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Organizational Climate and Psychological Ownership in an Advanced Practice Nursing Sample

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ORGANIZATIONAL CLIMATE AND PSYCHOLOGICAL OWNERSHIP IN AN ADVANCED PRACTICE NURSING SAMPLE

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The U.S. healthcare system has a cost-quality paradox with the highest costs and lowest healthcare quality of industrialized nations. APRNs have been posited as a solution to this value dilemma, but existing barriers to practice must be alleviated to make this a reality. Considerable progress has been made toward mitigating federal and state barriers, whereas organizational-level barriers may be intensifying. The Theory of Psychological Ownership defines how work environment psychologically impacts the worker. Work environments that foster high psychological ownership demonstrate improved work performance and outputs. Healthcare organizations such as hospitals restrict APRN activities leading to decreased effectiveness, which in turn may decrease ownership for work. The Theory of Psychological Ownership provides a potential explanatory mechanism for how removing common barriers to APRN practice improves APRN perception of their practice environment, and may improve motivation and performance. This study aims to investigate the relationship of common organizational-level barriers to APRN practice and their perceptions of their practice environment, and the role psychological ownership may play in this relationship.

Using a nested cross-sectional descriptive design, this study consists of a convenience sample survey of hospital CNOs in one state about institution-level APRN scope of practice and APRN's (CRNA, CNM, CNP) perceptions of organizational climate and psychological ownership in the corresponding institution. Structural equational modeling and correlation is employed to investigate the relationship between the APRN practice environment components of actual scope of practice and perceived organizational climate, and whether feelings of psychological ownership play a role in the relationship. Previous nursing research has linked improvement of these components of practice environment to positive nurse and ultimately, patient outcomes. Improved patient outcomes will be the economic driver of future hospital reimbursement. Providing empiric evidence that removing organizational barriers to practice can increase APRN feelings of ownership for, and thereby improve APRN performance and perceptions of their environment, and can provide the motives necessary to help alleviate these indoctrinated obstacles to APRN utilization.

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Introduction

The United States (US) health care system is in the unenviable state of being the most expensive in the world while underperforming relative to other countries on most health performance metrics (Davis, Stremikis, Shoen, & Squires, 2014). In measures of both per capita and percentage of gross domestic product (GDP) spent on health care, the U.S. consumes twice as much as eleven other industrialized countries (Organisation for Economic Cooperation and Development [OECD], 2013). For example, the US spent $8508 per capita (18% of GDP) on healthcare in 2011, while the other OECD countries averaged $4385 per capita (10%). Despite this striking difference in spending, the U.S. ranks last in overall health ranking, achieving the lowest outcomes in vital categories such as life expectancy and infant mortality (Davis et al., 2014). Unfortunately, this problem is amplified in low-income (Davis & Ballreich, 2014) and racially or ethnically diverse populations (Anderson, Ayanian, Zaslavsky, & McWilliams, 2014), where the most vulnerable, underserved individuals reside. This dramatic spending divested of improved health outcomes has sounded alarm bells in the U.S. causing policy makers to reconsider care delivery and propel forward health care reform efforts. The 2010 Affordable Care Act (ACA) is an example of such an effort. The ACA increases health insurance availability for millions of Americans, but critics have questioned its effect on the issues of high cost and poor outcomes, and suggest it may exacerbate the problem by bringing more patients into a system exhibiting poor value (Brill, 2014).

Nurses as a Solution

Recently, The Institute of Medicine (IOM) undertook a landmark study on the U.S. nursing workforce and concluded that an important solution to decrease healthcare costs and increase quality is more effective utilization of registered nurses (RN) and advanced practice registered nurses (APRN) in the delivery of health care (Institute of Medicine [IOM], 2010). The report highlights nurses' potential to lead innovative strategies of system improvement, and recommends incorporating nurses into reform efforts during this nexus of U.S. health care system change. Nurses have been found to be especially effective in improving care in historically underserved areas (Auerbach, et al., 2013). These recommendations align with those put forth by the World Health Organization (WHO) that envisions improved global health impact by increasing the utilization and leadership roles of nurses (WHO, 2010). Both reports acknowledge realization of nurses' contributions to health care system improvement cannot occur, however, without removal of existing barriers to their practice.

Barriers to Nurse Utilization

Many barriers have been identified that interfere with full utilization of nurses' talents, including those of a historical, systematic, educational and demographic nature, but those that may have the greatest impact are regulatory and policy barriers (IOM, 2010). APRN's are RNs who have acquired advanced clinical knowledge and skills through additional education and training, and are certified in one of four recognized roles: certified registered nurse anesthetist (CRNA), certified nurse midwife (CNM), clinical nurse specialist (CNS), or certified nurse practitioner (CNP) (National Council of State Boards of Nursing [NCSBN], 2012). APRN capabilities vary by role. CRNAs

specialize in the administration of anesthesia and related care before, during, and after surgery, as well as pain management (IOM, 2010); CNMs provide primary care to women including gynecological exams, family planning, prenatal care, management of low-risk labor and delivery, and neonatal care; CNSs provide acute and chronic care management as well as quality improvement, education, research, and consultation primarily in acute and long-term facilities; and CNP's care involves taking health histories and providing complete physical exams, diagnosing and treating acute and chronic illness, providing immunizations, and prescribing and managing medications and other therapies in acute, long-term, community, and primary care locations. These advanced practice nurses are educated and trained to deliver these functions independently, and by doing so, APRNs have been singled out as especially critical to health care reform efforts, however regulatory and policy barriers limiting APRN scope of practice and opportunities stymie APRN's contribution to healthcare system improvement. These barriers exist at the federal, state and, organizational level (IOM, 2010).

Federal barriers.

Federal barriers generally involve reimbursement issues, primarily with Medicare and Medicaid regulatory language requiring physician supervision for reimbursement (Safriet, 2010). Although it may be within an APRN's ability to independently examine patients, order and interpret tests, diagnose and treat illnesses, order and prescribe medications and other services, and admit patients to hospitals, The Centers for Medicare and Medicaid (CMS) policies contain language limiting these abilities (Centers for Medicare and Medicaid [CMS], 2014). Additionally, CMS limits the reimbursement rate

of some APRNs to a percentage of the physician rate, thereby discouraging use of independent APRNs, as health care facilities will increase revenues by employing a physician supervision structure. For example, an APRN is reimbursed at 85% of a physician Medicare rate for common services, but 100% if the services are billed *incident to* physician services, which necessitates a physician be on premises in a supervisory capacity during the actual care delivery. Care delivered in this structure is often billed under the physician billing number, rendering APRN care invisible in the process. Given the predominance of Medicare patients in many hospital payer mixes, this rule incentivizes *incident to* billing by creating a financial boon to physician supervision care delivery models, and although this example pertains only to Medicare, Medicaid and private insurers often mirror Medicare payment strategies, perpetuating the issue. Hospitals could deliver care utilizing APRN practitioners in unsupervised delivery models, thereby eliminating the high overhead of the supervising physician salary, however, the CMS policy language limitations, and the 15% decrease in reimbursement reduce incentives for organizations to do so. In both scenarios, the care is delivered by the APRN, it is only the organizational structure in which it is delivered that differs.

Additional federal barriers include limiting APRN roles in national quality initiatives such as the Health Care Home demonstration projects (Mason, Leavitt, & Chaffee, 2012) or Accountable Care Organizations (ACO) (Hart, 2012). Such programs are national healthcare quality initiatives that encourage innovative approaches to healthcare delivery, and provide for financial incentives to their use. Barriers to APRN participation exist primarily due to language in the script of the provisions. If participant language stipulates the term *physician or medical officer*, non-physicians are disqualified

from participation. Changing the word physician to provider opens the program to all forms of eligible providers.

State barriers.

Historically, the United States was one of the first countries to regulate health care providers, and this regulation occurred at the state level (Starr, 1949). Medicine was the first health care profession to create state practice acts, and claimed the entire human condition as the domain of medicine, necessitating other professions *carve out* functions legally state-by-state. Early regulations included limiting the taking of blood pressure or piercing of ears to *physician-only* practice (Safriet, 2010). Health care practices have undergone many changes over the years, and many of these early limitations have eased, but the legal requirement of physicians to supervise or direct other health care professions, along with the authority to delegate tasks to non-physicians persists.

