe, 1990; etc.). Though differences do exist, the previous patterns were not replicated in this study. Moreover, the same pattern was not observed even among the two groups analyzed for the downward
influence condition, nor the two groups for the higher power strata. It could be argued that despite the fact that both groups were in the downward influence condition, the patients have more of a client relationship with their physicians.

A significant relationship has been previously observed between the use of reason and an internal locus of control. Using tactics such as reason and assertiveness are considered to be dependent on the agent's personal ability to control the situation. Furthermore, this strong relationship between power and reason suggests that individuals who perceive themselves as being high in power are most likely to use reason as an upward tactic (Porter, Allen, and Angle, 1981; Ringer and Boss, 2000). In the present study, reason was used across all power levels. In fact, it was used as the most frequent tactic with all of the target groups. Physicians in the current study did perceive themselves to be high in power, so this may be one factor contributing to the frequent use of reason and supports previous studies. However, for the downward condition, a significant difference was found in how reason is used by physicians toward patients and nurses. Reason was used to a greater degree toward the patients than toward the nurses. Use of this tactic by the physician could be necessary in order to explain the rationale for treatment modalities, the necessity for diagnostic testing, explaining test results, and even discussing general health issues or diseases. Also, physicians may feel that nurses are more knowledgeable about the subject at hand and, therefore, physicians do not feel the need to employ the same degree of reasoning.
Ingratiation was also employed as a favored tactic with all targets. As shown in Tables 7 through 10 the initial MANOVA and ANOVA showed marginal directional differences in the use of ingratiation. However, the directional Scheffe Test did not support these differences. The two group analyses also demonstrated that while ingratiation was used frequently toward both targets, there were not significant differences between the groups as indicated in Table 12. From the perspective of the targets, at all power levels, the physicians were likely to influence in a friendly, humble manner. Though the results support this finding, however, physicians are often characterized by their arrogance (Lazarus, 2009; Bauerschmidt, 2008; Rudland and Mires, 2005; Duff, 2004; Berger, 2002; Hoffenberg, 2001; Friedman, 1997; Brody and Miller, 1981; Ingelfinger, 1980), and condescending attitudes (Mason, 2002; Makoul, and Curry, 2007; Thompson, Robinson, and Beisecker, 2004; Wofford, Wofford, Bothra, Kendrick, Smith, and Lichstein, 2004; Sulmasy, 2000; Becker, and Newsom, 2003). This discrepancy may be due, in part, to a few bad examples coloring the picture and tarnishing the image. Few empirical studies have been conducted regarding physician arrogance. Though its wide spread occurrence is reported to be common (Berger, 2002) there are no studies regarding its actual prevalence. Studies to date on physician arrogance have been reported incidents, anecdotal, opinion pieces, or case studies.

It is not surprising that there was a greater use of assertiveness against three of the targets in the a priori analysis. Assertiveness was used significantly less in the patient population and was a significant difference in the use of toward
the nurses and the patients, which were both in downward influence categories. Strikingly, when the data were analyzed in the two-tiered structure, assertiveness was used significantly more toward the lower level targets as hypothesized. This was consistent with previous studies and the hypothesized relationships that more forceful tactics are used against weaker targets (Schriesheim, Castro, and Yammarino, 2000; Case, Dosier, Murkinson, and Keys, 1998; van Knippenberg, van Knippenberg, Blaauw, and Vermunt).

The initial (three groups) results demonstrated marginal support for differences across the means for the upward appeal tactic. The more rigorous Scheffe Test did not recognize this significance as it requires a greater sample mean differentiation indicating that the relationship between upward appeal and the groups was not significant. For the exchange tactic there was a significant difference in terms of usage between the physicians and the patients. The physicians used this tactic to a greater extent laterally (with physician colleagues versus the patients). From the patient perspective the exchange tactic may be considered akin to bribery. Statements such as “reminded me of past favors,” “if you do this for me, I will do something for you,” and “offered to make a personal sacrifice,” were used to measure this tactic. The patients frequently gave these statements a low rating on the Likert scale.

The empirically validated results from the two group study were interesting. Ingratiation is used with all targets, reason more significantly towards those at a higher power level, and coalition, upward appeal, exchange, and assertiveness to a greater extent toward those in a lower power level. Most
notable is the fact that only two levels of power were empirically supported. The implications resulting from these findings when compared to the literature are noteworthy. Once again perceptions of the power relations with top level administrators may result in inappropriate use of influence strategies when the target does not respond well to the tactics employed. This can be very telling for the physician in that he or she may not be using the best tactic with different targets, and thus, target compliance may not be gained as much as desired or to the best advantage possible. Therefore, the administrators may not respond as well to the tactics employed. It could also result in greater time and complications in accomplishing tasks and solving problems. Hence, this finding supports previous research which emphasizes the need for increased leadership training among the physician population (Reinertsen, 1998; Berwick and Nolan, 1998; Williams, 2001; Stoller, 2009; Fernandez, Vozenie, Hegarty, Motola, Reznek, Ph Lumpus, and Kozlowski, 2008; Fairchild, Benjamin, Gifford, and Huot, 2004).

The relationship between the physician and the patient is unique. A degree of trust must prevail. The well-being of the individual is at stake and the importance of life/death decisions could have a profound effect on the manner in which physicians use influence. The patient/physician relationship is very dissimilar to a typical employee/employer relationship which might partially account for the differences in the findings demonstrated in this research compared to previous studies. The physician role is also quite different than that of most employees. The aforementioned educational level, non-traditional work
relationships, and the power differential of physicians may provide other mitigating factors to explain these discrepancies. Ultimately, using the appropriate tactic of influence toward each of the targets could enhance patient outcomes, so studies of this nature are important. Further research in this regard could help shed greater light on these relationships and assist in leadership development in the physician population.

Limitations

Every attempt was made to conduct this research in a sound manner. However, a variety of limiting factors could have an impact on the findings. Efforts were made to include reliable characteristics of design and methodology, to set parameters on the data interpretation, and to minimize constraints on generalizability and utility of the findings. However, as with all studies, limitations must be considered when interpreting findings.

It was not possible to randomly select participants for this study. Thus, data were collected by convenience sampling. Specifically, the researcher attended meetings where respondents were in attendance to solicit participation and some participants came from graduate classes. Selecting a randomized sample would have been difficult due to privacy issues. Furthermore, concerns related to Health Insurance Portability and Accountability Act (HIPAA) laws would place additional constraints on sample selection. Further, physicians historically have a poor participation rate when questionnaires are mailed out to them (Harbaugh, 2002; Delnevo, 2004; Cummings, Savitz, & Konrad, 2001;
Bostick, Pirie, Luepker, and Kofron, 1992). Convenience sampling is problematic due to concerns of representativeness and its limiting effects on the ability to generalize findings beyond the actual sample (Neutons and Rubinson, 2002). In clinical research the sample for the study is frequently made up of people who meet the criteria and are easily accessible to the investigator (Hulley, Cummings, Browner, Grady, and Newman, 2007). The clear advantages to using a sample of convenience are costs and logistics. For this study, the sample of convenience was the best alternative due to practical considerations. This sample of convenience facilitated having an adequate sample size. Another drawback to this design is that some members of the population had no chance of being sampled so that the extent to which the convenience sample actually represents the entire population is unknown (Fowler, 1984). The researcher attended medical grand rounds, staff meetings, classes, and medical clinics to increase participation in face-to-face settings. The protocol for administration was consistent across groups to avoid potential biases.

Another limitation with the sample is the fact that the data were collected from a single university medical system so generalizability is problematic. The sample may not be representative of other health care organizations. Future studies replicating this research in other settings will help to mitigate this.

One of the major issues with this study deals with the use of self-report data. Self reporting has been associated with many kinds of response bias (Donaldson, Thomas, Graham, Au, and Hansen, 2000; Schwartz, 1999; Stone et al., 2002; Spector, 1994) including under-reporting, over-reporting, and reporting
in a socially desirable fashion (Donaldson and Grant-Vallone, 2002). In order to address this, the questionnaire was completed from the target perspective rather than that of the agent. It was believed that the alternate approach of using the agent perspective would likely intensify the self-reporting bias due to the physicians reporting their own behavior. Using matched agent/target pairs is an area for future research and would aid in the consistency of reporting regarding the influence attempts. Using pairs would help discern whether self-reporting agents and targets perceived the same, or different use of influence strategies. Also, using pairs could answer the research question of whether or not the tactic was successful, that is, did the tactic result in compliance? Matching can also eliminate the influence of strong confounders like age and sex, and can increase power and precision by balancing the number of cases and controls in each stratum (Hulley et al., 2007).

There were a number of potential confounding variables. Specifically, these would be any of the variables which might affect the outcome, for instance the age, race, or gender of the participant. Also, the gender, age, race, medical specialty, and years in practice of the physician the participants were considering could also be confounders. As a further confounder, the complexity of interactions and influence tactic is prominent. Careful design of the study and statistical analysis using multivariate techniques helped address some of these confounders by identifying the variables that may be associated with the predictor variables. Further stratification of the data (for instance, subdivide the data by gender or age) could help identify the effects of the confounders and is an area for
future research. Collecting and analyzing various demographic factors was beneficial in addressing the possible confounders, and using stringent analytic techniques is also beneficial. Confounders were also somewhat mitigated by using a well researched survey (the Schriesheim and Hinkin Revised POIS) with sound psychometric properties. The Schriesheim and Hinkin tool is well regarded in the field of Organizational Behavior and has been found to be psychometrically sound. Despite this, however, the survey has been tested for validity from the agent, not from the target perspective. Internal consistency reliabilities in this study, ranging from .61 to .90, were consistent with the items measuring the six tactics and mitigated this concern. The questions were presented in random order to the participants with the exact wording and ordering of the Schriesheim and Hinkin Revised POIS.

Additional factors could undoubtedly mediate the relationship between the level of power and the influence tactic. For instance, physician personality or the situation at hand might necessitate a more forceful tactic. While in general, larger sample sizes would have been preferable, the ability to obtain a large sample size from the upward influence strata, the top-level administrators, was a challenge. The sample size consisted of 30 participants in each group for a total sample of 120. A larger sample could increase confidence in the findings and decrease both Type I and Type II errors. Thus the confidence in the findings for the two strata sample, with 60 in each level was greater. The Scheffe Test was used in the analysis to help mitigate Type I errors (Gravetter and Wallnau, 2005).
Given these limitations, the results are a measure of the sample surveyed. Further studies need to replicate the findings in order to be generalizable. Therefore, to achieve external validity further studies must be conducted. In terms of internal validity, a relationship between the independent variable (the group analyzed) and the dependent variable (the six influence tactics) was identified in the study. Though some difficulties and limitations have been identified these were addressed and minimized to the extent possible.

**Suggestions for Future Research**

This study is an important initial step to understand the dynamics of physician power and influence. Initially, the hope is that these propositions will be replicated in similarly designed studies. Additionally, replicating the study with a larger sample size is recommended. Replicating a similar study in another setting could help assess the generalizability of the research. A few additional possible avenues for future research building on this research are outlined below.

It stands to reason that the targets and agents may perceive influence differently. The physician perspective would be an interesting alternative. Better still, a paired design from both the target and the agent perspective could provide greater details about the relationship. Studies could also be designed to more thoroughly investigate each level of power in the physician's influence relationships. For instance, focus only on the physician/patient influence relationship or the physician/administrator relationship, etc. A sample hypothesis
could be - physicians use ingratiation tactics when influencing patients; or assertiveness tactics provide better patient compliance for exercise directives than reason tactics.

In the context of this study it was recognized that forcefulness of the influence tactic is frequently used as one of the variables in research analyzing the use of influence tactics. However, it was noted that very few studies have actually measured the level of forcefulness of each tactic. Furthermore, access to these studies is extremely difficult since they were published in proceedings rather than academic journals, and are no longer available. In particular, there have not been published studies specifically assessing the forcefulness of the six tactics identified in the Schriesheim and Hinkin revised POIS. Such research might help to further validate this and is certainly an area of needed research.

The present study did not look at situational variables which might necessitate the use of a more forceful tactic, such as those that might take place in an emergency room. Other situational contexts may even call for less forceful use of assertiveness, for instance, when physicians are dealing with a top level administrator to implement a new procedure, or informing a patient of dismal finding. Future research could look at the situational variables, such as where the influence is taking place, who is involved, the conditions surrounding the influence event, etc., to investigate influence tactic success and could even tie these to outcome variables.

The present study did not look at the other levels of the proposed Physician Influence Model that would play a mitigating role in the influence
process. There are numerous opportunities for research studies based on the variables proposed in this model. The current study analyzed the effects of power and influence direction on tactic use. Further studies could examine the effects of the other identified mediators in the model such as the leadership traits or situational variables and their effects on influence tactic usage. Researchers could also attempt to identify which tactics would result in the best target outcome. Ultimately, it is hoped that this research could link physician use of influence to outcomes variables as suggested in the Physician Influence Model and improve the level of care provided through the best use of influence. These outcome variables could include actual patient outcomes, medical errors, team commitment, effectiveness of treatments, financial results, and physician, patient and health care worker satisfaction.

In addition, further examination of power/influence interactions is recommended. Possible comparisons with others in powerful positions could provide similarities and/or differences due to the power relationships. This could provide greater understanding of, and direction for, most effective use of the influence tactics. In an additional vein of research, the trust relationship, could be explored to provide clues as to how this might alter the interactions with influence tactic usage.