Scope of practice is a phrase commonly used by healthcare professions in bylaws, position statements, model practice acts, and standards of practice. Definitions vary, but an example of a fairly simple one is the American Nurses' Association's, "…the 'who', 'what', 'where', 'when', 'why', and 'how' of nursing practice, including advanced practice nursing." (American Nurses' Association [ANA], 2001, p. 3). Although nurses' scope of practice is not limited to issues at the state level, many discussions regarding scope of practice concern state laws that determine *legal* scope of practice (Kleinpell, Hudspeth, Scordo, & Magdic, 2011). States enact APRN scope of practice regulation primarily through nurse practice acts that describe in broad language what practice authority is granted to APRNs in that particular state. State-level barriers tend to involve restrictions on licensed scope of practice limiting such things as authority to prescribe

medications, admit patients to hospitals, assessment of patients, and evaluating tests and procedures (Safriet, 2010). Additional limitations include requirement of supervision by another profession, such as medicine or pharmacy. A myriad of state laws govern APRN practice, with some states allowing for independent practice of APRNs, and others limiting APRN practice to restricted activities and requiring physician oversight. The effect of this inconsistency mean a CNP practicing in Oregon can independently diagnose and treat patients, write prescriptions, order physical therapy or sign a death certificate, yet if (s)he chooses to practice across the state line in California, all noted activities must be supervised by a physician, and (s)he is explicitly forbidden to sign a death certificate (Barton Associates, 2014). Adding this additional layer of provider increases cost and decreases efficiency although the competence and safety of the APRN has not changed.

Organizational barriers.

Above and beyond federal and state barriers, restrictions exist at the organizational level. Considerable attention is being directed at efforts to remove practice barriers at the federal and state level, but barriers at the organizational level have received much less examination (Lundstrom, Pugliese, Bartley, Cox, & Guither, 2002; Poghosyan, Nannini, Finkelstein, Mason, & Shaffer, 2013a) and, in fact, it has been suggested that recent consolidation of health care facilities has increased organizational barriers to APRN practice (Neft, Okechukwu, Grant, & Reede, 2013). Theoretically, all barriers can be removed from the federal and state levels, and APRN contributions to improving the U.S. health care system will still not be realized if barriers continue at the facility level, where the care is actually delivered. APRNs work in many different settings including hospitals, home care, offices, community centers, ambulatory surgery centers, schools,

and long term care facilities, and organizational barriers may occur in any of these settings, but the focus of this research will be acute care organizations, such as hospitals and medical centers. Hospital organizational level barriers result from a complex interplay of structural, cultural, and economic factors that interact to effect APRN practice.

Structural barriers primarily consist of constraints hospital bylaws place on APRN practice (Brassard & Smolenski, 2011; Kleinpell et al., 2014) with rules promulgated in areas such as organizational hierarchy, credentialing and privileging documents, and policy and procedure guidelines. Organizational structural features such as lack of APRN representation in reporting lines to higher level management, lack of influential committee membership, and centralized leadership impact APRN effectiveness. This leads to absence or exclusion of APRNs in key decision-making venues which in turn, diminishes visibility and voice (Safriet, 2010).

Organizational barriers are also impacted by culturally ingrained historical praxises that lead to lack of acceptance of the advanced practice nursing role by medicine, administration, other nurses, and various hospital staff (Ball & Cox, 2004; Sidani & Irvine, 1999). Nursing was traditionally a female subservient occupation without recognized revenue-generating capabilities, which diminished leadership and decision-making roles in healthcare organizations (IOM, 2010; Safriet, 2010). Although APRNs now enter the workforce willing and qualified for involvement at a higher level of system engagement, the weight of this historical perspective is still evident (IOM, 2010). In addition, many professional medical associations object to removing existing APRN barriers at all levels: federal, state, and organizational, holding that only

physicians have historically held responsibility for patient's healthcare, and this should not change (Safriet, 2010). This message, when absorbed by physicians working alongside APRNs, can lead to the insistence that advanced practice nurses lack education and competence to effectively lead quality patient care. Combining physician opposition with administration, RN, and other hospital personnel reluctance to accept APRN leadership roles also contributes to organizational level APRN barriers (Brown, 2003; Cummings, Fraser, & Tarlier, 2003).

Additionally, external factors influence organizational barriers including economic reimbursement policies (Hain & Fleck, 2014; Kunic & Jackson, 2013; Malina & Izlar, 2014; Sidani & Irvine, 1999). Insurer, managed care, and credentialing body (such as Joint Commission) rules often contain language which render APRNs ineligible for reimbursement for care that, when provided by physician counterparts, yields payment (Safriet, 2010). But it is not only external economic factors influencing APRN practice. In a 2009 study of healthcare executives, only 40% thought nurses were revenue generators, compared with 94% for physicians (AMN Healthcare, 2009), and a 2015 survey reported only a few organizations billed for APRN services, even when they could (Anen, 2015), further cementing the idea of APRNs as a financial burden. When APRNs are not viewed as revenue generators, they are excluded from decision-making processes about billing and payment, therefore payment schemes do not adequately measure, value, or capture their services, further perpetuating the inefficiencies (RWJF, 2010).

Not only do organizational barriers impact APRN efficiency and effectiveness in the organization, they can also diminish the psychological value APRNs perceive for

their work. The greatest barrier to practice appears to be the level of physician supervision over APRN practice (Devi, 2011). Lack of control resulting from physician oversite of APRN work has been linked to lower job satisfaction and increased intent to leave current positions (DeMilt, Fitzpatrick, & McNulty, 2011) which impacts an organization financially not only through turnover costs but may also decrease APRN performance. Perceptions of value and importance in an organization impact worker self-esteem, motivation and performance (Dipboye, 1977; Korman, 1976).

An example of how structural, cultural, and economic factors in an organizational environment can interact to create barriers to APRN practice can be seen in the hospital privileging process. When a physician or an APRN wishes to practice at a hospital (s)he applies for privileges and enters the credentialing and privileging process (Brassard & Smolenski, 2012). Credentialing is the process of verifying education, training, licensure, certification, and experience, whereas privileging is the delineation of what activities (or *privileges*) the individual will be allowed to perform in the institution. APRN privileges essentially describe the APRN organizational scope of practice, which details specific activities that an APRN may perform in a given organization, and can be more restrictive than federal or state scope of practice, but not less (Kleinpell et al., 2011). The rules for the hospital's credentialing and privileging process are generally delineated in hospital bylaws and determined in a committee-type structure (Kleinpell, 2008). Rules such as what credentials are necessary to be granted certain privileges (e.g. only physicians may admit patients to the facility) or designation of levels of medical staff privileges (e.g. non-physicians are not eligible for full medical staff appointment) can greatly influence an APRN's scope of practice in the institution, and are often a reflection of which

professions are involved in the rule-making committee. If cultural bias exists in the organization against APRN leadership on such influential committees, APRNs will lack decision-making involvement in the privileging process (Brassard & Smolinski, 2012; Safriet, 2011). Additionally, the inability of a hospital to bill for an APRN activity, or prohibition by a credentialing body or managed care group for APRNs to perform certain activities create economic pressures against the privileging of these activities in the organization (Hodges, 2009).

Work Environment Research

As is evident by the above discussion, APRN organizational-level barriers involve factors in the work environment that act to restrict APRN utilization. Industrial psychologists and organizational behavior scientists have long-studied the effects of where a person works on the work that they do. One of the earliest studies in the Western Electric Company carried out in 1920s and 30s emphasized findings that the performance of employees is influenced as much by their surroundings and co-workers as by their own innate abilities (Roethlisberger, 1940). This was a revolutionary finding in the industrial research field, as earlier studies tended to focus on individual-level contributions to performance. Since that time, the field has matured and evolved to encompass many different and competing terms all describing the effects of the worker environment on the worker (Sleutel, 2000). Terms such as work environment, organizational culture, organizational climate, job context, job environment, task environment, and practice environment are used, often interchangeably and with overlapping definitions, to describe

this idea. In nursing research, the term practice environment, or professional nurse practice environment are observed most commonly.

Organization work environment is a broad idea that can be conceptualized as actual organizational traits in combination with employee perceptions and responses to these traits (Tragunno, 2005). Work environment is a more global concept than either organizational culture or climate, the two most common descriptors of the environment concept used in research (Sleutel, 2000). Both organizational climate and culture evolved from early organization literature in the 1930s, but each construct followed a very different research trajectory (Table 1.) (Reichers & Schneider, 1990). The following paragraphs highlight these differences.

Organizational climate.