Finally, some research suggests that upward influence activity in organizations may have an impact on overall organizational effectiveness (Floyd and Wooldridge, 1997). Given this association, investigations regarding this linkage could provide valuable information for cost effectiveness, profitability
and even patient/health outcomes. Ultimately, designing studies that look at physician influence in terms of outcome variables could best translate the research into providing direction for best practice alternatives. One area to investigate, for example entails assessing which influence tactic(s) result in best patient compliance or best patient outcomes? Others include, which influence tactics would reduce the number of medical errors, or which influence tactics would result in better financial outcomes. Future investigations of influence, in conjunction with the outcome variables, could represent valuable contributions for research.

Concluding Remarks

The health care system in the United States is undergoing unparalleled change and with the passage of the new Health Care Bill in Congress and its signature by the President, this pace will continue to accelerate. The challenges associated with the even greater change are daunting. In more recent times, the health care system has changed from a more simple, fee-for service structure to a highly complex, multi-dimensional, and often, profit or net revenue focused form of organization. Physicians need to be effective as leaders in spearheading the change. The ability of physician executives to influence successfully will determine to a large extent how effective they will be as managers (Schenke, 1980; Curry, 1988).

Continued research regarding the effective use of influence to lead physicians and their role as leaders is vital in this critical environment. It is
imperative for physicians to recognize and improve upon the manner in which they in order to best meet the challenges and the rampant changes in health care today. It is abundantly clear that physicians need effective leadership skills to be in the forefront in spearheading efforts to confront the myriad of challenges facing the system. If physicians fail to take an effective lead, their power may indeed diminish.
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Appendix 1

Schriesheim and Hinkin Revised POIS for Measuring Influence Tactics

INFLUENCE TACTIC ITEMS USED TO REVISE KIPNIS, SCHMIDT, & WKKINSON (1980) SCALES

01. Sympathized with him/her about the added problems that my request caused.
02. Offered help if he/she would do what I wanted.
03. Acted very humbly to him or her while making my request.
04. Set a time deadline for him or her to do what I asked.
05. Obtained the support of co-workers to back up my request.
06. Used logic to convince him or her.
07. Acted in a friendly manner prior to asking for what I wanted.
08. Obtained the informal support of higher-ups.
09. Filed a report about him/her with higher-ups (e.g., his/her superior).
10. Reminded him or her of past favors that I did for him/her.
11. Made him or her feel good about me before making my request.
12. Pointed out that the rules required that he or she comply.
13. Explained the reasons for my request.
14. Obtained the support of my subordinates to back up my request.
15. Sent him or her to superiors.
16. Offered an exchange (e.g., if you do this for me, I will do something for you).
17. Presented him or her with information in support of my point of view.
18. Wrote a detailed plan that justified my ideas.
19. Had a showdown in which I confronted him or her face-to-face.
20. Repeatedly reminded him or her about what I wanted.
21. Waited until he or she appeared in a receptive mood before asking.

22. Made him or her feel important ("only you have the brains, talent to do this").

23. Offered to make a personal sacrifice if he or she would do what I wanted (e.g.,
work late, work harder, do his/her share of the work, etc.).

24. Became a nuisance (kept hugging him/her until he/she did what I wanted).

25.Expressed my anger verbally.

26. Did personal favors for him or her.

27. Made a formal appeal to higher levels to back up my request.

28. Used a forceful manner; I tried such things as demands, the setting of deadlines, and the expression of strong emotion.

29. Relied on the chain of command--on people higher up in the organization who have power over him or her.

30. Mobilized other people in the organization to help me in influencing him or her.

FINAL SUBSCALE ITEMS:
Ingratiation 03, 07, 11
Coalition 05, 14, 30
Reason 06, 13, 17
Upward Appeal 08, 27, 29
Exchange 10, 16, 23
Assertiveness 19, 25, 28

Appendix 2

Target IBQ-G
Person to be described:

**Instructions:** The purpose of this questionnaire is to learn more about the different ways people try to influence each other in work organizations. Please describe how much the person indicated above uses each type of behavior in an effort to influence you. For each behavior item, select one of the following response choices, and write the number for your choice on the line provided.

1. I can't remember him/her ever using this tactic with me
2. He/she very seldom uses this tactic with me
3. He/she occasionally uses this tactic with me
4. He/she uses this tactic moderately often with me
5. He/she uses this tactic very often with me

If an item does not apply to your situation, then use the #1 response. Please try to avoid letting general impressions of the person bias your answers. Before you begin it is helpful to look over the 11 different types of influence tactics so that you do not get them confused with each other.

This person . . .

**Rational persuasion**
___ 1. Uses facts and logic to make a persuasive case for a request or proposal.
___ 2. Explains clearly why a request or proposed change is necessary to attain a task objective.
___ 3. Explains why a proposed project or change would be practical and cost effective.
___ 4. Provides information or evidence to show that a proposed activity or change is likely to be successful.

**Exchange**
___ 5. Offers something you want in return for your help on a task or project.
___ 6. Offers to do something for you in exchange for carrying out a request.
___ 7. Offers to do a specific task or favor for you in return for your help and support.
___ 8. Offers to do something for you in the future in return for your help now.

**Inspirational appeal**
___ 9. Says a proposed activity or change is an opportunity to do something really exciting and worthwhile.
___ 10. Describes a clear, inspiring vision of what a proposed project or change could accomplish.
___ 11. Talks about ideals and values when proposing a new activity or change.
___ 12. Makes an inspiring speech or presentation to arouse enthusiasm for a proposed activity or change.

**Legitimating**
___ 13. Says that his/her request or proposal is consistent with official rules and policies.
___ 14. Says that a request or proposal is consistent with a prior agreement or contract.
___ 15. Verifies that a request is legitimate by referring to a document such as a work order, policy manual, charter, bylaws, or formal contract.
___ 16. Says that a request or proposal is consistent with prior precedent and established practice.

**Apprising**
___ 17. Explains how the task he/she wants you to do could help your career.
___ 18. Describes benefits you could gain from doing a task or activity (e.g., learn new skills, meet important people, enhance your reputation).
___ 19. Explains how a proposed activity or change could help you attain a personal objective.
___ 20. Explains why a proposed activity or change would be good for you.

**Pressure**
___ 21. Demands that you carry out a request.
___ 22. Uses threats or warnings when trying to get you to do something.
___ 23. Repeatedly checks to see if you have carried out a request.
___ 24. Tries to pressure you to carry out a request.

**Collaboration**
___ 25. Offers to help with a task that he/she wants you to carry out.
___ 26. Offers to provide resources you would need to do a task for him/her.
___ 27. Offers to show you how to do a task that he/she wants you to carry out.
___ 28. Offers to provide any assistance you would need to carry out a request.

**Ingratiation**
___ 29. Says you have the special skills or knowledge needed to carry out a request.
___ 30. Praises your past performance or achievements when asking you to do a task for him/her.
___ 31. Praises your skill or knowledge when asking you to do something.
___ 32. Says you are the most qualified person for a task that he/she wants you to do.
Consultation
___ 33. Asks you to suggest things you could do to help him/her achieve a task objective or resolve a problem.
___ 34. Consults with you to get your ideas about a proposed activity or change that he/she wants you to support or implement.
___ 35. Encourages you to express any concerns you may have about a proposed activity or change that he/she wants you to support or implement.
___ 36. Invites you to suggest ways to improve a preliminary plan or proposal that he/she wants you to support or help implement.

Personal Appeals
___ 37. Appeals to your friendship when asking you to do something.
___ 38. Says he/she needs to ask for a favor before telling you what it is.
___ 39. Asks you as a friend to do a favor for him/her.
___ 40. Asks for your help as a personal favor.

Coalition
___ 41. Mentions the names of other people who endorse a proposal when asking you to support it.
___ 42. Gets others to explain to you why they support a proposed activity or change that he/she wants you to support or help implement.
___ 43. Brings someone along for support when meeting with you to make a request or proposal.
___ 44. Asks someone you respect to help influence you to carry out a request or support a proposal.

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Appendix 3  (Alonso, 2009)
Summary of Comparisons of the IBQ the Schriesheim and Hinkin revised POIS Psychometric Properties

<table>
<thead>
<tr>
<th>Criteria</th>
<th>IBQ-R</th>
<th>Schriesheim and Hinkin revised POIS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IBQ-G</td>
<td></td>
</tr>
<tr>
<td>Dimensionality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supported eleven factors.</td>
<td>Supported by several studies, 4 samples (Yukl, Seifert, &amp; Chavez, 2008).</td>
<td>Supported six factors. Supported by several studies, 4 samples (Schriesheim &amp; Hinkin, 1990). 4 samples (Hochwarter et al. 2000).</td>
</tr>
<tr>
<td>Domain Sampling</td>
<td>Adequate</td>
<td>Adequate</td>
</tr>
<tr>
<td>Convergent Validity</td>
<td>Support for convergent validity of the 11 tactics (Yukl, Seifert, &amp; Chavez, 2008).</td>
<td>Convergent validity values in the expected direction with most correlations low to moderate. Analyses corroborate the distinctness of the factors. (Hochwarter et al. 2000).</td>
</tr>
<tr>
<td>Internal Consistency Reliability</td>
<td>IBQ-G Alpha reliabilities adequate in 3 studies ranging from .65 to .94 (Yukl, Seifert, &amp; Chavez, 2008).</td>
<td>Alpha reliabilities acceptable in two studies ranging from .73 to .87 (Schriesheim &amp; Hinkin). Inadequate for two samples and two samples demonstrated internal consistencies ranging from .82 to .87 (Hochwarter et al. 2000).</td>
</tr>
<tr>
<td></td>
<td>bank</td>
<td>bank</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td><strong>Test-Retest Reliability</strong></td>
<td>Adequate support.</td>
<td>Moderate support.</td>
</tr>
<tr>
<td><strong>Minimal Contamination From Extraneous Sources</strong></td>
<td>No information to date.</td>
<td>No information to date.</td>
</tr>
<tr>
<td><strong>Use in Studies</strong></td>
<td>Unknown – early stage.</td>
<td>Revised version of agent POIS used in many studies. Only a few studies used this to measure target influence (Yukl, Seifert, &amp; Chavez, 2008).</td>
</tr>
</tbody>
</table>
Appendix 4

Physician Influence Model

Influence Tactic
- Rationality
- Exchange
- Ingratiation
- Coalition
- Pressure
- Upward Appeal

Bases of Power
- Reward Power
- Coercive Power
- Legitimate Power
- Expert Power
- Referent Power

Leadership Traits
- Personality
- Gender
- Age
- Self-confidence
- Intelligence
- Social Intelligence
- Stress Tolerance
- Ethics & Integrity

Influence Direction
- Upward
- Downward
- Lateral

Situational Variables
- Target
- Outcomes
- Commitment
- Compliance
- Resistance

Outcome Variables
- Patient Outcomes
- Medical Errors
- Commitment of Multi-disciplinary Team
- Effectiveness of Treatments
- Financial Results
- Satisfaction Levels

INPUTS

MEDIATORS

OUTPUTS

Sheryl L. Alonso October, 2009
Appendix 5

Physician Power Questionnaire

The purpose of this questionnaire is to determine the level of power among various physician constituents. It is a preliminary study to eventually help determine leadership behaviors and social influence among physicians. We believe you can help advance knowledge on physician leadership qualities necessary to meet the demands of today’s challenging environment. We really appreciate your time and thank you in advance for your participation.

Part A

On the next page, you will find a list of constituents physicians routinely deal with on a day-to-day basis. Please indicate the degree of power you feel each of the identified individuals would have when you are attempting to influence them (the identified constituents) in a desired fashion, i.e., getting them to do what you would like them to do. Place an X in the appropriate box. Choose not applicable (N/A) if you do not deal with that constituent.

Use the following response scale for your answers:

0 = The constituent has no power in relation to the physician
1 = The constituent has very little power in relation to the physician.
2 = The constituent has some power, but less power than the physician.
3 = The constituent has equal power in relation to the physician.
4 = The constituent has greater power than the physician in some situations.
5 = The constituent generally has greater power than the physician.
Consider the degree of power each of the constituents would have when you are attempting to influence their behavior. The constituent generally has … (0-5) when dealing with me.

<table>
<thead>
<tr>
<th>Constituent</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care Patients (i.e., in a trauma unit or severely ill or injured)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>N/A</td>
</tr>
<tr>
<td>Non-acute care patents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric Patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic Care Patients (i.e., COPD, diabetes, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Level Hospital Administrators (i.e., CEO, CFO, CMO, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-Level Hospital Administrators (i.e., Pharmacy Director, Head Nurse, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician Colleagues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Subordinates (i.e., RN’s, PT’s, Pharmacists, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-professional Subordinates (i.e., clerks, aides, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Party Payors (i.e., insurers, HMO’s, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Members of Patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Part B

Please **rank** the following constituents according the level of power you believe them to have when dealing with physicians. Place a number 1 next to the constituent with the least power, a 2 next to the constituent with the second lowest level of power and so on, so that you place a number 13 next to the constituent with the greatest degree of power in relationship to the physician. Please be sure to use each number (1-13) only once.

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Ranking (1 = least; 13 = most)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care Patients (i.e., in a trauma unit or severely ill or injured)</td>
<td></td>
</tr>
<tr>
<td>Non-acute care patents</td>
<td></td>
</tr>
<tr>
<td>Pediatric Patients</td>
<td></td>
</tr>
<tr>
<td>Chronic Care Patients (i.e., COPD, diabetes, etc.)</td>
<td></td>
</tr>
<tr>
<td>Top Level Hospital Administrators (i.e., CEO, CFO, CMO, etc.)</td>
<td></td>
</tr>
<tr>
<td>Mid-Level Hospital Administrators (i.e., Pharmacy Director, Head Nurse, etc.)</td>
<td></td>
</tr>
<tr>
<td>Medical Students</td>
<td></td>
</tr>
<tr>
<td>Residents</td>
<td></td>
</tr>
<tr>
<td>Physician Colleagues</td>
<td></td>
</tr>
<tr>
<td>Professional Subordinates (i.e., RN’s, PT’s, Pharmacists, etc.)</td>
<td></td>
</tr>
<tr>
<td>Non-professional Subordinates (i.e., clerks, aides, etc.)</td>
<td></td>
</tr>
<tr>
<td>Third Party Payors (i.e., insurers, HMO’s, etc.)</td>
<td></td>
</tr>
<tr>
<td>Family Members of Patients</td>
<td></td>
</tr>
</tbody>
</table>

Thank you!
### Table I

*Scale Definitions of Influence Tactics*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Tactics</td>
<td>The person uses demands, threats, or intimidation to convince you to comply with a request or to support a proposal. (Similar to <em>assertiveness</em>)</td>
</tr>
<tr>
<td>Upward Appeals</td>
<td>The person seeks to persuade you that the request is approved by higher management, or appeals to higher management for assistance in gaining your compliance with the request. (Similar to <em>upward appeal</em>)</td>
</tr>
<tr>
<td>Exchange Tactics</td>
<td>The person makes an explicit or implicit promise that you will receive rewards or tangible benefits if you comply with a request or support a proposal, or reminds you of a prior favor to be reciprocated. (Similar to <em>exchange</em>)</td>
</tr>
<tr>
<td>Coalition Tactics</td>
<td>The person seeks the aid of others to persuade you to do something or uses the support of others as an argument for you to agree also. (Similar to <em>coalitions</em>)</td>
</tr>
<tr>
<td>Ingratiating Tactics</td>
<td>The person seeks to get you in a good mood or to think favorably of him or her before asking you to do something. (Similar to <em>ingratiation</em>)</td>
</tr>
<tr>
<td>Rational Persuasion</td>
<td>The person uses logical arguments and factual evidence to persuade you that a proposal or request is viable and likely to result in the attainment of task objectives. (Similar to <em>rationality</em>)</td>
</tr>
<tr>
<td>Inspirational Appeals</td>
<td>The person makes an emotional request or proposal that arouses enthusiasm by appealing to your values and ideals, or by increasing your confidence that you can do it.</td>
</tr>
<tr>
<td>Consultation Tactics</td>
<td>The person seeks your participation in making a decision or planning how to implement a proposed policy, strategy, or change.</td>
</tr>
</tbody>
</table>

Influence Tactics and Objectives in Upward, Downward, and Lateral Influence Attempts.

Yukl, Gary; Falbe, Cecilia  
Appendix 7

Social Influence Questionnaire

Please tear this sheet off before proceeding further. Use it to refer to as you complete this questionnaire.

Instructions: The purpose of this part of the questionnaire is to learn more about the way in which physicians influence others. Please think of one physician you deal with frequently in your work/practice. On a five point scale, as indicated below, describe how frequently in the last six months the physician you are thinking of used each influence tactic when trying to get you to comply with a request. The scale will be measured as follows:

1 = I can not recall him or her ever using this tactic with me.
2 = He or she very seldom uses this tactic with me.
3 = He or she occasionally uses this tactic with me.
4 = He or she uses this tactic often with me.
5 = He or she uses this tactic very often or always with me.

Please note: Questionnaires will remain anonymous, names of participant and the physician as an agent will not be recorded. Only a composite summary of the influence tactic is being sought and no information regarding an individual physician is of concern. The study is for research purposes only.
Social Influence Questionnaire

Part A

Below are some questions which will provide necessary background information for our study. Please answer all questions without omitting any. Thank you.

1. How old were you on your last birthday?
   ______

2. What is your gender?
   ______ Male (1)
   ______ Female (2)

3. What is your race/national origin?
   ______ Caucasian (1)
   ______ Hispanic (2)
   ______ African American (3)
   ______ Asian (4)
   ______ Other (5)

4. In what capacity are you currently employed?
   ______ Nurse (1)
   ______ Physician (2)
   ______ Administrator (3) – Select this category if you are a Hospital Administrator, Nurse Administrator or Physician Administrator

5. What is your job title?

6. What is the gender of the physician you are considering?
   ______ Male (1)
   ______ Female (2)

7. What is the clinical specialty of the physician you are considering?
   ____________________________

This completes the Background Information section. Please proceed to the next page.
## Part B

Use the responses 1-5 to respond to each of the following item numbers according to the responses on the instruction sheet you tore off.

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>INFLUENCE TACTIC</th>
<th>YOUR RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acted very humbly with me while making his or her request</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Obtained the support of co-workers to back up his or her request.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Used logic to convince me.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Acted in a friendly manner prior to asking what he or she wanted.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Obtained the informal support of higher-ups.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Reminded me of past favors that I did for him/her.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Made me feel good about him or her before making his/her request.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Explained the reasons for his or her request.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Obtained the support of his or her subordinates to back up his or her request.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Offered an exchange (e.g., if you do this for me, I will do something for you).</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Presented me with information in support of his or her point of view.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Had a showdown in which he or she confronted me face-to-face.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Offered to make a personal sacrifice if I would do what he or she wanted (e.g., work late, work harder, do my share of the work, etc.).</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Expressed his or her anger verbally.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Made a formal appeal to higher levels to back up his or her request.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Used a forceful manner, he or she tried such things as demands, the setting of deadlines, and the expression of strong emotion.</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Relied on the chain-of-command – on people higher up in the organization who have power over me.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Mobilized other people in the organization to help him or her in influencing me.</td>
<td></td>
</tr>
</tbody>
</table>

Verbal Consent

*Verbal Consent to Participate in Research*

**Social and Behavioral Sciences Form**

A verbal consent script may be used when a waiver of written consent has been granted. This script is read to the potential subject.

**VERBAL CONSENT SCRIPT**

*Social Influence Tactics used By Physicians: An Empirical Study*

Hi, my name is Sheryl Alonso and I am involved in a research study called *Social Influence Tactics used By Physicians: An Empirical Study* at the University of Miami.

**PURPOSE OF STUDY:**

We are asking you to take part in a research study because we are trying to learn more about how physicians influence others. You will be asked to complete a short checklist about yourself (such as age group and ethnicity) and then complete a short survey. It will take approximately 15 minutes of your time or less to complete. You will be asked to think of a physician who has treated you recently and then answer some questions about how often he or she used certain influence tactics with you. You will answer on a one to five scale the frequency with which each influence tactic is used.

There are no risks to you in participating in this study. Also, there are no benefits for participating. You will not benefit directly from participating in this research study.

You will not be paid for participating in this research study.

We are looking for trends only and we are not interested in assessing individual physicians, so no names will be identified. You will not be asked to identify your name or the name of the physician anywhere on the survey or information sheet. We will not use your name or the name of the physician. All of the papers pertaining to the study will be kept in a locked file cabinet, and all electronic data will be stored in secure computer files. Only people who are directly involved with the project will have access to those records. When the project is finished and results are reported, no individual will be identified in any way. The surveys will be shredded and discarded after a five year period upon completion of the study so the record retention may be longer than 5 years.
Your participation is voluntary. You can decline to participate, and you can stop your participation at any time, if you wish to do so, without any negative consequences to you.

Do you have about 15 minutes to participate in this research study? Would you like to participate now?

By you answering the survey/interview questions that I will ask, this means you consent to participate in this research project. Do you have any questions?

If you have any questions or concerns about the research, please feel free to contact:

Sheryl Alonso  
University of Miami  
School of Business Administration  
417 Jenkins Building  
Coral Gables, Florida 33124-9145  
305 992-5306 Cell  
305 284-8591 Work  
s.alonso@miami.edu

If you have questions regarding your rights as a research participant, contact the University of Miami, Human Subject Research Office at (305)243-3195.
Appendix 9

Verbal Consent for Physicians

Verbal Consent to Participate in Research
Social and Behavioral Sciences Form

This verbal consent script will be used when a waiver of written consent has been granted. This script will be read to the potential physician subjects.

VERBAL CONSENT SCRIPT FOR PHYSICIANS

Social Influence Tactics used By Physicians: An Empirical Study

Hi, my name is Sheryl Alonso and I am involved in a research study called Social Influence Tactics used By Physicians: An Empirical Study here at the University of Miami.

PURPOSE OF STUDY:

I am asking you to take part in a research study because I am investigating more about how physicians influence others. You will be asked to complete a short checklist about yourself (such as age group and ethnicity) and then complete a short survey. It will take approximately 15 minutes of your time or less to complete. You will be asked to think of a physician colleague who you have worked with recently and then answer some questions about how often he or she used certain influence tactics with you. You will answer on a one to five scale the frequency with which each influence tactic is used.

There are no risks to you in participating in this study. Also, there are no benefits for participating. You will not benefit directly from participating in this research study.

You will not be paid for participating in this research study.

I am looking for trends only and am not interested in assessing individual physicians, so no names will be identified. You will not be asked to identify your name or the name of the physician you are considering anywhere on the survey or information sheet. We will not use your name or the name of the physician. All of the papers pertaining to the study will be kept in a locked file cabinet, and all electronic data will be stored in secure computer files. Only people who are directly involved with the project will have access to those records. When the project is finished and results are reported, no individual will be identified in any way. The surveys will be shredded and discarded after a five year period upon completion of the study so the record retention may be longer than 5 years.
Your participation is voluntary. You can decline to participate, and you can stop your participation at any time, if you wish to do so, without any negative consequences to you.

Do you have about 15 minutes to participate in this research study? Would you like to participate now?

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305 284-8591 Work  
s.alonso@miami.edu

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Appendix 10

Items Used to Measure Each Influence Tactic

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>INFLUENCE TACTIC</th>
<th>TACTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acted very humbly with me while making his or her request</td>
<td>Ingratiation</td>
</tr>
<tr>
<td>2</td>
<td>Obtained the support of co-workers to back up his or her request</td>
<td>Coalition</td>
</tr>
<tr>
<td>3</td>
<td>Used logic to convince me.</td>
<td>Reason</td>
</tr>
<tr>
<td>4</td>
<td>Acted in a friendly manner prior to asking what he or she wanted.</td>
<td>Ingratiation</td>
</tr>
<tr>
<td>5</td>
<td>Obtained the informal support of higher-ups.</td>
<td>Upward Appeal</td>
</tr>
<tr>
<td>6</td>
<td>Reminded me of past favors that I did for him/her.</td>
<td>Exchange</td>
</tr>
<tr>
<td>7</td>
<td>Made me feel good about him or her before making his/her request.</td>
<td>Ingratiation</td>
</tr>
<tr>
<td>8</td>
<td>Explained the reasons for his or her request.</td>
<td>Reason</td>
</tr>
<tr>
<td>9</td>
<td>Obtained the support of his or her subordinates to back up his or her request.</td>
<td>Coalition</td>
</tr>
<tr>
<td>10</td>
<td>Offered an exchange (e.g., if you do this for me, I will do something for you).</td>
<td>Exchange</td>
</tr>
<tr>
<td>11</td>
<td>Presented me with information in support of his or her point of view.</td>
<td>Reason</td>
</tr>
<tr>
<td>12</td>
<td>Had a showdown in which he or she confronted me face-to-face.</td>
<td>Assertiveness</td>
</tr>
<tr>
<td>13</td>
<td>Offered to make a personal sacrifice if I would do what he or she wanted (e.g., work late, work harder, do my share of the work, etc.).</td>
<td>Exchange</td>
</tr>
<tr>
<td>14</td>
<td>Expressed his or her anger verbally.</td>
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</tr>
<tr>
<td>15</td>
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<td>16</td>
<td>Used a forceful manner, he or she tried such things as demands, the setting of deadlines, and the expression of strong emotion.</td>
<td>Assertiveness</td>
</tr>
<tr>
<td>17</td>
<td>Relied on the chain-of-command – on people higher up in the organization who have power over me.</td>
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</tr>
<tr>
<td>18</td>
<td>Mobilized other people in the organization to help him or her in influencing me.</td>
<td>Coalition</td>
</tr>
</tbody>
</table>

Appendix 11

IRB Approval and Application

Folder for Sheryl Alonso

Welcome to your Protocol Team Personal Folder, the central resource for managing your Protocol applications. Here are some hints to help you along:

- **My Inbox**: This is where you will find your submissions of various types as you prepare them. Your submission will also appear here if the IRB is requesting further information or the submission requires some action on your part.
- **Use the New Protocol button to the left to create a new Protocol Application**
- **My Roles list your various user roles and allows you to switch roles**
- **To create a new Continuing or Final Report, a new Amendment, or to record a new Reportable Event, first click the Protocol tab below, then click on the name of the protocol for which you want to create the new document. You can reach the same location by clicking on the name of the protocol from within any tab.**
- **To see all your protocols, any reportable events you have filed, old continuing reports, amendments, etc, click on the appropriate tab below.**
1. General Information

1.1. *Title of Study/Project:
Social Influence Tactics Used By Physicians:
An Empirical Study

1.2. Additional (UM/JHS/SCCC, etc.) identifying number for this study: (if applicable)

1.3. *Principal Investigator:
Sheryl Alonso  Professional License # (if applicable):
NOTE: PI must be a UM Faculty. If a non-faculty member wishes to be PI of a study, approval
must be received in advance from the Vice Provost of Human Subjects Research.