Organizational climate research finds its roots in psychology and Lewin Field Theory (Reichers & Schneider, 1990). Lewin described behavior as a function of both environment and person (Lewin, 1951). Although mentions of the *climate* term can be found as early as 1939, Litwin and Stringer (1968) first *defined* the concept as "a set of measurable properties of the work environment, perceived directly or indirectly by the people who live and work in this environment and assumed to influence their motivation and behavior" (p.1). One investigation into the climate concept identified 54 unique definitions (Verbecke, Volgering, & Hessels, 1998), with most including a component of an employee's perception of their work environment characteristics. After introduction of the defined concept in 1968, applied psychologists exhibited immediate interest and a flurry of studies emerged in the 1970s and 80s (Denison, 1996; Reichers & Schnieder, 1990). Studies primarily assumed quantitative methodologies utilizing employee surveys

with little attempt at theoretical or conceptual exploration. Interest in organizational climate research began to wane in the 1980s as problems with concept delineation and level of measurement issues arose (Schneider, 2013).

Organizational culture.

As interest is organizational climate waned, organizational culture surfaced. Organizational culture research, in contrast to climate, emerges from anthropology, and, as such, employs primarily qualitative ethnographic methodologies (Schein, 1990). Schein (1990) defines organizational culture as a pattern of assumptions created by a group as it learns to cope with its problems of external adaptation and internal integration. He further emphasizes that culture is a more global, deeply rooted, and somewhat unconscious organizational concept than climate, which is nearer to the surface, concrete, and measurable. As with climate, organizational culture was originally posited in industrial research in the 1930s, but not defined or introduced as a concept until Pettigrew in 1979. Interest in the concept exploded in the 1980s when researchers and popular non-fiction authors coined terms such as *Corporate Culture*, while contrasting the differences in culture and success of Japanese versus American companies (Denison, 1996; Schein, 1990).

Climate and culture congruency.

Although much has been made about the differences between organizational climate and culture, there are those that believe they are different perspectives on the same phenomena (Clarke, 2006; Denison, 1996). Citing evidence of overlapping concepts and definitions, some have argued that climate is actually a measureable

manifestation of the more abstract concept of culture (Pettigrew, 1979). Regardless of the title of the concept, Sluetel, in an extensive 2000 review of the effect of work environment on nurses, determined that, similar to findings in other fields, work environment has an impact on the work that nurses do, and should remain a vital topic of research.

Levels of measurement.

Organizational climate has witnessed a resurgence of popularity in the last decade due in no small part to the resolution of level of measurement issues. Early researchers simplified measurement of organizational climate by surveying individuals and applying a mean of scores to identify a higher level concept (Kuenzi & Schminke, 2009). Much criticism was waged regarding this practice arguing lack of construct validity, and research, as previously mentioned, stalled in the wake of this criticism. If many divergent scores were obtained on a climate measure, could these be averaged to describe the construct of *organizational climate*? Theorists began to recommend some degree of consensus be present at the individual level before the concept can be elevated to a higher level construct. According to Kuenzi & Schminke (2009), as climate reflects a shared perception, individual agreement is a prerequisite of a *climate*, and lack of consensus indicates lack of a climate. Therefore, some researchers feel agreement at the individual level is a precursor to aggregating scores to the higher level of construct measurement.

Several statistical tests have been suggested to quantify consensus at the individual level and justify aggregation to the higher level, including the index of within-group agreement ($r_{wg)}$, eta-squared, Intraclass Correlation (ICC), and Within and Between Group Analysis (WABA) (Klein & Kozlowski, 2000; Kuenzi & Schminke, 2009). The

common element in all is some index of within-group homogeneity in scores. Statistical measurements differ in their inclusion of a comparison of within-group versus between group variability, and sensitivity to sample size, see Table 2 for a description of the various tests. Regardless of which statistical measures are used, some researchers recommend at least one or more of these tests be used with a cut-off point designated to justify aggregation of individual results to a higher level (Kuenzi & Schminke, 2009; Schneider, Ehrhart, & Macy, 2013).

An alternative contemporary method of construing organizational climate is the concept of climate strength. Climate strength uses a dispersion method of measuring variability of individual scores (Chan, 1998; Schneider, 2013). Instead of a cutoff value designed to determine construct validity, this variability is used to determine to what degree climate actually exists in a group or organization. High degree of individual variability designates low or no climate, whereas low individual variability indicates high individual agreement and therefore, high organizational climate.

Practice Environment in Nursing Research.

As previously mentioned, scientists have long studied the effects of work environment on worker behavior, and nursing researchers make important contributions to this body of work (Sleutel, 2000). In nursing research, practice environment has been described as 'the organizational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178). Another way to envision nursing practice environment is, "the physical-social-psychological characteristics of a

work setting" (Chan & Hauk, 2004). Practice environment factors that impact nursing have been shown to profoundly affect nurse outcomes and patient outcomes. Much of the early nurse practice environment findings came out of Magnet Hospital research, which study the characteristics of hospitals known to provide good working environments for nurses. (McCLure, Poulin, Sovie & Wandelt, 1983; McClure & Hinshaw, 2002). Consistent relationships have been found between environmental factors and nurse outcomes such as increased autonomy and increased job satisfaction (Finn,2001), increased autonomy and decreased turnover (Aiken & Fagin, 1997), increased empowerment and decreased job strain/increased job satisfaction (Larrabee, et al., 2003; Laschinger, 2001), higher control over practice and decreased job stress/strain (Almost & Laschinger, 2002; Freeborn, Hooker, & Pope, 2002), improved physician-nurse relations and increased job satisfaction and decreased turnover intention (Galletta, Portoghese, Penna, Battistelli, & Saiani, 2011; Zangaro & Soeken, 2007)), and supportive leaders and decreased turnover (Tuckett, Winters-Chang, Bogossiah, & Wood, 2014) to name a few. Likewise, good practice environments have also been associated with improved patient outcomes such as fewer adverse events (Aiken, et al., 2011), decreased mortality (Estabrooks, Midodzi, Cummings, Ricker, & Giovannetti, 2005; Kazanjian, Green, Wong, & Reid, 2005), and improved patient safety (Laschinger & Leiter, 2006).

As can be ascertained from the documented nurse outcomes, evidence is mounting that practice environmental characteristics such as control over practice and supportive leaders psychologically impact nurses. APRN research has demonstrated similar findings. Control over one's work appears to offset the psychological demands of

NP work (Almost & Laschinger, 2002). Autonomy and collaboration are significant predictors of NP job satisfaction (Byers, Mays, & Mark, 1999). The combination of empowerment and Magnet characteristics were a significant predictor of NP job satisfaction (Laschinger, Almost, & Tuer-Hodes, 2003). The relationship between CRNA work climate and work context on job turnover was mediated by burnout and job satisfaction (Meeusen, Van Dam, Brown-Mahoney, Van Zundert, & Knape, 2011a). Strong relationship have been found between challenge/autonomy and NP job satisfaction (Pasaron, 2013). These findings all support the connection between APRN practice environment and important psychological constructs linked to APRN performance (Korman, 1977).

To summarize, work (or practice) environment is a global concept that, according to Tragunno, describes both an organizations traits and worker perceptions of these traits (2005). Whereas, organizational climate is a more specific term used to describe perceptions of the worker about the work environment (Reichers & Schnieder, 1990). A measure of an organizations traits affecting APRNs could be the scope of practice in the institution, as this describes what the nurse is actually permitted to do in the facility (Kleinpell et al., 2011). This study investigates the global APRN practice environment using two domains: the hospital's scope of practice to measure an organizational trait and organizational climate to measure perceptions of the organization and determine the extent of the relationship between the two domains.

APRN scope of practice.

As part of the practice environment of an institution, hospital bylaws describe the process by which privileges an individual APRN is granted to perform in that institution

are determined (Brassard & Smolenski, 2011; Kleinpell, Hravnak, & Hinch, 2008; Magdic & Hravnak, 2005). These privileges delineate the applicant's *scope of practice* for that institution. Scope of practice, in the institutional context, refers to the actual activities the individual is allowed to perform in that institution, and can be more restrictive than state law permits, disallowing some legally permissible activities or requiring physician supervision for others (Brassard & Smolenski, 2011). Hospital privileges were originally only applicable to physicians, however, in 1983, the Joint Commission on Accreditation of Healthcare Organizations (Joint Commission) allowed hospitals to open medical staff membership to non-physician providers such as APRNs and physician assistants (PA), and in 2011, required hospitals privilege non-physician providers through the same process as physicians. However, facilities may privilege non-physicians as less than active medical staff with restrictions on duties, require provisions for medical oversight, and allow no representation on governance committees or boards leading to barriers to practice that impede effective APRN utilization.

Organizational climate in nursing.