1.4. Department: (this field will be populated automatically based on PI's department once the page
is saved)
Management, Department of

    Major Sub-division: (if applicable)

    Research Center: (if applicable)

1.5. Co-Investigator(s):

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Employer</th>
<th>Department/Division</th>
<th>Professional Lic. # (if applicable)</th>
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</thead>
<tbody>
<tr>
<td>Neider</td>
<td>Linda</td>
<td>UM</td>
<td>Management, Department of</td>
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</table>

NOTE: If this is student-initiated research, a faculty advisor must be selected. If a non-faculty
member wishes to be PI of a study, approval must be received in advance from the Vice Provost
of Human Subjects Research.

1.6. Faculty Advisor(s):

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Employer</th>
<th>Department/Division</th>
<th>Professional Lic. # (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alonso</td>
<td>Sheryl</td>
<td></td>
<td>Management, Department of</td>
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</table>

NOTE: You may include as many individuals as you feel necessary to receive notifications
regarding this protocol. If you do not indicate a Study Contact, only the PI will receive such notifications.

**Note:** The Principal Investigator, Co-Investigators, Faculty Advisors, and Study Contacts will have editor access to this protocol.

1.8. **Key Study Personnel:**

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Employer</th>
<th>Role in Project</th>
<th>Professional Lic. # (if applicable)</th>
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**NOTE:** Individuals are considered to be "key personnel" if they have direct contact with subjects, subject data, subject records (including records-based research), protected health information or biological samples collected and/or tested for research purposes.

- The definition of key personnel includes individuals who may have direct responsibilities for data analysis or who contribute or collaborate in a substantive way to the scientific development of a project.
- Key personnel are also those listed as such on a DHHS-supported grant that is sponsoring the study.
- Students are considered key personnel if they meet any of these criteria.
- The definition of key personnel is not dependent upon whether or not the personnel receive compensation from the grant supporting the project.
- Pharmacists are considered key personnel and should be listed on the Form 1572 as a sub-investigator, if they will be compounding, labeling, monitoring and reporting test article compliance data.
- Appropriate licensure and/or certifications for study personnel are to be uploaded in section 19.6.

1.9. * Will this study be conducted in collaboration with a non-UM or non-JHS faculty or staff member?*

- Yes
- No

1.9.A. **If yes, list all non-UM/JHS collaborators:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Telephone</th>
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<tbody>
<tr>
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</tbody>
</table>

There are no items to display

1.10. * Type of Research:*

Social/Behavioral

1.11. * Type of Review Requested:*

<table>
<thead>
<tr>
<th>Select one</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expeditied Review</td>
<td>Study involves no more than minimal risk to human subjects and fits under one or more of the nine categories for expedited review. See UM IRB policy 8.2.</td>
</tr>
</tbody>
</table>
### Exempt Review
Study involves very little, if any, risk to human subjects and fits within an exempt category listed under 45 CFR 46.101(b)(1)-(6). See UM IRB policy 8.1.

### Full Board Review
Study does not meet the criteria for exemption or for expedited review. See UM IRB policy 8.3.

### Emergency Use
See UM IRB policy 27.1.

### Facilitated Review
Study reviewed and approved by NCI-CIRB/Pediatric CIRB.

### External IRB Review
Requesting review by external IRB (e.g. Florida Department of Health IRB).

**NOTE:** For a summary describing the types of review, please see IRB Review and Approval Process and Instructions for Review Categories.

1.11.A. If *External IRB Review*, select the proposed IRB of record for this study:

### 1b. Exempt Review Categories

1.11.B. **Exempt Review Categories:** Research activities in which the only involvement of human subjects will be in one or more of the following are exempt from federal regulations 45 CFR 46:

* Under what category is exemption being requested? *Please check all that apply:*

<table>
<thead>
<tr>
<th>Category Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects financial standing, employability, or reputation.</td>
</tr>
</tbody>
</table>

1c. General Information (cont'd)

1.12. *Proposed Start Date:*
1/25/2010
1.13. **Anticipated Completion Date:** 3/15/2010  
- [ ] [ ] Check here if completion date is uncertain

## CRIS

To determine whether the UM CRIS Office (Clinical Research Initiation Service) must complete a Medicare Coverage Analysis (MCA) and/or a contract for this Study, please answer the following:

### 1.14 *Study Involves:

<table>
<thead>
<tr>
<th>Study Involves</th>
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</thead>
<tbody>
<tr>
<td>☐ ☐ Chart review only</td>
</tr>
<tr>
<td>☐ ☐ Interview or survey activities only</td>
</tr>
<tr>
<td>☐ ☐ Limited data set only</td>
</tr>
<tr>
<td>☐ ☐ Observational only</td>
</tr>
<tr>
<td>☐ ☐ Testing a drug, device, or biologic, or performing procedures, lab tests (including blood draws) and/or interventions (standard of care and/or experimental)</td>
</tr>
<tr>
<td>☐ ☐ None of the above</td>
</tr>
</tbody>
</table>

### 1.15 *Type of Study:

<table>
<thead>
<tr>
<th>Check all that apply</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ ☑ Prospective</td>
<td>Collecting new data</td>
</tr>
<tr>
<td>☐ ☐ Retrospective</td>
<td>Looking only at data already collected</td>
</tr>
</tbody>
</table>

### 1.16 *Who initiated this study?*

Investigator-initiated

### 1.17 *Will you use the University of Miami’s Velos eResearch system to track this study, its subjects, milestones, and/or related data collection?*

- ☐ ☐ Yes  ☐ ☐ No

If yes, the Velos eResearch system will be notified for your protocol. See [http://med.miami.edu/orim](http://med.miami.edu/orim) for additional information on Velos.

### 1.17.A. **If yes, will you require assistance to develop electronic versions of your finalized case report forms for data collection within Velos eResearch?**

- ☐ ☐ Yes  ☐ ☐ No

If yes, notification will be sent to the Office of Research Information Management (ORIM) regarding the need for follow-up. It is recommended to discuss this with ORIM as early as possible in the CRF development process.

**NOTE:** If Study involves testing a drug, device, or biologic, and/or if procedures, lab tests and/or
interventions will be performed on a patient as part of the Study:

1. A coverage determination and/or contract are likely required from CRIS.
2. The study must comply with the UM’s patient enrollment and tracking policy. UM’s Clinical Research Revenue Cycle (CRRC) office must be notified of a consented subject no later than 24 hours after receiving a signed consent (including screening consents) and upon patient disenrollment. Notification can be submitted to CRRC automatically via Velos or manually via the CRIS website (http://med.miami.edu/cris).
3. eProst will notify the CRIS Office about this Study. The Study may not be initiated until CRIS and the IRB approve it.

1e. Methods & Procedures - Social/Behavioral

1.19. * Methods & Procedures: Check all that apply

Interviews, surveys, questionnaires

1.19.A. If Other, please specify and explain:

1.20. * Are there any medical procedures not checked above involved in this study? Yes ☐ No ☐

1.20.A. If yes, please explain:

2. Supplemental Study Information - All Studies

2.1. * Will human biological samples be used in this research? Yes ☐ No ☐

2.2. * Does the study involve genetic testing of subjects or their samples? Yes ☐ No ☐

2.3. * Does this study involve cancer patients, diagnosis, therapy, or prevention? Yes ☐ No ☐

NOTE: Approval from the Cancer Protocol Review Committee is required for all studies involving cancer patients, diagnosis, or therapy.

3. Research Location(s)

3.1. * Is this a multi-center study? (A multi-center study is one in which non-UM PIs at different institutions are conducting the same study.)
3.1.A. If yes, is the University of Miami the coordinating center?

☐ Yes  ☐ No

3.2. * List all Performance Sites "engaged" in this research.

**NOTE:** For multi-center studies, list performance sites only for the research being conducted by the UM principal investigator. Even if UM is the only site, it must be indicated here.

An institution or performance site is "engaged in this research" when its employees or agents (i) intervene or interact with living individuals for these research purposes; (ii) obtain individually identifiable private information for these research purposes; or (iii) if the institution receives a direct federal award to support this research. **This may apply when a UM investigator collaborates with a non-UM investigator or institution, or when UM serves as a Coordinating Center. Each PI at each non-UM performance site will require a letter of IRB approval from the site's IRB.** If the site has an FWA, list below. See OHRP guidance at [http://www.hhs.gov/ohrp/humansubjects/assurance/engage.htm](http://www.hhs.gov/ohrp/humansubjects/assurance/engage.htm). Also see UM IRB "Subcontracts for Non-UM Institutions or Individuals 'Engaged' in UM Research."

<table>
<thead>
<tr>
<th>Name of Performance Site</th>
<th>If Other, Site Name</th>
<th>IRB Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Miami</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.3. * Are there any performance sites "involved" but NOT "engaged" in this research?

☐ Yes  ☐ No

**NOTE:** If a UM investigator will be conducting research at a non-UM site or institution (e.g. when only recruiting subjects, collecting specimens, etc. at the site) and the employees or agents of the institution or performance site (i) do not intervene or interact with living individuals for these research purposes; or (ii) do not obtain individually identifiable private information for these research purposes; or (iii) if the institution does not receive a direct federal award to support this research, THEN the institution or performance site is considered "involved" but not "engaged" in the research. See UM IRB Policy "Agreement for Non-UM Institutions or Individuals 'Involved' in UM Research."

3.3.A. If yes, list all Performance Site(s) "involved" but NOT "engaged" in this research:

<table>
<thead>
<tr>
<th>Name of Performance Site</th>
<th>IRB Approval Letter</th>
<th>Letter of Cooperation</th>
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</thead>
<tbody>
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</table>

There are no items to display

3.4. * Will you be conducting this study at any institutions other than UM or JHS?

☐ Yes  ☐ No
3.4.A. If yes, a copy of the institution’s IRB approval must be attached:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
</table>
There are no items to display

3.5. * Does this study involve UM related research activities conducted or coordinated at one or more sites outside of the United States?
- ☐ No
- ☑ Yes

3b. Other UM or Jackson Health System Protocols & JHS Activities

3.6. * Is this research part of a larger grant that includes other UM or Jackson Health System protocols?
- ☐ No
- ☑ Yes

3.6.A. If yes, please define Protocol(s) by ID, title, and Principal Investigator:

<table>
<thead>
<tr>
<th>Protocol ID</th>
<th>Title</th>
<th>Principal Investigator</th>
</tr>
</thead>
</table>
There are no items to display

3.7. * Are any study-related activities performed at a JHS site?
- ☐ No
- ☑ Yes

4. Description of Study

**Study Protocol**

4.1. * Abstract and Specific Aims
Include a brief summary of the significance, purpose or research question, specific aims, and risks/benefits. Specific aims include hypotheses you will investigate.
The research topic is "Social Influence Tactics Used By Physicians: An Empirical Study". I am investigating the manner in which physicians influence others. Leadership, power, social influence and team dynamics are well researched topics within the fields of organizational behavior, psychology, and sociology. However, there has been very little crossover of this body of work in the medical arena. The study addresses the gap between the application of well-researched
organizational behavior concepts regarding social influence and the health care environment, focusing on the physician leader. This research examines the influence processes between physicians and the people they deal with on a frequent basis. Specifically, the social influence styles utilized by physicians interfacing with different constituencies will be investigated. This investigation addresses the level of power held by the constituents and assesses whether different influence tactics are used when physicians interface with constituents possessing various forms of power. The published literature on physician leadership tends to be normative, prescriptive, anecdotal, and/or observational, largely based on qualitative opinion surveys (Xirasagar, Samuels and Stoskopf, 2005). Furthermore, it has been noted that “there have been no definitive studies describing the way physicians use power, authority and influence” (Betson, 1986, p. 104). Consequently, quantitative research such as this, is greatly needed. It is an important area of study in lieu of the current complexities of the healthcare system in the U.S. which places ever increasing leadership pressures on the physician.

Specific Aims Include:
Specific Aim 1: To identify the power level among the various physician constituents (those a physician frequently encounters on a day-to-day basis).
Specific Aim 2: To investigate the different social influence tactics a physician (agent) uses when dealing with constituents (targets) at differing power levels (upward, lateral, or downward).
Specific Aim 3: To use statistical analysis to determine whether different tactics of social influence are utilized by physicians based on the power level of the target.

Primary Hypothesis (Hypothesis 1): Influence strategies have different levels of forcefulness associated with them.
Primary Hypothesis (Hypothesis 2): Certain influence tactics will be used by physicians against certain influence targets.
Hypothesis 3: The level of power among the different physician constituents varies.
Hypothesis 4: The influence tactics utilized by physicians most frequently, vary depending on the level of power of the target in relationship to the physician.
Hypothesis 5: The social influence tactics utilized most frequently by physicians when interacting with targets with a low level power base (downward) is assertiveness.
Hypothesis 6: The social influence tactics utilized most frequently by physicians when interacting with targets with an equal level (lateral) power base are coalition, rationality, and exchange.
Hypothesis 7: The social influence tactics is utilized most frequently by physicians when interacting with targets with a high level (upward) power base are upward appeal, coalition, and ingratiation.

4.2. *Research Background*
Provide background and previous studies supporting the study rationale. Include a brief summary of existing knowledge relevant to the research. Explain how the research may contribute to the advancement of knowledge.

Background Information
Leadership, power, social influence and team dynamics are well researched topics within the fields of organizational behavior, psychology, and sociology. Researchers have, in fact, been examining the issues of leadership, interpersonal influence processes and social power for more than a century (Neider and Schriesheim, 2001; Bruins, 1999). It is apparent that leadership is closely linked with the ability to influence others. This leads to the question: what is influence? Basically, influence can be conceptualized as the ability to motivate another to do what you would like them to. French and Raven (1959) define influence as a force one person (known as the agent) exerts on someone else (known as the target) to induce a change in the targets, including changes in behaviors, opinions, attitudes, goals, needs, and values (French and Raven, 1959). Effective leaders must be able to effectively influence others in order to enact change in their behavior to carry out requests, support proposals and implement decisions. Ultimately, ”the effectiveness of leaders depends on their influence over superiors and peers as well as subordinates” (Yukl and Chavez, 2002, p. 140).
Closely intertwined and integrated with influence is the concept of social power. French and Raven (1959) define power as "potential influence of some individual or group O over an individual P,"
and legitimate power as that power which stems from internalized values in P which dictate that 
O has a legitimate right to influence P and that P has an obligation to accept this influence” 
(Raven & French, 1959). Level of power can be described as the degree to which one person has 
the capacity of influence over another, based upon that power. 
The social psychologist, Kurt Lewin, is credited as one of the first scholars in modern times to 
study power and influence (Lewin, 1941; Bruins, 1999). He developed a framework for change by 
looking at the forces that influence a situation. Specifically, Lewin considered “power the 
possibility of inducing force on someone else, or more formally, as the maximum force a person A 
can induce on person B divided by the maximum resistance that B can offer” (Bruins, 1999, p.8). 
In the late 1950’s, John French and Bertram Raven established themselves as seminal 
researchers in addressing the issues of social power and influence. Chief among their vast body of 
work is their explorations into social influence and power and the identification of the bases of 
power. Recognizing the processes of power are pervasive and complex, they enumerated five 
distinct bases of power: reward power, coercive power, legitimate power, referent power and 
expert power (French and Raven, 1959). 
Filley and Grimes (1968) presented another classic investigation, focusing on the theoretical 
concept of power and power relationships. These researchers conducted exploratory studies to 
develop a reliable scheme by which future qualitative statements could be classified for inclusion 
in a larger study. The study analyzed 36 full time employees all reporting to a single leader. Each 
participant was interviewed using a standardized questionnaire. This resulted in 864 statements 
to explain why people respond to decision situations. The authors perceived the findings as 
tentative and hoped this would set the stage for future research on this important topic. They also 
made an attempt to develop a classification system for the bases of power. Their preliminary 
investigation led to classifying the basis of power into a scheme with 12 types identified (Filley 
and Grimes, 1968). 
The French and Raven model has been the conceptual framework used for most investigations 
attempting to assess power relationships within organizational settings. Numerous studies used 
the French and Raven model to measure the five bases of power in actual work settings 
(Bachman, Bowers, and Slesinger, 1966; Student, 1968; Thamhain and Gemmill, 1974; Dunne, 
Stahl, and Melhart, 1978; Busch, 1980; Cobb, 1980; etc.). Importantly, Podsakoff and 
Schriesheim (1985) in their review of numerous field studies found that “a majority of them suffer 
from severe methodological shortcomings that make their interpretation problematic at best” (p. 
387). Their reanalysis of the literature “strongly suggested that some of the knowledge about the 
five basis of power was methodologically suspect” (p. 387). Podsakoff and Schriesheim raised 
several important questions regarding methodological problems in most of the field studies of 
power. They found that many studies investigating power used unsound psychometric measures. 
Because of this, they concluded that the knowledge regarding the relations between bases of 
social power and subordinate criterion variables was likely to be incomplete (Podsakoff and 
Schriesheim, 1985). 
Hinkin and Schriesheim (1989) developed new scales to measure the French and Raven (1959) 
bases of social power using psychometrically sound principles. They conducted a tiered study that 
designed measures of reward, coercive, legitimate, expert, and referent power. They began by 
generating definitions for each base of power, then evaluated the proposed definitions and came 
to a consensual agreement on the theoretical definitions. Next, they generated, and reached 
agreement on, a list of 53 items. These items were then submitted to a formal content validity 
examination by two independent panels of judges. Based on this content validity assessment, 42 
preliminary items were generated. These items were investigated further for content validity by 
administering survey questionnaires to 254 participants. Subsequently, based on the results from 
this sample, the list of items was reduced to 20, four items for each of the bases of power. 
Importantly, this was the first psychometrically sound investigation to evaluate the measures of 
power (Hinkin and Schriesheim, 1989). 
An additional development in the field occurred when Kipnis, Schmidt, and Wilkinson (1980) 
introduced a new scale they pioneered to measure social influence. Since that time the scale has 
been cited in over 350 other articles, and is used repeatedly. This also set the path to measure 
influence. The researchers set out to analyze the tactics of influence used by people to change the 
behavior of their superiors, co-workers and subordinates. In the initial study, 165 lower-level 
managers wrote essays to describe an incident in which they influenced their boss, co-workers or 
subordinates. Through a content analysis of the essays, Kipnis and his colleagues identified 370
influence tactics which they grouped into 14 categories. In a follow-up study, a 58-item questionnaire was developed and used to investigate the extent to which the participants used each item to influence their boss, co-workers or subordinates. Factor analysis was used for additional refinements leading to eight tactics of social influence (Assertiveness, Ingratiation, Rationality, Sanctions, Exchange, Upward Appeals, Blocking, and Coalitions). Subsequently, Kipnis, Schmidt and Wilkinson developed a commercial version of their tool called the Profiles of Organizational Influence Strategies (POIS) to measure the eight influence tactics. The POIS is a self-report questionnaire from the perspective of the agent (Kipnis, Schmidt, and Wilkinson, 1980; Kipnis and Schmidt, 1982).

In response to many subsequent studies and new theoretical conceptualizations of power, Raven, Schwarzwald, and Koslowsky, (1998) developed an instrument to measure 11 bases of power. These power bases incorporated the six original French and Raven (1959) bases of power along with further differentiation of three of the bases. The researchers devised a new scale, the Interpersonal Power Inventory (IPI), to measure the expanded bases of power structure. The internal consistency of the items which made up the 11 bases of power proved adequate. The tool has not appeared to draw much subsequent use or attention (Raven, Schwarzwald, & Koslowsky, 1998).

The first useful framework for future studies tying together the research on influence and power was devised by researchers Timothy Hinkin and Chester Schriesheim (1990). In a collaborative effort between the two, the relationships between subordinate perceptions of supervisor influence tactics and attributed bases of supervisory power were analyzed. The sample included 251 working, senior business students, who completed a questionnaire regarding their perceptions of their supervisors. Exploratory factor analysis showed that influence targets were able to distinguish five of the seven Kipnis et al. dimensions giving further support for their validity. Furthermore, this demonstrated that future research may be able to employ these measures to examine target perceptions of agent influence behaviors. In addition, the confirmatory factor analysis results reinforced the distinctiveness between the constructs of power and influence. In a more practical realm, the new scales developed could be useful in observing the relationships between perceived leader power and leader behaviors (Hinkin and Schriesheim, 1990).

Additional studies conducted by Schriesheim and Hinkin (1990) led to the creation of psychometrically improved Kipnis et al. scales, significantly advancing research in power and influence. Initially the researchers critiqued the Kipnis and associates influence subscales, then, in a series of four studies, Schriesheim and Hinkin examined the influence subscales. Exploratory factor analyses were conducted in each of the studies and each study built upon the previous with refinements along the way. The overall findings gave support to the dimensionality of the subscales and also provided evidence that substantial improvements could be made by deleting some items and by adding others. The results of the studies supported six of the original eight subscales: rationality, exchange, ingratiation, pressure, coalition, and upward appeal. The remaining two tactics did not provide stable factors; as a result the blocking and sanctions subscales were eliminated. Schriesheim and Hinkin then adapted the influence scale to develop a tool for measuring social influence, known as the Schriesheim and Hinkin Revised POIS. There were 18 final subscale items, three for each of the six identified factors. Fifteen of these were from the original Kipnis, et al. items and three new subscale items (Schriesheim and Hinkin, 1990). (Appendix 1).

The Kipnis POIS and the Schriesheim and Hinkin Revised POIS have been used as the basis for research in many studies over the years (Thacker and Wayne, 1995; Higgins, Judge, and Ferris, 2003; Ammeter, Douglas, Gardner, Hochwarter, and Ferris, 2002; Deluga, 1991; Deluga and Perry, 1991). It should be noted that the Schriesheim and Hinkin Revised POIS examined upward influence (not influence of peers and subordinates) and thus the validation of the instrument was tested for upward influence only. However, a few studies have used the Schriesheim and Hinkin Revised POIS to measure lateral and/or downward influence (Erez and Rim, 1982; Kipnis, Schmidt, and Wilkinson, 1980).

Gary Yukl and his various colleagues have significantly built upon the work on power and influence by providing important contributions to the field, and have emerged as the most prolific researchers in the field (Yukl, and Falbe, 1990; Yukl, Chavez, and Seifert, 2005; Yukl and Tracey, 1992; Yukl, Kim and Falbe, 1996; Yukl and Chavez, 2002; Yukl, Seifert, and Chavez, 2008, etc.). Yukl & Falbe (1990) conducted two further studies in order to replicate and validate the original Kipnis, Schmidt, and Wilkinson influence tactics subscales. The research used
information gathered from both the agents and the targets of influence. Yukl and Falbe reported several limitations and concerns in the Kipnis et al. study; primarily, the list of influence objectives needs to be extended, the range of influence tactics measured by the questionnaire was too narrow, and the research examined only self-perception. Overall, the findings demonstrated some inconsistencies with the Kipnis et al. subscales. The conclusion from Kipnis et al., that managers have different reasons for influencing subordinates, peers, and supervisors, was largely supported. However, in other areas the results only partially replicated the Kipnis et al. findings for differences in upward, downward and lateral use of influence tactics. The research also supported the addition of consultation and inspirational appeals to the list of influence tactics (Yukl and Falbe, 1990).

Further analysis by Yukl, Lepsinger, and Lucia (1991) identified a larger group of proactive tactics that are relevant for leaders in an organization. (Proactive tactics are those used in an attempt to influence someone to carry out a request.) The researchers developed and validated a new tool to measure these proactive tactics. They called the tool the Influence Behavior Questionnaire (IBQ). The IBQ is designed to measure a manager’s use of the nine tactics used to influence subordinates, peers, and superiors. The tool was specifically developed for use by targets. Factor analysis of the responses to the IBQ by subordinates, peers, and bosses included nine distinct tactics, including five that were similar to those found in the Schriesheim and Hinkin (1990) revisions, namely: rationality, exchange, ingratiation, pressure, and coalition. The additional four tactics were drawn from the leadership and power literature. These include: consultation, inspirational appeals, personal appeals, and legitimating. The research demonstrated that an upward appeal is a form of coalition that did not, for the most part, emerge as a separate factor (Yukl, Lepsinger, and Lucia, 1991; Yukl & Chavez, 2002).

Yukl and Tracey (1992) conducted a survey field study to investigate how a manager’s use of the nine different influence tactics is related to the target’s task commitment and the manager’s effectiveness. The survey was completed by the subordinates, peers and boss of each manager. The newly developed IBQ was utilized in conjunction with other questions. These questions included how many influence attempts by the agent resulted in complete commitment by the target respondent; and the respondents rating of the overall effectiveness of the influence agent (manager) in carrying out his or her job responsibilities. The relationship to manager effectiveness was determined by group-level analysis. Directional differences (upward, lateral or downward) in frequency of use were found for all of the tactics with the exception of consultation. The findings indicated that the most effective tactics were rational persuasion, inspirational appeal, and consultation and that these tactics were found to be effective across directions. Pressure, coalition and legitimating were found to be the least effective tactics. Ingratiation and exchange were found to be moderately effective for influencing subordinates and peers, but were not effective for influencing superiors. Inspirational appeal, ingratiation, and pressure were used most in downward influence. Personal appeal, exchange and legitimating were used most frequently in lateral relationships. Coalitions were used most frequently in both lateral and upward directions. Finally, rational persuasion was used most often in an upward influence direction. Overall, the study provides further support for the construct validity of the nine influence tactics (Yukl & Tracey, 1992).

In an interesting study by Yukl, Falbe, and Youn, (1993) patterns of influence used by managers with their subordinates, peers and superiors were investigated using 145 working MBA students, half at the managerial level. Forms were utilized for respondents to provide information relating critical incidents regarding influence attempts and there were fixed-response items to indicate the direction of the influence (up, down, or lateral) and the final outcome of the influence (resistance, compliance or commitment). Coding was conducted independently by two people out of four coders. A total of 646 target incidents were obtained. The study is noteworthy in that it was the first to use the critical incident approach to study directional differences in the use of influence tactics. Also, it was the first to study how often various tactics are used alone and in combination. The findings support the notion that selecting what tactics to use through empirically based guidelines would have the practical outcome of providing managers with a course of action to identify appropriate tactics and would help improve their skills at influencing others. Furthermore, the authors identified a set of 11 tentative guidelines to facilitate this process (Yukl, Falbe, & Youn, 1993).