Organizational climate is broadly defined as, "the meanings people attach to interrelated bundles of experiences they have at work" (Schneider, Ehrhart, & Macey, 2013, p. 361). Organizational climate in nursing can be thought of as nurses' *perceptions* of their actual practice environment (Parker, et al., 2003; Rousseau, 1988). Hospital level factors that impact RN organizational climate have been identified as leadership, group behaviors and structural components (Aiken, Sloane, & Sochalski, 1998; Gershon, Stone, Bakken, & Larson, 2004). Expanding the concept to the advanced practice realm, Poghosyan et al. (2013b), in a qualitative study of organizational climate domains in CNP

primary care setting, concluded that CNP-physician relations, independent practice and autonomy, professional visibility, organizational support and resources, and CNP-administration relations described the CNP organizational climate. It can be appreciated that significant overlap exists between these organizational climate factors and those that have been identified as constituting organizational barriers.

Gaps in Literature

Over forty years of nursing research links improved nurse practice environments to positive nurse and patient outcomes (Sleutel, 2000). However, the effects of nurse practice environment on advanced practice registered nurses (APRN) is less established. Although APRNs share commonalities with RNs, many differences exist in the workplace environments of the two groups (Faris, Douglas, Maples, Berg, & Thrailkill, 2010), therefore RN practice environment research may not translate to the APRN arena. There is a need to synthesize the research surrounding APRNs and their practice environment to describe the current state of the science**.**

Additionally, although relationships between RNs improved practice environment and improved outcomes have been documented, the underlying reason for this relationship is not well understood, with the putative explanation that improving organizational structure improves organizational processes, which in turn improves organizational outcomes, and that empowering the worker leads to improved ability to accomplish organizational goals (Laschinger, 1996; Laschinger, Almost, & Tuer-Hodes, 2003). A more nuanced explanation could be realized through the Theory of Psychological Ownership, which postulates that improving structural components of an organization and empowering the worker creates feelings of ownership, and the worker

becomes personally invested in the outcomes (Pierce, Kostova, & Dirks, 2001). This study aims to investigate the role psychological ownership may play in the APRN practice environment, and hypothesizes a mediating role between APRN scope of practice and perceptions of organizational climate. This study will test the following hypotheses:

Hypothesis 1. There is a positive relationship between a broad APRN scope of practice as reported by CNO's and APRN's perceptions of organizational climate (Fig.1c)
Hypothesis 2. There is a positive relationship between a broad APRN scope of practice as reported by CNO's and APRN's perceptions of psychological ownership (Fig. 1a)
Hypothesis 3. There is a positive relationship between APRN's perceptions of psychological ownership and APRN's perceptions of organizational climate. (Fig. 1b)

Theoretical Underpinnings

Theory of Psychological Ownership

In the 1990s Jon Pierce and colleagues proposed the Theory of Psychological Ownership, which describes the psychological state of an employee's attachment to work issues (Pierce, Kostova, & Dirks, 2001). Psychological ownership is a state of mind that leads individuals to feel a target of ownership is "theirs", or an extension of oneself (Pierce & Jussila, 2011). The Theory of Psychological Ownership has identified three main motives, or *roots* of feelings of ownership: 1) efficacy and effectance, 2) self-identity, and 3) having a place or home. It has long been recognized that humans have an innate need to feel effective, or useful, and controlling an object is one way to fulfill this

need (Isaacs, 1933). In addition, possessions can serve as symbolic expressions of one's self- an outward expression of one's uniqueness (Dittmar, 1992), and therefore, self-identity constitutes the second root or reason to possess. Finally, the feeling of possession, or having, creates a space in which one can inhabit or dwell, another recognized basic human need (Heidegger, 1927/1967; Duncan, 1981). These three roots describe the motive for psychological ownership, and organizational behavior research has demonstrated these roots exist in organizations (Pierce & Jussila, 2011).

Just as important as why feelings of psychological ownership develop is how they do. The Theory of Psychological Ownership proposes three *route*s or paths humans take in the formation of these feelings toward a target: control, intimate knowledge, and self-investment (Pierce & Jussila, 2011). In one or more of these routes, a path is forged for creation of psychological ownership toward a target. Organizations provide opportunities for development of psychological ownership by allowing employees control over their own work environments, promoting access to knowledge about the job to more intimately connect the employee to the job, and encouraging investment of oneself into the job through inclusion of the employee's ideas, skills and physical and psychological energies.

Research has linked such positive workplace outcomes such as internal and intrinsic motivation, job satisfaction, organizational commitment and self-esteem, experienced responsibility, improved in-role and extra-role performance, increased personal sacrifice and acceptance of change as a result of psychological ownership of a job (Pierce & Jussila, 2011). Of the positive outcomes noted, it is the experienced responsibility that is most relevant to patient care. Psychological ownership links the organization or job to the employee, leading to a heightened sense of responsibility for

work outputs. The worker *owns* the output. Work outputs, in the context of nursing, are patient outcomes, the implication being a nurse who develops psychological ownership for her job will feel an increased sense of responsibility for the health outcomes of the patient.

Nursing and Psychological Ownership

Although the Theory of Psychological Ownership is relatively new, it has been used many times as a theoretical basis for research in the areas of business and technology. A literature research revealed two results of psychological ownership research involving nursing: one in Korean without English translation (Yoo, & Yoo, 2012), and one study in Malaysia that found psychological ownership mediated the relationship between spiritual and emotional intelligence and caring behavior (Kaur, Sambasivan, & Kumar, 2013). It is surprising, given the long-standing nursing research interest in many antecedents and consequences of the Theory of Psychological Ownership, that more studies have not employed it. Studies of the relationships between autonomy and job satisfaction (Finn, 2001; Shoham-Yakubovich, Carmel, Zwanger, & Zaltcman, 1989; Zangaro & Soeken, 2007), autonomy, control over practice and patient outcomes (Wall, 2010), autonomy and patient outcomes (Kazanjian, et al., 2005), organizational commitment and job satisfaction (DeGieter, Hofmans, & Pepermans, 2011; Gutierrez, Candela, & Carver, 2012), responsibility and work motivation (Toode, Routasalo, & Suominen, 2011), among others are frequently reported in nursing. These commonalities between the factors involved in psychological ownership and factors important to nursing research warrant further investigation.

Position of this Study in the Nursing Research Field

The overarching aim of this dissertation is to fill a void in the nursing research literature by investigating the impact of APRN scope of practice on organizational climate perceptions and exploring a possible mechanism of action, psychological ownership by examining its relationship to elements of APRN practice environment. The research will focus on the APRN population in the acute care setting. This dissertation will also examine the psychometric properties of The Psychological Ownership Questionnaire, an instrument designed to measure psychological ownership routes and presence, in the acute care APRN population. The presentation of the dissertation will be organized as three manuscripts to be submitted for peer-reviewed publication. Each manuscript has its own Specific Aims.

Manuscript 1: Practice Environment in Advanced Practice Nurses: An Integrative Review

Specific Aim - Summarize the extant research related to practice environment in the population of APRNs to identify what is known, consider gaps in the literature, and suggest logical next steps forward. This literature review uses the integrative review approach recommended by Whittemore and Knafl (2005). The following questions frame this review: 1) what study designs and methodologies are used to study APRN practice environments, 2) what is the level of evidence, 3) what variables are used in quantitative studies, and, 4) what are the key findings in the research.

Manuscript 2: Psychometric Properties of the Psychological Ownership Questionnaire in a Sample of Advance Practice Nurses

Specific Aim – to acquaint the nursing community to the Theory of Psychological Ownership, and report the psychometric functioning of the Psychological Ownership Questionnaire in an Acute Care APRN Population.

Manuscript 2 reports the Psychological Ownership Questionnaire (POQ) reliability and confirmatory factor analysis (CFA) results from the dissertation study. This manuscript introduces the Theory of Psychological Ownership to the nursing community, and describes how the concept relates to previous nursing practice environment research. The functioning of the four-factor POQ in the current study in an APRN population is reported, including psychometric properties to establish construct validity. Discussion of the results and recommendations for further research follows measurement description.

Manuscript 3: APRN Practice Environment and Psychological Ownership in an APRN Population

Specific Aim- To investigate the effect of APRN practice environment on perceptions of organizational climate and psychological ownership in an acute care APRN population.

Manuscript 3 reports the results of testing the three hypotheses of the dissertation study, including an abbreviated literature review, methods, analyses, results, discussion, limitations, recommendations for further research, and conclusion (Fig. 1).

Dissertation Study Methods

This is an analytic cross-sectional multilevel study with level one as hospital unit of analysis and level two as APRN level analysis. (Fig.1) Structural equation modeling (SEM) is used because the key APRN concepts of organizational climate and psychological ownership in the study are inherently latent (perception), and SEM permits assessment of how well a measure reflects intended latent constructs through the CFA component (Kelloway, 2015; Kline, 2011). In addition, SEM allows for distinction of error attributable to measurement from that due to model fit (i.e. hypothesis of predictions among constructs), whereas other statistical measures do not account for the possibility of error in measurement (Iacobucci, 2009; Kelloway, 2015).