In a further refinement on the identification and classification of measuring and classifying interpersonal influence, Yukl, Chavez, & Seifert (2005) assessed the construct validity and
relative effectiveness of two new influence tactics, collaboration and apprising. These items had been added to the IBQ when efforts to make the IBQ more useful for multisource feedback to managers revealed evidence of these tactics. The primary purpose of the research was to investigate the construct validity of collaboration and apprising as proactive influence tactics. Another objective of the study was to evaluate the usefulness of collaboration and apprising in lateral and downward influencing of peers and subordinates. Three different methods were used for the study: a field study, incident analysis, and a laboratory experiment. A confirmatory factor analysis supported collaboration and apprising as distinct from the nine other proactive tactics. On the practical side, the research supported collaboration as a highly effective method for influencing peers and subordinates while apprising, which can be considered as an explanation of why a request is likely to benefit the target as an individual, was less effective than either rational persuasion or collaboration. Consistent results were reported across the three different methods used in the study, increasing the validity of the research (Yukl, Chavez, and Seiffert, 2005).

Yukl, Seifert, and Chavez (2008) recently published four studies to validate the extended version of the Influence Behavior Questionnaire. Further, Yukl et al. differentiated between the IBQ-R, and the IBQ-G. The IBQ-R, which is useful for longitudinal studies, measures for the 11 proactive influence tactics where each tactic is represented equally, but presented to the respondent in a random order. In the IBQ-G each of the tactic scales has four items which are presented to the respondent in order. The IBQ-G was used for the validation studies. The results largely support the validity of the 11 influence tactic scales in this newest version. Findings indicate that the IBQ-G measures an agent’s use of the 11 tactics, through the perspective of the target, with an acceptable degree of accuracy when the target is a subordinate or a peer. Specifically, the validation research indicates that four items per scale provide for content validity and internal consistency. The authors assert that the IBQ questionnaire, both the R & G versions, have extensive potential applications for research, as well as for practice, and feel it is the most comprehensive and best validated measure of proactive influence tactics (Yukl, Seifert, & Chavez, 2008).

Yukl and Chavez (2002) recognized four factors researchers need to identify in order to better understand influence processes. First, researchers need to distinguish distinct tactics of influence which can be observed and measured. Secondly, it is necessary to identify the relevant criteria necessary to delineate if the influence process was a success. Thirdly, the researcher needs to recognize both conditions which can help facilitate each influence tactic, as well as the limitations of those tactics. Finally, Yukl and Chavez stress that researchers should identify the mediating processes that can help explain the effects of the tactics (Yukl & Chavez, 2002).

Recently, Elias (2008b) provided an overview of the history and evolution of the bases of power set forth by French and Raven (1959) extending this framework to examine the power/interaction model. Further, he addresses the future of this nomenclature in organizational settings. Elias asserts that advances made to the original French and Raven power taxonomy have not been incorporated into the management and organizational behavior literature. Elias holds that the current taxonomy addresses 14 bases of power. Elias recognizes that because of the advances made in the power taxonomy since its inception, there is a still much to discover and apply to organizational settings (Elias, 2008b).

To summarize, there has been a great deal of research in the literature focused on power and influence. Several studies have confirmed the concept that power and influence are recognized as distinct constructs (Hinkin & Schriesheim, 1990; Kapoor & Ansari, 1988; Yukl, Kim & Falbe, 1996). However, “the relationship among specific forms of power, specific influence behaviors, and influence outcomes is complex and not well understood” (Yukl, 2006, p. 169).

Advantageously, the body of work on social influence and power from the social sciences can be used to analyze and build a physician driven model. It is apparent that further research in this regard is essential in order to better understand the complexities of understanding influence behaviors and the impact of these on managerial effectiveness.

The quantitative research on physician use of power and influence remains sparse. The proposed research will contribute to the current body of knowledge in many important ways. First, it will assess the generalizability of previous studies on influence tactics and power from the fields of organizational behavior, sociology, and psychology. Second, the study will contribute to the body of knowledge regarding physicians as leaders. “Physician executives are in demand, and this demand is growing” (Fulkerson & Hartung, 2008) yet the body of research in this regard is lagging. Physicians need to be at the forefront of these efforts and therefore this investigation will
provide a platform for learning more about physician leadership. Connecting research in the power and influence fields with particular emphasis on the physician will help to identify the successful leadership skills of physicians within a collaborative framework. Additionally, scholarship in health care leadership will be enhanced while also serving as a resource to aid the medical profession in developing training and development in leadership and effective influence tactics. In the increasingly dynamic world facing health care practitioners these characteristics are necessary to supplement clinical expertise.

Thirdly, learning more about influence tactics and those which provide the best outcomes could help to ultimately improve the quality of healthcare delivery. “Knowing more about how physician executives influence others in health care organizations is important, because the ability of the physician executives to persuade others will determine much of their success in managing the health care enterprise” (Garko, 1993, p. 27). Finally, this investigation will develop a functional model of influence tactics for physicians at differing levels of power. The model will provide a conceptual schema of antecedent factors, inputs of selected influence tactics, level of target power, situational factors, and processes affecting influence and how these lead to successful outcomes. Yukl (1989) aptly notes that success in influencing people and developing their commitment to task objectives is one of the most important determinants of managerial effectiveness. Physicians need to better understand the processes of power and influence, and how these can be utilized effectively in order to be the transformational leaders necessary in the healthcare environment of today. “Power and influence are key processes in organizations and anyone wanting to learn how to lead or manage organizations effectively must first understand the dynamics associated with such processes” (Schriesheim & Neider, 2006, p. vii). Clearly, quantitative, empirical, theoretical-based research, which focuses on the physician as a leader is needed. Especially given the dynamic state of healthcare, we need to increase our knowledge base on physician leadership to enhance best practices, improve patient safety, increase cost effectiveness, and remain competitive as the leading world health care provider.

4.3. If you have cited references above, please attach a bibliography, including title, full author list, journal, date and pages. This bibliography should include only those articles referenced above.

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<thead>
<tr>
<th>Name</th>
<th>Description</th>
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<tr>
<td>References</td>
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4a. Description of Study (cont’d)

Rationale and Methodology

4.4. * In non-technical, lay language, describe the study design and all study procedures, in order of sequence and timing. Include length of subject participation, what tasks are involved in the study, what tests or procedures subjects will be asked to complete or undergo, specific measures to be used, etc. If applicable, include frequency of visits, duration of visits, and study procedure calendar.

Description of Project - Step-by-Step in Layman's Terms

Overview: The study will consist of a preliminary study to confirm the level of power of each of the constituents using the Physician Power Questionnaire. This portion of the study will consist of a sample of 20 physicians. The main study will then examine four different constituents of the physicians, these groups will represent different levels of power as identified in the preliminary
The sample will consist of four groups (50 in each group) which will be studied for this: 1. Health care executives, 2. Physician colleagues, 3. Registered Nurses, and 4. patients. All will complete the same questionnaire: Schriesheim and Hinkin (1990) Revised Kipnis et al. Social Influence Questionnaire. This is outlined in greater detail below.

I. Preliminary Study

A. Sample - 20 Physicians. The preliminary study will help determine the level of power of physician constituents (people the physician deals with on a day-to-day basis). 20 physicians will be asked to complete two surveys to rank the level of power of each constituent. The surveys will take the physician a total of approximately five minutes to complete. The sample will consist of a sample of convenience of physicians known to the primary researcher. The Physician Power Questionnaire will be utilized for the preliminary study.

B. There are no identifiers on the survey so the subject remains anonymous. The Verbal Consent for Physicians will be read aloud to all participating physicians.

C. The level of power of each constituent will be established through statistical analysis of results of preliminary study.

II. Data Collection

A. The types of influence tactics used by physicians towards targets (people they influence or deal with) will be assessed using a common and well researched behavioral science stool - the Schriesheim and Hinkin (1990) Revised Kipnis et al. Social Influence Questionnaire. The questionnaire will take approximately 15 minutes or less to complete. The survey includes a section for demographic information and the questionnaire which includes 18 questions to be rated with a response of one to five scale (on a Likert-type scale).

B. The survey is from the perspective of the target (those who deal with the physicians). There are no identifiers on the survey so the subject remains anonymous; neither the person completing the survey nor the physician they are considering when completing the survey can be identified.

C. All questionnaires will be collected and all data will be analyzed by the researcher. All participants will be required to sign voluntary consent forms. Verbal instructions (in addition to written directions) will be provided prior to administration of the questionnaire. The questionnaire will be self-administered in face-to-face sessions. All participants will be read aloud the Verbal Consent or the Verbal Consent for Physicians. The researcher will be available to answer questions at all sessions. Questionnaires will remain anonymous, names of participant and the physician as an agent will not be recorded. Anonymity and confidentiality will be emphasized. Respondents will be assured that only a composite summary of the data is being sought and no information regarding an individual physician is of concern. Participants will be informed that the study is for research purposes only. Each respondent will be assured that the questionnaires will remain anonymous and that their individual responses will remain confidential. Questionnaires will include demographic information including age, race, gender, and level of education. In addition, this section will include an area for response of frequency of contact the target has with the physician. The respondent will be asked to give a brief description of the physician they are considering including the gender and the specialty of the physician.

D. Sample - 200 total surveys will be collected from four separate groups at three different levels of power (three study conditions). All participants must be able to read and write in English.

1. Upward Influence (those with more power than the physician) - This sample of 50 will include individuals who would generally have greater power than the physician such as Hospital CEO’s, Hospital CFO’s, Provost and Department Chairs.
2. Lateral Influence (those with an equal power base to the physician) - This sample of 50 will include physicians as colleagues. Physicians will be recruited from an Executive MBA class, and through direct contact. The primary researcher will attend medical staff meetings as approved by the Hospital CEO or Department Chairs.

3. Downward Influence (those with less power than the physician) - This sample will consist of two groups of 50 in each group (total 100).

a. The first group for the downward influence condition will be nurses. The sample will consist of 50 nurses. These will be collected from a sample of convenience collected from students - Master of Science in Nursing(MSN) and Doctor of Nursing Practice (DNP) and Registered Nurses (RN's) at nursing staff meetings.

b. The second group for the downward influence condition will be adult patients/former patients, as those who have interacted with a physician as a caregiver. The sample will consist of 50 patients. These will collected from outpatient individuals on a voluntary basis from clinics, waiting areas, etc. and in no way will it affect patient care. Only those patients/former patients who are seemingly well will be included: Ambulatory outpatients, in non-acute distress, who are visiting the clinic on a non-emergency visit will be used for the patient selection group. Primary researcher will check with clinic supervisory personnel or physician to verify which patients will be appropriate. Only patients who do not appear uncomfortable and are not in any apparent distress will be approached. Due care and sensitivity will be exercised in selection of patients and if in doubt the researcher will err on the side of not including that patient. Two of the Associate Deans for Medical Education at the Miller School of Medicine have agreed to suggest clinics which would have the type of patients appropriate for the study. Also, employees or students who have been a patient in the system within the past six months would be appropriate for the study. No children, pregnant women, cancer patients, or compromised individuals will be included.

III. Determination of Influence Tactic

A. Data will be statistically analyzed using SPSS to determine which influence tactic is used most frequently with each group.

4.4.A. **Standard Measures**: Click the "Add" button to open the search window, the click the "Find" button to browse and select measures.

<table>
<thead>
<tr>
<th>Name of Measure</th>
<th>Brief Description</th>
<th>Type of Measure</th>
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<tbody>
<tr>
<td>There are no items to display</td>
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**NOTE**: A copy of the first page of each standard measure is provided in the Library of Standard Measures for verification. Ensure that the version being used in this study is the same as the version that has been selected.

**Upload any questionnaires and/or assessment tools to be used that are not listed above**:

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<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
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<tbody>
<tr>
<td>Physician Power Questionnaire - Revised</td>
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<tr>
<td>Social Influence Questionnaire</td>
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4.5. **Identify and distinguish between those procedures that are standard treatment versus those that are experimental/research-specific.**
4.6. Describe any therapeutic alternatives that may exist for the study population.

Not applicable

4b. Description of Study (cont’d)

Risk/Benefit Assessment

4.7. * Describe the nature, degree, and if available, expected frequency of all potential economic/financial, legal, physical, psychological, social or other risks to which research participants may be exposed as a result of their participation in this research. If applicable, please describe the risk of investigational agents or devices (side effects).

There are no risks to the participants.

4.8. * Are there potential direct benefits of this research to the subjects?

☐ ☐ Yes ☐ ☐ No

4.8.A. If yes, provide a description of the potential direct benefits and indicate if all, or only some, of the subject groups may derive this potential benefit.

There are no direct benefits to the subjects for participating in this research.

4.9. * Are there potential benefits of this research to society?

☐ ☐ Yes ☐ ☐ No

4.9.A. * Please explain:

In the long run it will be beneficial to learn more about the way physicians influence others so that they may be better leaders in regards to health care.

4.10. * Explain why the risk/benefit ratio supports conducting this research.