Participants

Calculating sample size in SEM is a controversial subject, and to date, a universally accepted formula has not been developed (Kline, 2011; Waltz, Strickland, & Wenz, 2010; Westland, 2010). It is suggested that sample size depends on the anticipated measurement quality determined by factor structure and loadings (Waltz, Strickland, & Wenz, 2010). In this study, a standard α of .05, and β of .8 are used, with a minimum of 30, and a preferred number of 100 hospitals targeted to determine a medium effect size. *Hospital level data*: The sampling frame consists of a convenience sample of all acute care hospitals in Florida. The rationale for sampling all hospitals is to maximize survey responses, since SEM requires sufficiently large subsamples to conduct a multi-group analysis. Data was collected at the hospital level from acute care hospital Chief Nursing Officers (CNO) obtained from the American Organization of Nurse Executives databases.

APRN level data: The sampling frame consists of a convenience sample of all APRNs in a responding hospital. APRNs were surveyed for perceptions of psychological ownership and organizational climate with the two measures discussed below.

Specific measurement procedures and analyses will be introduced in the following sections, but are fully discussed in manuscript three.

Measures

Hospital Level

Hospital Characteristics: CNOs were asked to complete a hospital characteristic survey identifying such items as hospital size, location (urban, suburban, rural), teaching status, number of APRNs in facility, ownership status, etc..

Scope of Practice: The CNOs completed a researcher-created survey which specifies which APRN practices are permitted in the hospital (e.g. ability to write admission orders, write discharge orders, or order medications). These items have been described as a benchmark of hospital APRN scope of practice (Anen, 2015, Chumbler, Geller, & Weier, 2000). A composite scope of practice score was obtained for each hospital, weighted for independence of the activity permitted in the hospital, with higher weights given for independent activity, and lower weights for activities permitted, but requiring a physician co-signature *(3-independent, 2-with co-signature, 0-not permitted, range 0-30*). A practice visibility score was obtained by adding visibility items. Higher scores indicated more scope of practice and practice visibility (*1-inclusion of APRN, 0- no inclusion, range 0-4*).

APRN Level

CNP Characteristics: APRNs were asked to complete a demographic survey containing items such as age, gender, education level, APRN type, years of RN practice, years of APRN practice, and length of time at current position.

Organizational Climate: APRN perceptions about organizational climate were measured by The APRN Organizational Climate Questionnaire, a 28-item tool originally designed for use in Primary Care APRNs (Poghosyan et al., 2013a) that was adapted for APRNs in the acute care setting. Items are scored on a 4 point Likert-type scale (*1-strongly agree, 2-agree, 3 disagree, 4 strongly disagree*). A composite Organizational Climate score was tallied with lower scores indicating greater perceptions of organizational climate. Example items include, "I feel valued by my organization" and "Administration is well informed of the skills and competencies of APRNs". Internal consistency reliability reported an overall Cronbach's α of above .90, with subscale alphas of Professional Visibility .87, NP-Administration Relations .95, NP-Physician Relations .90, and Independent practice and support .89 (Poghosyan, Nannini, Stone, & Smaldone, 2013).

Psychological Ownership: Psychological ownership was measured by the Psychological Ownership Questionnaire, a 21-item tool designed to measure the degree of routes to, and presence of psychological ownership of one's current job (Brown, Pierce, & Crossley, 2014). Items are scored on a 4 point Likert-type scale (*1-strongly agree, 2-agree, 3-disagree, 4-strongly disagree*). The 4-factor subscale was originally measured using a 7-point Likert-type scale, however, for this study the scale was shorted to 4-points for consistency with the APRN-OCQ. Example items include "I have invested many of my ideas into this job", and "I sense that this job is MINE". Initial reliability testing on this

measure reported Cronbach's α for subscales as .92 for Intimate Knowing, .92 for investment of self, .94 for experienced control, and .96 for psychological ownership (Brown, Pierce, & Crossley, 2014).

Pilot Testing of Procedures

Small scale pilot testing is suggested to assure a measure is easy to understand and contains the required data elements (Waltz, Strickland, & Lenz, 2010). The Level One CNO survey was pilot tested with four former nurse administrators. Three surveys were returned, and respondents agreed that the survey length was appropriate and CNOs should have the knowledge regarding survey content. Verbiage was changed on two questions to increase ease of understanding based upon respondent feedback. One pilot CNO survey was not returned. The Level two APRN survey was pilot tested with four APRNs with experience in acute hospital practice environment, and all were returned. Respondents agreed survey length and content were appropriate. Two demographic questions were altered for ease of understanding.

Analyses

Analyses of hospital and APRN characteristics were performed to describe study samples.

The analyses plan was to study the hypothesized model using SEM techniques with maximum likelihood estimation using Mplus 7.3 (Muthen & Muthen, 1998-2012). SEM proceeds in two stages: the first stage assesses the construct validity of latent variables (Organizational Climate and Psychological Ownership) through confirmatory

factor analyses, and the second stage tests the actual structural equation model (Kline, 2011). A unique aspect of SEM is that it allows researchers to examine the independent *and* interactive effects of variables measured at different levels (Hayes, 2006). This is an advantage over other statistical methods such as regression or ANOVA, which assume independence of variables. Since multi-level or nested studies (in this case APRN-level nested within the hospital level) by nature have some degree of interdependence (i.e. the hospital the APRN works in will have some effect on the APRN scores), this assumption cannot be met. SEM does not have the assumption of independence, therefore is a good statistical method for this study.

Stage I of SEM is based on 1) a CFA testing the previously described four-indicator model of the revised APRN-Organizational Climate Questionnaire in the current study population, and 2) a CFA testing the previously described four-indicator model of the Psychological Ownership Questionnaire in the current study population. Manuscript 2 describes the results of the psychological ownership questionnaire.

Stage 2- Path Analysis as depicted in Figure 1. A detailed explanation of the analyses is presented in Manuscript 3.

Summary

APRNs have been posited as a solution to America's healthcare cost/quality dilemma, but existing barriers must be alleviated to make this a reality. Progress is being made in relieving federal and state barriers, however organizational-level barriers have received little attention, and may even be expanding. The 2010 IOM Future of Nursing Report was the result of an exhaustive 2-year study of nursing's role in U.S. healthcare.

The IOM report concludes that allowing nurses to practice to their full capacity of education and training (i.e. reducing scope of practice restrictions), and make autonomous decisions where care is delivered (i.e. reducing structural and cultural barriers) will improve healthcare quality. Allowing for autonomous decision-making at the bedside is consistent with organizational behavior research findings that less structured, more autonomous work environments are associated with positive employee attitudes and behaviors (Brown, Pierce, & Crossley, 2014; Pierce & Gardner, 2002), however outdated organizational structural and cultural practices in healthcare settings impede that possibility. Organizations, with their ingrained historical conventions, will require a motive to change this culture. We are entering an era of healthcare reform where hospitals will be paid based on quality of delivered care, not volume (Blumenthal & Jena, 2013). Decades of RN research have shown that improving nurse practice environments improves both nurse and patient outcomes. Empirical evidence linking improved APRN scope of practice to improved APRN practice environment and supplying an explanatory mechanism for this link could furnish the incentive to improve this environment and eliminate unnecessary barriers to practice, thereby improving not only the financial climate of the organization, but the U.S. healthcare system overall.

Chapter 2

Literature Review: Practice Environment in Advanced Practice Nurses

Background

Over forty years of nursing research links improved nurse practice environments to positive nurse and patient outcomes (Sleutel, 2000). Improved patient outcomes are a primary focus of recent reform efforts, and the economic driver of future healthcare reimbursement, so identifying associated factors holds substantial relevance. Research on nurse practice environment has a long history, however, the effects of practice environment on advanced practice registered nurses (APRN) is less established. Although APRNs share commonalities with RNs, many differences exist in the workplace experience of the two groups (Faris, Douglas, Maples, Berg, & Thrailkill, 2010), therefore RN practice environment research may not translate to the APRN arena. There is a need to synthesize the research surrounding APRNs and their practice environment to describe the current state of the science.

Many overlapping terms are used to discuss work setting including organizational climate, organizational culture, work environment, and work context (Sleutel, 2000). The most common nursing research term is practice environment. In addition to the confluence of applicable terms, many notable theories have influenced this body of work, the detailed description of which is outside the scope of this text. Theories frequently applied in nursing research include Frederick Herzberg's 2-Factor Theory (Herzberg, 1966) and Hackman and Oldham's Job Characteristics Theory (Hackman & Oldham, 1980;), which address job design, Rosabeth Kantor's Theory of Organizational Empowerment, encouraging empowering work environments (Kanter, 1977); and Peters

and Waterman's Organizational Culture of Excellence Framework (Peters, Waterman, & Jones, 1982) that delineates factors common to high-performing businesses (Table 3). Elements of these theories often appear as variables in nursing practice environment studies.

Magnet hospital research, focused on characteristics of hospitals with exemplary nurse practice environments, also influences variables in quantitative research (McClure & Hinshaw, 2002). Magnet designation is based upon meeting 14 Forces of Magnetism (Table 3), recently condensed into 4 key components: structural empowerment; transformational leadership; exemplary professional practice; and new knowledge, innovations, & improvements (American Credentialing Center [ANCC], 2015). Magnet practice environments have been associated with improved patient outcomes such as higher levels of patient safety, fewer adverse events, and decreased mortality (Aiken, et al., 2011; Kazanjian, Green, Wong, & Reid, 2005; Kutney-Lee, et al., 2015).

The original tool designed to measure Magnet hospital characteristics was the Nursing Work Index (NWI) (Kramer & Hafner, 1989), revised (NWI-R) in 2000 (Aiken & Patrician, 2000), and updated to the Essentials of Magnetism (EOM) tool in 2004 (Kramer & Schmalenberg, 2004). Additionally, Lake developed a scale specifically measuring practice environment characteristics in Magnet hospitals, the Practice Environment Scale (PES of the NWI) (Lake, 2002). Outside of Magnet research, the revised Conditions of Work Effectiveness tool (CWE-II), Job Activities Scale (JAS-II), and Organizational Relationships Scale (ORS-II) measure practice environment factors in the context of Kanter's Theory of Organizational Empowerment (Laschinger, Sabiston, & Kutzscher, 1997). These tools are regularly used to measure nurse practice environment.

Measures of practice environment in APRNs are less bountiful. Two research teams created measures focused on nurse practitioner (NP) practice environment: Lucine Pogoysan and colleagues developed the Nurse Practitioner Primary Care Organizational Climate Questionnaire focusing on NPs in primary care settings (Poghosyan, Nannini, Finkelstein, Mason, & Shaffer, 2013), and Misener & Cox (2001) developed the Misener Nurse Practitioner Job Satisfaction Scale (MNPJSS) that rated NP job satisfaction with several practice environment characteristics. These tools, plus revisions of Magnet-based RN practice environment tools are most frequently used in APRN practice environment studies.

The United States healthcare system is currently facing a fiscal and quality crisis leading to unprecedented reform efforts (Institute of Medicine [IOM], 2010). APRNs have been singled out as especially critical to improving the healthcare system during this time of rapid transformation however, barriers have been identified in practice environments that impede this realization. Consequently, research on APRN practice environments is particularly relevant at this time. The purpose of this article is to synthesize the research surrounding APRN practice environments to describe current state of the science.

Methods

This literature review employs the Whittemore and Knafl (2005) integrative review approach. Eileen Lake's definition of practice environment, "the organizational characteristics of a work setting that facilitate or constrain professional nurse practice." (2002, p. 178) guides the review. The aim is to summarize the extant research related to practice environment in the population of APRNs to identify what is known, consider

gaps in the literature, and suggest logical next steps forward. The following questions frame this review: 1) what study designs and methodologies are used to study APRN practice environments, 2) what is the level of evidence, 3) what variables are used in quantitative studies 4) what themes are identified in qualitative studies, and 5) what are the key findings in the research.

Literature Search

Whittemore and Knafl (2006) recommend at least two literature search strategies for integrative literature reviews. In this review, first computer-based searches were conducted in the Cumulative Index to Nursing and Allied Health (CINAHL), Pubmed, and PsychInfo databases. Key words were "advanced practice nurs*, nurse practitioner, nurse anesthetist, nurse midwi*, clinical nurse specialist AND work environment, practice environment, organizational climate, and organizational culture. Inclusion criteria for articles were: peer reviewed, available in English, and investigated the practice environment of APRNs. All publication years were considered. Exclusion criteria included studies excluding APRN populations, or those not focused on *organizational characteristics* of a work setting that facilitate or constrain professional nurse practice (Lake, 2002). Second, ancestry and decendency searches of selected articles were performed. Lastly, nursing experts were consulted for additional literature sources.

Due to the complex nature of the search, a synopsis is provided here. Figure 2 depicts the search results by term and APRN type with most common reasons for article rejection. The computer data base search yielded a total of 17 articles. An additional 4 articles were obtained through ancestry searches, and 2 articles were obtained through

expert consultation for a total of 23 articles. During initial review, the Misener Nurse Practitioner Job Satisfaction Scale (MNPJSS) was noted to rate job satisfaction on several elements of organizational characteristics. A secondary search of this tool in the above mentioned databases revealed an additional 16 articles related to APRN populations. Review of these articles found that although the tool measured nurse satisfaction of several *organizational characteristics of a work setting that facilitate or constrain professional nursing practice,* the focus was not always on the organizational characteristics, but often on overall NP job satisfaction. Of the 16 MNPLSS studies identified, an additional 4 met the inclusion criteria, yielding a total of 27 articles for review.

Results

Overview

The 27 reviewed studies spanned 1982 to 2015 with a consistent upward trajectory (Fig.3). Three studies took place in Canada, 2 in the Netherlands, with the remaining 22 studies in the US. The majority focused on an NP population (63%), one studied a clinical nurse specialist (CNS) population, two studied a certified registered nurse anesthetist (CRNA) population, and seven enrolled a combination of CNS and NPs. Two US studies identified their population generally as APRNs, one with a focus on those working in family planning clinics, which presumably included certified nurse midwives (CNM), and the other included all APRN types and physician assistants (PA). Two studies looked at a combination of primary care providers that included PAs, NPs and physicians. This review revealed CRNAs and CNMs are under-represented in APRN practice environment research.

Most studies were quantitative in nature, with 21 cross-sectional descriptive studies, 1 measurement design study, 1 manuscript describing analysis of an ongoing database, and 1 trend-study design (Table 4). The remaining 3 studies followed qualitative methodologies. All studies fell into level VI of evidence, originating from a single descriptive or qualitative study or report of survey (Ackley, Swan, Ladwig, & Tucker, 2008).

Common Quantitative Variables

Analysis of the quantitative studies revealed many variables involved magnet hospital characteristics, with several using either magnet measures for data collection (Doran, Duffield, Rizk, Nahm, & Chu, 2014; Laschinger, Almost, & Tuer-Hodes, 2003), or referencing Magnet designation in the manuscripts (Almost & Laschinger, 2002). This is not surprising given the origins of nurse practice environment research culminated in development of Magnet designation. Table 4 provides a complete list of variables identified in the review. The most common are discussed below:

- The most prevalent variables involve relationships with other individuals most commonly physicians, followed by administrators, RNs, other health care professionals, and patients. These relationships were studied in the context of collegiality, and resistance to, or support for the APRN role.
- The second most prevalent variables involved providing resources and support. Items generally asked about provision of adequate resources and support, or focused on the quality of support and resources provided to physicians versus APRNs.

- The third most common group of variables involved autonomy and control in APRNs work environments. Items generally asked how autonomous or how much control was present in the APRN's setting.
- Opportunity for advancement or professional development was the next most common variable-type identified.
- Finally, a number of studies focused on variables regarding compensation. Overall, compensation items related to salary and benefits, or compensation as a barrier or motivator to practice.

As previously discussed, it is predictable all of the common variables involved characteristics identified in magnet hospital research, as these are factors found in hospitals known for good nurse practice environments. However, it should be noted that Magnet hospital research has its roots *in* and primary focus *on* the RN, not necessarily the APRN. While RNs and APRNs share many similarities, APRNs also cross boundaries with physicians, and are not easily categorized into either of these professions (Metzger, & Rivers, 2014). This unique feature renders RN-focused tools insufficient in measuring APRN practice environment. In addition to the common magnet-focused variables identified above, the present review identified the following variables unique to APRN populations.

- Credentialing and privileging: APRNs must be credentialed and privileged to practice in acute care facilities (Magdic & Hravnak, 2005). This requirement is unique to physicians and advanced practice providers such as physician assistants (PA) and APRNs. Variables related to this process included whether the process

was similar to medical staff, or whether APRN input was involved in credentialing and privileging processes.