No risks inherent in this study so only adds benefit to behavioral research.

4c. Description of Study (cont’d)

Data

4.11. * Describe follow-up, data storage methods, data security, authorized access to records and record retention, including site name and address.

Data will be saved by the primary researcher on a thumb drive and on the secure N drive at the University of Miami. Questionnaires will be saved by the primary researcher for five years upon the completion of the study. Only those authorized by the primary researcher will have access to the records and data. The data will be kept at:

UNIVERSITY OF MIAMI
School of Business Administration
Department of Management
417 Jenkins Building
4.12. * Support the study validity by describing the statistical design, including quantitative and qualitative methods used to analyze data.

Determination of the Favored Tactic of Social Influence and Level of Target Power

This portion of the study is the analytic portion to answer the final research question of whether different social influence tactics are utilized by physicians depending on the level of power of the constituent. Determination of favored tactic of influence and level of target will be statistically analyzed using SPSS (Green & Salkind, 2008). The analysis will determine perceived differences in physician influence strategies based upon level of power in relation to the physician. The influence tactics are measured from the target perspective. The independent variable will be the group analyzed (power level). The groups will each represent a different power level. The dependent variables will be the six influence tactics. For all groups the measure under investigation consists of the six influence subscales. The data will be analyzed to determine significant differences between different target’s mean scores. The model to test this will be MANOVA - computing six -one-way ANOVA’s. Once it has been determined whether the means in each group are equal or unequal, then a planned T test will be conducted. The mean should help predict the directional ordering. Statistics will be interpreted in order to draw conclusions related to the hypotheses.

Descriptive statistics for the entire sample will be computed for age, race/national origin, and gender. Further demographic information will be analyzed in regards to the clinical specialty, and gender.

Privacy/Confidentiality Agreements

4.13. Describe any privacy agreements or certificates of confidentiality, if applicable.

N/A

4d. Description of Study (cont’d)

Deception

4.14. * Is the use of deception part of the study design?

☐ ☐ Yes ☐ ☐ No

If yes, please answer the following 3 questions:

4.14.A. Describe in detail the nature of the deception and explain why this is necessary for the research.

4.14.B. State how, when, and by whom the research subjects will be debriefed.


5. Study Participants

Per 45 CFR 46, human subjects (participants) means a living individual about whom an investigator (whether professional or student) conducting research obtains:

1. data through intervention or interaction with the individual; or
2. Identifiable private information (i.e. pathological specimens, medical records, etc.)

5.1. *Participant Age:

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<th>Notes</th>
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<tr>
<td></td>
<td>Parent Permission/Consent required for each participant</td>
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<td>Parent Permission/Consent &amp; Child Assent required for each participant</td>
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5.2. For the following questions, please use integers for your responses. For any question that is not applicable, please enter the number 0. (Do not enter commas, decimal points or special characters)

5.2.A. *Maximum number of subjects in the Protocol to be screened at all sites (regardless of PI):

220

5.2.B. *Total number of subjects in the Protocol to be studied at all sites (regardless of PI):

220

University of Miami

5.2.C. *Maximum number of subjects to be screened by this PI at UM:

220

*Maximum number of subjects to be enrolled by this PI at UM:

220

*From the above, how many are expected to complete this study (participate in the study beyond initial enrollment?:

220

Jackson Health Systems

5.2.D. *Maximum number of subjects to be screened by this PI at Jackson Health Systems (JHS):

0

*Maximum number of subjects to be enrolled by this PI at Jackson Health Systems (JHS):

0

*From the above, how many are expected to complete this study (participate in the study beyond initial enrollment)?

0

Miami VA Medical Center

5.2.E. *Maximum number of subjects to be screened by this PI at Miami VA Medical Center:

0
* Maximum number of subjects to be enrolled by this PI at Miami VA Medical Center: 0
* From the above, how many are expected to complete this study (participate in the study beyond initial enrollment)? 0

5a. Study Populations

5.3. * Study populations to be included in this study where PI will be conducting research and those sites where the UM IRB will have oversight responsibility:

<table>
<thead>
<tr>
<th>Check all that apply</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Outpatients</td>
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<tr>
<td>Subordinates/employees</td>
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<td>UM students/trainees</td>
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5.3.A. If other, please specify:

5.3.B. Describe below any additional safeguards that have been included to protect vulnerable subjects:
N/A

5b. Inclusions/Exclusions

5.4. * Is the population being enrolled in this study at high risk for incarceration?

☐ ☐ Yes ☐ ☐ No

5.4.A. If yes, will the subjects be withdrawn from the study once they are incarcerated?

☐ ☐ Yes ☐ ☐ No

5.4.A.(i) If the above answer (question 5.4.A.) is no, describe how re-contacting/re-consenting, treatment, and/or follow-up will occur:

NOTE: If a subject becomes incarcerated while enrolled in a study, all research interactions and interventions with that subject, and the obtaining of identifiable private information about the subject, must cease until the requirements of subpart C have been satisfied with respect to the relevant protocol.

If notified that a previously enrolled research subject has become a prisoner, the principal investigator must promptly seek IRB re-review of the protocol in accordance with the requirements of subpart C if the principal investigator wishes to have the prisoner-subject continue to participate in the research. *In special circumstances in which the principal...
investigator asserts that it is in the best interests of the subject to remain in the research study while incarcerated, the IRB Chairperson may determine that the subject may continue to participate in the research until the requirements of subpart C are satisfied.

5.5. * What are the criteria for exclusion of participants from the research?
Participants will be asked if they can speak, read and write in English. No children, pregnant women, cancer patients, or compromised individual will be included in the study.

5.6. * Will any population be systematically excluded in this study?

- [ ] Yes
- [x] No

5.6.A. **If yes, provide rationale/justification for this exclusion:**
Non-English speaking participants will be systematically excluded. No children, pregnant women, cancer patients, or compromised individuals will be included. Rationale: This is a behavioral study and the participants must fit into the three level of power groups described.

5.7. * What are the criteria for inclusion of participants in the research?
The criteria for inclusion are that the participants fall within the groups identified at the three power levels: Hospital CEO's, Hospital CFO's, Provost and Department Chairs; physicians; nurses; and outpatients/former patients. (Only those patients/former patients who are seemingly well will be included.)

5.8. * Will only one group of individuals be systematically selected and recruited for this study (e.g., welfare patients, racial and/or ethnic minorities, persons confined to institutions or persons determined to be incapacitated)?

- [ ] Yes
- [x] No

5.8.A. **If yes, please state how this participant group will benefit from the results of the research and provide the reasons and justifications to target this group:**

6. **Subject Recruitment**

6.1. * From what sources or by what methods will subjects be recruited?

Check all that apply

- Outpatients/clinics
- Direct contact

6.1.A. **If postings within hospital, please indicate name of facility:**
6.1.B. **If emergency room, please indicate name of facility:**

6.1.C. **If other, please specify:**

### 6a. Subject Recruitment (cont'd)

6.2. *Provide a step-by-step description of the recruitment procedures used to identify and/or contact prospective participants:*

1. Physicians/ Nurses - Participants will be recruited by the researcher through direct personal contact, or personal contact at the beginning or end of Medical Staff or Nursing Staff meetings. The researcher will attend these meetings only with the direct permission and approval of the Chair of that meeting. Also, physician students in the Executive MBA program will be recruited for the study with the express permission and approval of the course professor. Master of Science in Nursing (MSN) and Doctor of Nursing Practice (DNP) nursing students will be recruited for the study with the express permission and approval from the course professor.

2. Hospital CEO’s, Hospital CFO’s, Provost and Department Chairs - Participants will be recruited through direct personal contact by the researcher.

3. Patients - Prospective participants will be recruited on a voluntary basis from clinics and waiting areas. The researcher will get the permission and approval from the physician and Department manager of that clinic prior to personally attending the clinic or waiting room to recruit participants. Ambulatory outpatients, in non-acute distress, who are visiting the clinic on a non-emergency visit will be used for the patient selection group. Primary researcher will check with clinic supervisory personnel or physician to verify which patients will be appropriate. Only patients who do not appear uncomfortable and are not in any apparent distress will be approached. Due care and sensitivity will be exercised in selection of patients and if in doubt the researcher will err on the side of not including that patient. Two of the Associate Deans for Medical Education at the Miller School of Medicine have agreed to suggest clinics which would have the type of patients appropriate for the study. Also, employees who do not fit in the first two categories but have been a patient of a physician in the UM System may also participate and will be recruited through personal contact by the primary researcher.

6.2.A. **Please upload copies of scripts, recruiting materials, and advertisements:**

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<th>Description</th>
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There are no items to display

**NOTE:** Any materials that will be given to or seen by potential subjects must be reviewed and approved by the IRB. This includes assessments, instruments, diaries, questionnaires, and all screening and recruitment materials, including advertisements, web postings, letters, and telephone scripts. Only IRB approved versions of these materials may be used during the course of the study.

6.3. *What measures will be taken during the recruitment process to safeguard against the potential coercion or the appearance of coercion of participants, particularly vulnerable populations?*

Measures will be taken during the recruitment process to safeguard against coercion or the appearance of coercion of participants. The study will be briefly explained to potential participants.
then they will be asked if they wish to participate in the study. They will be told that participating in the study is completely voluntary and that there are no benefits from, or drawbacks to, participation. Only those participants who volunteer will be included. The researcher will emphasize that there will be no drawbacks or repercussions for not participating.

6.4. * Are there specific criteria to prematurely end a particular subject's participation in the study (e.g., predetermined safety endpoints, unexpected clinically significant findings, distress or serious adverse events, etc.)? Select one

- Yes
- No
- Not Applicable

6.4.A. If yes, please describe:

6.5. * Will subjects be remunerated for their participation in the study in any way other than credit toward a course requirement? 

- Yes
- No

6c. Financial Liability

6.6. * Financial Liability for Study Participants: Complete the table below, indicating the responsible party for payment of research activities and procedures.

- Not applicable

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<thead>
<tr>
<th>Procedure or Activity</th>
<th>Frequency</th>
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6.7. * Select all categories indicating costs which participants or their insurance companies will be responsible for:

- Participants will have no costs associated with this study
- Study-related procedures which would be done under standard care
- Study-related procedures not associated with standard care
- Administration of drugs/devices
6.7.A. * If other, please specify:

6.8. * In the event of study-related subject injury, who will be responsible for compensation?
Not Applicable

6.8.A. * If Other 3rd Party, please specify:

7. Informed Consent

7.1. * Is an alteration of the consent process being requested?
☐ ☐ Yes ☒ ☒ No

NOTE: "Alteration of consent" is when the consent procedure does not include, or alters, some of the required elements of informed consent. This only applies to studies conducted by state or local government on public benefit or service programs. See http://www.hhs.gov/ohrp/humansubjects/assurance/consentckls.htm

7.2. * Is a waiver of informed consent being requested?
☐ ☐ Yes ☒ ☒ No

NOTE: This indicates there is no consent process; waiver criteria need to be justified.

7.3. * Is a waiver of signed consent being requested?
☐ ☐ Yes ☒ ☒ No

NOTE: This indicates that the consent process will occur, but there is no signed consent (i.e., verbal script or consent letter).

7b. Informed Consent (cont'd)

7.8. * Under which of the following criteria does this research qualify for Waiver of Signed Consent?

<table>
<thead>
<tr>
<th>Check one</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒ ☒ 45 CFR 46.117 (c) (1)</td>
<td>The only records linking the subject and the research would be the consent document, and the principal risk would be the potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject’s wishes will govern.</td>
</tr>
</tbody>
</table>
This research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

7.8.A. *Please state the justification for the criterion selected above:
There are no identifiers on the questionnaire and the only linking document would be the signed consent. The research does not involve risk to the subjects.

7c. Informed Consent (cont'd)

7.9. *Describe the specific steps for obtaining informed consent (e.g., by whom, his/her credentials, language, where, when, etc.):
☐ ☐ Not applicable
The person who obtains consent from the subject will be the Principal Investigator, a Ph.D (ABD) student completing her dissertation. The consent (script) will be read verbally to all participants. The researcher will discuss the purposes of the research study; the activities that will take place; that the questionnaire will take approximately 15 minutes to complete; that there are no risks or benefits to participating in the research; and how the participant privacy will be maintained. Each participant will be asked whether they want documentation linking the participant with the research and the participant's wishes will prevail regarding verbal or written consent. Verbal or written consent will be obtained from all participants: physicians, patients, nurses and hospital administrators (as described in section 4.4). Physicians will be recruited from an Executive MBA class, and through direct contact. The primary researcher will attend medical staff meetings as approved by the Hospital CEO or Department Chairs.

7.10. Consent may be required from a parent, legal guardian, legal representative, court-appointed representative, or health care surrogate where research involves children/minors, wards of the state, cognitively or developmentally impaired individuals, comatose or traumatized or emergency subjects, as well as any other subjects lacking capacity to consent. Such surrogate/representative/guardian can only consent if the IRB has approved the research under HHS or FDA regulations. For court-appointed guardians, court assent is required.

If your study involves any of these groups, please specify below whether consent will be obtained from such surrogate/representative/guardian and describe the process for obtaining such consent:

7.11. *What protections will be offered to persons with cognitive impairment or to persons determined to be incapacitated? Describe how capacity for consent will be determined, whether cognitive capacity is expected to change significantly during the study, whether a legally authorized representative or health surrogate has been designated for purposes of obtaining informed consent, and whether court approval has been obtained (for court-appointed guardians). Describe plans to re-consent subjects after a change in the subject's cognitive capacity.
7.12. * How will informed assent for children and parental consent/permission be obtained?