- Understanding and acceptance of APRN role: Several studies included variables related to whether or not patients, physicians, administrators, RNs, and other health care providers understood or accepted the APRN role. Nurses, as a well-known entity in the healthcare workforce, do not face this challenge, whereas the newer less familiar profession of APRNs may (van Soeren & Micevski, 2001).
- Scope of practice variables: Several studies looked at specific variables of what an APRN was permitted to do in the facility, the most common of these being prescriptive authority, oversight by physicians, and admitting privileges. While RNs also face practice restrictions, the provision to practice without physician input is not permitted (Metzger & Rivers, 2014), rendering certain scope of practice items unique to the APRN population.
- Reimbursement issues: Reimbursement by third-party payers is not an organizational characteristic, per se, but impacts how organizations construct practice environments and utilize APRNs through financial incentivization (Buppert, 2006; IOM, 2010). A facility is less likely to provide opportunities to APRNs if reimbursement constraints afford lower financial incentives. Several variables addressed reimbursement issues, and three specifically addressed whether APRNs in the facility were empaneled with their own patients (Chumbler, Geller, & Weier, 2000; Poghosyan & Aiken, 2015; Tilford, Jones, Keesing, & Sheehan, 2012). Empanelment involves assigning patients to

providers for increased care coordination and continuity (Grumbach & Olayiwola, 2015).

Several studies looked at outcome variables related to the consequences of the practice environment. By a wide margin, job satisfaction was the most common consequence investigated, with 9 studies investigating the relationship between job satisfaction and practice environment factors. The relationships between several other variables such as turnover or turnover intent, burnout, and job stress or strain and practice environment characteristics were also noted.

Qualitative Themes

The three qualitative studies analyzed in this review reported themes and findings that mirror the quantitative studies (Table 3). All three studies investigated barriers and constraints to NP or CNS practice. One study utilized a single open ended qualitative question embedded in a quantitative study (Howard & Greiner, 1997), while the remaining two studies utilized group and individual interviews in a semi-structured format (Plagar & Conger, 2007; Poghosyan, Nannini, & Smaldone, et al., 2013). Table 5 details the qualitative study characteristics, themes, and major findings.

Major Findings

The major findings of the 27 studies are listed in Table 6. Many findings were related to RN magnet research, suggesting that good practice environments for RNs are consistent with the APRN population. Additionally, several findings were unique to APRNs. Major findings are discussed below in order of frequency.

Autonomy and empowerment

Similar to findings in RN populations, autonomy and control over nursing practice, and the related concept of empowerment were overwhelmingly found to enhance APRN practice, and lack of these factors hindered it (Almost & Laschinger, 2002; Byers, Mays, & Mark, 1999; Chumbler, et al, 2000; Domine, Siegel, Zicafoose, Antal-Otong, & Stone, 1998; Faris, et al., 2010; Hayden, Davies, & Clore, 1982; Howard, & Greiner, 1997; Laschinger et al., 2003; Poghosyan, et al., 2014; Poghosyan, Nannini, & Finkelstein, et al., 2013). APRNs were found to have more empowerment, autonomy, and control over nursing practice, and participation in hospital affairs than staff RN counterparts (Doran, et al.; Laschinger, et al., 2003), yet consistently identified these elements as barriers to practice. In particular, the restricted or complete inability to prescribe medications and hold admitting privileges (Domine, et al., 1998; Howard & Greiner, 1997), or have a consistent patient panel (Chumbler, et al., 2000; Poghosyan & Aiken, 2015; Tilford, et al., 2012) were identified.

In this review, benefits to increased autonomy, control, and empowerment were increased job satisfaction (Byers, et al., 1999; Laschinger, et al., 2003), productivity (Chumbler, et al., 2000), and mitigation of psychological demands of the job (Almost & Laschinger, 2002). Several factors were found to increase autonomy in practice including increased tenure in setting (Chumbler, et al., 2000; Lelli, et al., 2015; Faris, et al., 2010), use of clinical guidelines, fewer physicians on site, working in a family specialty or multi-specialty group setting (Chumbler, et al., 2000), increased age (Faris, et al., 2010; Lelli, et al., 2015), working in a state with broad practice laws, and working in a physician office (Poghosyan, et al., 2014).

The setting where the APRNs practiced also appeared to be significant. In several studies, hospitals were reported to be less empowering and more restrictive than outpatient/ambulatory settings (Almost & Laschinger, 2002; Chumbler, et al., 2000; Hayden et al., 1982; Poghosyan, et al., 2014), although in one early study comparing inpatient and outpatient settings there was no difference in rating of barriers to practice (Hupcey, 1993). When retail clinic settings were compared with traditional primary care settings, no difference was found (Lelli, Hickman, Savrin, & Peterson, 2015), suggesting the differences were primarily at the hospital versus ambulatory level. The reasons cited for hospital practice restrictions were the larger size and more bureaucratic systems in hospital versus outpatient settings (Howard & Greiner, 1997).

Where comparisons of APRNs were made, studies were mixed, with CNSs reporting feeling more restricted in practice than NPs in one study (Chevalier, Steinberg, & Lindeke, 2006), and CNSs reporting more positive job factors in another (Faris, et al., 2010).

In nursing literature, lack of autonomy is often discussed as a barrier to nursing practice, yet in two studies that compared physician to NP/PAs, all providers reported similarly positive views on autonomy in primary care setting (Byers, et al., 1999; Freeborn, Hooker, & Pope, 2002).

Understanding of APRN Role

There is general consensus that lack of understanding of the APRN role by patients, physicians, administrators, nurses, or other healthcare professionals impedes care (Chevalier, et al., 2006; Domine, et al., 1998; Howard, & Greiner, 1997; Lindeke, Jukkala, & Tanner, 2005; Plager & Conger, 2007; Pasaron, 2013; Poghosyan, Nannini,

Smaldone, et al., 2013; Poghosyan & Aiken, 2015), a concern not reported in RN literature. APRNs with more than 10 in the organization were less likely to report difficulties with coworkers understanding their role in one study (Poghosyan & Aiken, 2015), and another study found this perception more prevalent in CNSs than NPs (Chevalier, et al., 2006). Incidentally, NPs make up more than 75% of all APRNs in this country (National Council of State Boards of Nursing [NCSBN], 2015). In setting comparison studies, one study reported less inpatient than outpatient NPs reported lack of knowledge of role (Tilford, et al., 2012),

Relations with other Healthcare Professionals

Akin to RN research, relationships with other healthcare professionals played a key role in APRN practice environments. These relationships impeded care when it was described in terms of resistance from, in conflict with, or lack of support from these providers. This finding was most reported from physicians (Chevalier, et al., 2006; Hayden, et al., 1982; Howard & Greiner, 1997; Hupcey, 1993; Plager & Conger, 2007), followed by administrators and RNs and other healthcare providers (Hayden, et al., Howard & Greiner, 1997; Hupcey, 1993; Pasaron, 2013). One study reported that physician support made up for lack of support from administration (Poghosyan, Nannini, Smaldone, et al., 2013), while another study found overall NPs reported positive relations with physicians (Poghosyan & Aiken, 2015). Poghosyan & Aiken (2015) found overall NP-physician relations highest in physician office settings versus hospitals or community health centers. Another study looked at acceptance of role, and found most acceptance by other NPs and patients, and less acceptance by administrators, physicians, and RN supervisors (Hayden, et al., 1982).

Collaboration with physicians or managers was another relationship commonly reported. Almost & Laschinger (2002) found overall collaboration with physicians and managers to be moderate to moderately high. Differences in collaboration were found in several studies: NPs reported less collaboration in a state with restricted APRN practice laws than in one with more broad practice laws (Poghosyan, et al., 2014), collaboration with physicians was reported as more important to NPs in primary care settings and collaboration with administrators more important in acute care settings (Almost & Laschinger, 2002), and CNSs reported more collegiality overall in a Veteran's Health Administration (VA) setting than NPs (Faris, et al., 2010).

Salary and Benefits

Competitive compensation is important to RNs, and is included in the Forces of Magnetism (ANCC, 2015). Findings on salary and benefits in APRNs were mixed. In a trend study, NPs ranked salary as the third biggest barrier to practice in 2005, yet it did not rank in the top five in 1996 (Lindeke, et al., 2005). Similarly, a study in 1982 reported salary was not a concern (Hayden, et al., 1982). In a 1998 VA study, salary was identified as the biggest job dissatisfier (Domine, et al., 1998), however a later VA study in a similar population found APRNs most satisfied with benefits (Faris, et al., 2010), and benefits were also a satisfier in a 2015 Midwestern NP population (Brom, Melnyk, Szalacha, & Graham, 2015). When comparisons were made, NPs felt salary was a greater barrier to practice than CNSs (Chevalier, et al., 2006), and NPs and PAs were less satisfied with salary than physicians (Freeborn, et al., 2002). Increased salary was found to correlate with increased decision-making authority (Chumbler, et al., 2000).