☑ ☑ Not applicable

7.13. * Describe plans to re-assent or obtain consent for child subjects during the study if the subject reaches the age of majority (18 years) or if there is a significant change in cognitive capacity (i.e. gets older or regains consciousness).

☑ ☑ Not applicable

7.14. * How will non-English speaking participants be consented?  (Federal regulations require the equitable selection of minorities as research subjects to assure that they receive an equal share of the benefits of research and to ensure that they do not bear a disproportionate burden.)

<table>
<thead>
<tr>
<th>Check one</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ ☑ Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>

☑ ☑ A translated written informed consent document in a language understandable to the participant

This should be an accurate translation of the IRB-approved English version of the full informed consent document. Translations of IRB-approved informed consent documents must be made by a certified translator. Click here for list of certified translators.

☑ ☑ Orally, using a qualified translator to translate the English informed consent document to the participant, and a translated short form in a language understandable to the participant.

See IRB Policy IV.B. "Documentation of Informed Consent".

7.15. * Informed Consent Document Templates

☑ ☑ Not applicable

Please attach all consent and assent templates associated with this study. (This includes genetic consent, HIV consent, tissue banking consent, etc.)

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal Consent</td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>Verbal Consent for Physicians.docx</td>
<td></td>
<td>0.01</td>
</tr>
</tbody>
</table>
8. Protected Health Information

Protected health information (PHI) is individually identifiable health information that is or has been collected or maintained by the University of Miami or JHS or created for purposes of providing medical care/treatment and can be linked back to the individual participant.

8.1.(a)  * Will Protected Health Information (PHI) be accessed (used or created for treatment) prior to contact with subjects in this research?  
☐ ☐ Yes ☐ ☐ No

8.1.(b)  * Will PHI be accessed (used or created for treatment) during the course of the proposed research?  
☐ ☐ Yes ☐ ☐ No

15. Conflict of Interest

As the Principal Investigator, you must be aware of any conflict of interest of the protocol team or institution. Please note that the thresholds of ownership described below apply to the aggregate ownership of each individual investigator (or other key personnel, to the best of their knowledge) and their immediate family. The immediate family includes each investigator’s spouse, domestic partner and dependent children (e.g., if an investigator together with his/her spouse, domestic partner and dependent children own a total of $10,000 or 5% worth of equities in the sponsor, it should be reported below).

"Conflicts of interest" apply to each investigator or other individuals listed as key personnel. Do not consider the combined ownership of all investigators/key personnel. Do not consider compensation for the % effort on a study.

15.1.  * Does any person obtaining consent have any existing relationship (family, social, or professional, including physician-patient or student-teacher) with the subject(s)?  
☐ ☐ Yes ☐ ☐ No

15.1.A.  If yes, describe the relationship(s) and how subjects will be protected against undue influence or coercion:

15.2.  * Will there be any programs, bonuses, rewards or other incentives that may be offered to this site and/or its faculty or staff by the sponsor or others for rapid enrollment?  
☐ ☐ Yes ☐ ☐ No
15.2.A. If yes, please describe:

Note: Before accepting any awards, the IRB must be informed of the nature and value of these incentives.

15.3. * Do any of the investigators or members of their immediate families receive from the sponsoring entity salaries, consulting fees, or other compensation for services that exceed $10,000 in any twelve month period? (Note: if the sponsoring entity is the full time employer of the investigator, co-investigator or key personnel (i.e. UM or JHS) then answer "No." Do not consider compensation for the % effort on a study.)

☐ ☐ Yes ☐ ☐ No

15.4. * Do any of the investigators or members of their immediate families serve as an officer, director, or as a member of any advisory board with the sponsoring entity?

☐ ☐ Yes ☐ ☐ No

15.5. * Do any of the investigators or members of their immediate families have an equity interest that exceeds $10,000 in value or represents more than 5% ownership in the sponsoring entity?

☐ ☐ Yes ☐ ☐ No

15.6. * Do any of the investigators or members of their immediate families have any intellectual property rights (patents, copyrights, royalties) in any article(s), product(s), drug(s), device(s) or other material(s) that will be involved in this research?

☐ ☐ Yes ☐ ☐ No

15.7. * Do any of the investigators or members of their immediate families have any other financial interest or relationship that would reasonably be affected by this research?

☐ ☐ Yes ☐ ☐ No

15.8. * Do any of the investigators or others know of any institutional conflict of interest pertaining to this study?

☐ ☐ Yes ☐ ☐ No

15.8.A. If yes, please describe:

15.9. * Has any of the technology used in the study been developed in whole or in part at the University of Miami?

☐ ☐ Yes ☐ ☐ No
16. Monitoring Plans

16.1. **Select the item below that most accurately reflects the plan for data and safety monitoring for this study:**

<table>
<thead>
<tr>
<th>Selection</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ ☐</td>
<td>The study will be monitored only by the study investigators and/or sponsor.</td>
</tr>
<tr>
<td>☐ ☐</td>
<td>The study will be monitored by at least one individual who is not associated with the study, but not by a formally constituted Data and Safety Monitoring Board (DSMB).</td>
</tr>
<tr>
<td>☐ ☐</td>
<td>A formally constituted Data and Safety Monitoring Board (DSMB) will monitor the study.</td>
</tr>
<tr>
<td>☐ ☐</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

16.2. **Has an internal (UM or JHS) data safety monitor or board/committee been established to provide additional oversight or monitoring of this study for safety and adherence to the study protocol?**

- ☐ ☐ Yes
- ☐ ☐ No

16.2.A. **If yes, describe the composition of the committee and how they will communicate findings to the IRB:**

16.3. **Has an external (non-UM or JHS) data safety monitor or board/committee been established to provide additional oversight or monitoring of this study for safety and adherence to the study protocol?**

- ☐ ☐ Yes
- ☐ ☐ No

16.3.A. **If yes, describe the composition of the committee and how they will communicate findings to the IRB:**

17. Study Funding

17.1. **How is the study being funded or supported?**

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>University-funded</td>
</tr>
<tr>
<td>UM internally-funded (study is funded by a UM school, college, department, center, grant, or award)</td>
</tr>
</tbody>
</table>

17.2. **If study is extramurally funded/supported, list funding sources below:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Type of Funding</th>
<th>Pending?</th>
</tr>
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<tbody>
<tr>
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</table>

There are no items to display
19. Attach Documentation

The documents listed below must be uploaded, as applicable to your study:

19.1. Attach grant application(s):

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
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<tbody>
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19.2. Attach sponsor's protocol:

<table>
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<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
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<tbody>
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</table>

There are no items to display

19.3. Attach investigator brochure:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

There are no items to display

19.4. Attach clinical trial contract:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
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</thead>
<tbody>
<tr>
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</tbody>
</table>

There are no items to display

*Please note: If this is a WIRB protocol, please go to [http://www.wirb.com](http://www.wirb.com), complete the Initial Submission Form, and then upload it here by clicking on the Add button below. In addition, provide a hard copy of the WIRB form to the Human Subjects Research Office.

19.5. Upload External IRB (WIRB, FL DOH IRB)/CIRB submissions:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

There are no items to display

19.6 Attach appropriate certifications or licenses for study personnel and any other related documents:

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

There are no items to display

Electronic Submission Instructions

1. Each member of the protocol team must log-in to eProst and click on “Submit Conflict of Interest” in the protocol workspace for this particular protocol.

2. The Principal Investigator is the only protocol team member authorized to submit a protocol for review. To submit the protocol for review, please click the "Submit Protocol" activity button found under "My Activities" in the left-hand navigation area. **Note:** If there is any missing information, eProst will prompt you to provide this before the protocol can be submitted.

3. Execution of the "Submit Protocol" activity will move the protocol to the "Originating"
4. Once the Originating Department approves the protocol, it may require "Ancillary Committee Review."
   
   a. If Ancillary Committee Review required, the protocol state will change to "Ancillary Committee Review."

5. When the protocol reaches the HSRO office, the study state will reflect "Pre-Board Review."

Signatures

[electronically signed by Sheryl Alonso on 1/18/2010]

Principal Investigator

Co-Investigator
**3.2.A. ** *Name of Performance Site:*

**University of Miami**

3.2.A.(i) *If Other, please specify:*

3.2.A.(ii) *If you selected University of Miami in 3.2.A. above, please indicate all UM sites at which the protocol team will engage in protocol activities:*

<table>
<thead>
<tr>
<th>Check all that apply</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMSM</td>
<td>University of Miami Medical Campus</td>
</tr>
<tr>
<td>BPEI</td>
<td>Bascom Palmer Eye Institute</td>
</tr>
<tr>
<td>UOMH</td>
<td>University of Miami Hospital</td>
</tr>
<tr>
<td>SCCC</td>
<td>Sylvester Comprehensive Cancer Center</td>
</tr>
</tbody>
</table>

3.2.A.(ii)(a) *If Other UM Site, please specify:*

3.2.B. *IRB of Record:*

<table>
<thead>
<tr>
<th>Check all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ ✓ UM (this includes Jackson Health System)</td>
</tr>
<tr>
<td>□ □ Other</td>
</tr>
</tbody>
</table>

*If Other was selected for IRB of Record, please answer the following questions:*

3.2.B.(i) *If Other, please specify:*

3.2.B.(ii) *Does the site have an FWA (Federalwide Assurance)?*  

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
3.2.B.(ii)(a) **If yes, enter name of FWA Holding Institution:** UM

3.2.B.(ii)(b) **If yes, enter FWA Number:**

3.2.B.(iii) **IRB Approval:**

3.2.B.(iii)(a) **If attached, please upload IRB approval letter or Research Collaboration agreement:**

3.2.B.(iv) **Briefly describe activities at this site:**
Appendix 12.

Correlated Sample t Test Computations.

**Administration and Colleagues**

\[
(3.100 - 3.050) / \left[ \left(1.553 \right)^2 + 0.759^2 - 2 \times 0.085 \times 1.553 \times 0.759 \right]^{1/2} / \sqrt{20} = \\
(0.05) / \left[ \left(2.411 + 0.576 - 0.200 \right)^{1/2} / \sqrt{20} \right] = \\
(0.05) / \left[ \left(2.787 \right)^{1/2} / 4.472 \right] = \\
0.05 / 0.373 = 0.134 \text{ Not significant}
\]

**Colleagues and Nurses**

\[
(3.050 - 2.650) / \left[ \left(0.759 \right)^2 + 1.182^2 - 2 \times 0.607 \times 0.759 \times 1.182 \right]^{1/2} / \sqrt{20} = \\
(0.40) / \left[ \left(0.576 + 1.397 - 1.089 \right)^{1/2} / \sqrt{20} \right] = \\
(0.40) / \left[ \left(0.884 \right)^{1/2} / 4.472 \right] = \\
0.40 / 0.210 = 1.90 \text{ Significant } p < .05 \text{ (1-tailed)}
\]

**Nurses and Patients**

\[
(2.650 - 2.30) / \left[ \left(1.182 \right)^2 + 1.129^2 - 2 \times 0.596 \times 1.182 \times 1.129 \right]^{1/2} / \sqrt{20} = \\
(0.35) / \left[ \left(1.397 + 1.275 - 1.591 \right)^{1/2} / \sqrt{20} \right] = \\
(0.35) / \left[ \left(1.081 \right)^{1/2} / 4.472 \right] = \\
0.35 / 0.233 = 1.502 \text{ Significant } p < .05 \text{ (1-tailed)}
\]
Colleagues and Patients

\[
\frac{(3.050 - 2.30)}{\sqrt{\left(\left(0.759\right)^2 + \left(1.129\right)^2 - 2(0.350)(0.759)(1.129)/20\right)^{1/2}}}
\]

\[
= \frac{0.75}{\sqrt{\left(0.576 + 1.275 - 0.60\right)/\sqrt{20}}}
\]

\[
= \frac{0.75}{\sqrt{1.118}/\sqrt{4.472}}
\]

\[
= \frac{0.75}{0.25} = 3.0
\]

Significant p < .05 (1-tailed)

Administration and Nurses

\[
\frac{(3.100 - 2.650)}{\sqrt{\left(\left(1.553\right)^2 + \left(1.182\right)^2 - 2(-0.123)(1.553)(1.182)/20\right)^{1/2}}}
\]

\[
= \frac{0.45}{\sqrt{\left(2.411 + 1.397 + 0.452\right)/\sqrt{20}}}
\]

\[
= \frac{0.45}{\sqrt{2.064}/\sqrt{4.472}}
\]

\[
= \frac{0.45}{0.461} = 0.976
\]

Not significant

Administration and Patients

\[
\frac{(3.100 - 2.30)}{\sqrt{\left(\left(1.553\right)^2 + \left(1.129\right)^2 - 2(-0.168)(1.553)(1.129)/20\right)^{1/2}}}
\]

\[
= \frac{0.80}{\sqrt{\left(2.411 + 1.275 + 0.589\right)/\sqrt{20}}}
\]

\[
= \frac{0.80}{\sqrt{2.068}/\sqrt{4.472}}
\]

\[
= \frac{0.80}{0.462} = 1.732
\]

Significant p < .05 (1-tailed)