Time

Several studies reported time constraints constitute a barrier to practice, similar to RN findings (Faris, et al., 2010; Howard & Greiner, 1997; Plager & Conger, 2007; Poghosyan, Nannini, Smaldone, et al., 2013). Specific items identified were: too many non-APRN tasks and no time for research (Faris, et al., 2010), too much paperwork (Howard & Greiner, 1997), time constrains inhibited role fulfilment (Plager & Conger, 2007), and pressure to see more patients decreased time for patient education and holistic care (Plager & Conger; Poghosyan, Nannini, Smaldone, et al., 2013).

Human Resources Practices

Several studies reported findings related to human resources practices including orientation and evaluation. In one report of an ongoing survey in hospital APRNs and PAs, less than half of APRNs had a formal orientation, and of those with an orientation, only 4% felt it was effective (Anen & McElroy, 2015). In an earlier study, nearly on quarter of NPs reported no formal orientation in both inpatient and outpatient NPs, and of those with an orientation, nearly one-third was with a physician (Tilford, et al., 2012). More outpatient NPs reported physician orientation than inpatient, and approximately 60 % of both inpatient and outpatient NPs felt their orientation was effective.

Evaluation practices also showed variation, with 63% of hospital APRN and PAs reporting a formal evaluation process in one study (Anen & McElroy, 2015), and only 33% of primary care NPs in another (Poghosyan & Aiken, 2015). Similarly, Poghosyan & Aiken (2013) reported more outpatient than inpatient NPs had no evaluation. Pasaron (2013) reported most NPs evaluated by a nursing director did not feel this was an appropriate evaluation method.

APRN Specific Findings

Of identified variables unique to APRNs, two; understanding and acceptance of APRN role and scope of practice were discussed above as most common overall findings. The remaining APRN-specific findings were less prevalently reported. Findings related to credentialing and privileging reported the majority of APRNs in one study were credentialed and privileged in the hospital setting, but only 24% had representation on the credentialing committee (Anen & McElroy, 2015). In an earlier study, 88% of NPs were credentialed through the medical staff office, with the remaining 12% through a nursing department center, and 62% believed they were credentialed to do all in their scope of practice (Tilford, et al., 2012).

Analysis of reimbursement findings reveals that third-party reimbursement practices lead to APRN practice barriers (Anen & McElroy, 2015; Plager & Conger, 2007; Poghosyan, Nannini, Smaldone, et al., 2013). One article suggested that hospitals are unprepared to appropriately bill for APRN services leading to under-billing or APRN care billing occurring under physician's billing numbers (Anen & McElroy, 2015), a finding also supported in primary care settings (Plager & Conger, 2007; Poghsoyan, Nannini, & Smaldone, et al., 2013). One study suggested reimbursement issues are improving (Plager & Conger, 2007), but another study found pressure to maximize reimbursement led to increases in burdensome paperwork which increases time constraints (Poghosyan, Nannini, & Samldone, et al., 2013). NPs in community health centers (CHC), with their decreased reliance on privately insured patients, were found to have less reimbursement issues (Poghosyan, Nannini, & Smaldone, et al., 2013).

Discussion

Research on RN work environment has provided evidence that good healthcare requires good nursing working environments, and improvement of these environments may lead to improved patient, nurse, and organizational outcomes (IOM, 2004). Further analysis recommended advanced practice nursing's unique role could be instrumental in improving US healthcare problems, provided barriers to their utilization were mitigated (IOM, 2010). This analysis reviewed APRN practice environment research and found that increased autonomy, control, empowerment, and practicing to the full extent of education and training all enhanced APRN practice, consistent with RN Magnet research (Kramer & Schmalenber, 2008), and indeed generalized organizational research (Stansfeld, & Candy 2006). In particular, the dependence on physicians for prescriptive authority and hospital admission capabilities, need for physician co-signatures, and inability to care for a panel of patients were cited as barriers to APRN care.

These particular restrictions have been attributed to outside influences such as state laws mandating physician oversight or prohibiting certain activities (Faris, et al., 2010; Howard & Greiner, 1997; Poghosyan, et al., 2014; Poghosyan & Aiken, 2015), and third party payer reluctance to reimburse organizations for APRN services (Howard & Greiner, 1997; Plager & Conger, 2007; Poghosyan, Nannini, & Smaldone, 2013; Poghosyan et al., 2015). The concept of APRN autonomy and independent practice is layered within organizational policies directed by third party payer reimbursement practices which are, in turn, influenced by state laws. The healthcare industry is highly regulated, setting it apart from other organizations studied in organizational environment research. Blanket these industry realities in the state regulation and reimbursement complexities of APRN

practice and the difficulties of positively impacting APRN practice environment are evident.

Outside of reimbursement/ regulatory restrictions, organizations may limit APRN practice due to ignorance of contemporary billing capabilities (Anen &McElroy, 2015). The attempt to maximize profitability may lead organizations to imprudently limit services to physician providers. Lack of efforts to capture APRN revenue leads to de-valuation of APRNs and contributes to the overall lack of autonomy and inability to practice to full ability.

Several studies put forth recommendations for a decentralized decision-making structure utilizing participatory management practices (Almost & Laschinger, 2002; Freeborn, et al., 2002; Laschinger, et al., 2003; Pasaron, 2013; Poghosyan, Nannini, Smaldone, et al., 2013), a practice recommended historically in non-nursing organizational research (Tesluck, Vance, & Mathieu, 1999). In this review, hospitals were reported to be less empowering than outpatient settings (Almost & Laschinger, 2002; Chumbler, et al., 2000; Howard & Greiner, 1997; Poghosyan, et al., 2014). Hospitals, with their bureaucratic, hierarchical power structures are particularly prone to the opposite environment, where power and decision making is centralized with rare nurse participation at executive levels (McGibbon, Peter, & Gallop, 2010). This structure has historical patriarchal roots when the female nurse held a subservient role to the male physician. Although many more females are entering the medical profession, and nursing, especially advanced practice nursing is increasing in male composition, this gender context continues to influence hospital work environments. In this context, the recommendation for APRNs to become more involved in managerial processes and

assume more control over practice ignores the underlying forces of gender and power that perpetuate these practices (Wall, 2010), and must, at minimum, at least be addressed to move this initiative forward.

Lack of understanding of APRN role and difficulty in relationships with other individuals were separate variables in many studies, but may be two sides of the same coin. The APRN role is expanding (NCSBN, 2015). As exposure to the role increases, there is evidence patients and coworkers become more understanding and accepting of the care provided (Chevalier, et al., 2006; Dill, Pankow, Erikson, & Shipman, 2012; Poghosyan & Aiken, 2015). Findings in this review also suggest relations with physicians may be improving over time. This may represent increased exposure to the role, or increased reliance on APRN colleagues as market forces and health care reform promote their utilization. There is still room for improvement in hospital environments, again leading credibility to the idea that large bureaucratic institutional practices are immutable. However, it is interesting to note these larger hospital settings were also more likely to have policies in place that benefit APRN practice such as a dedicated APRN leader (Anen & McElroy, 2015), APRN-involved quality assurance initiatives (Plager & Conger, 2007), orientation with an APRN, and formal evaluation practices (Tilford, et al., 2012).

Limitations

Results of this review must be regarded in the context of several limitations. The sheer number of terms applicable to practice environment makes literature detection difficult. It is possible that relevant studies were omitted which utilized alternate search terms. To mitigate this limitation, multiple search terms were employed along with

several literature search strategies. A second limitation was the inclusion of only articles published in English. Bias may have been introduced toward Western studies. Additionally, the APRN search strategy utilized terminology consistent with NCSBN consensus model language which could bias the review to US studies.

Summary

APRN practice environment research reveals elements found to improve working conditions in RNs and other occupations are also relevant to APRNs. These include autonomy, empowerment, control over practice, participation in decision making, respect and good working relationships. Entanglement of these factors with outside forces such as state laws, reimbursement practices, and unfamiliarity with the role increases the complexity of the APRN work environment. Research into these issues is in its infancy, but steadily gaining momentum. Examination of APRN practice environment acknowledging the gendered perspective, investigation of local third-party reimbursement practice environment effects in the context of state regulations, and APRN practice environment studies that investigate mitigation strategies for organizational size still need to be explored. By studying the complexities of APRN practice environment, organizational best practices that increase effective utilization of APRNs can help alleviate the US healthcare system fiscal and quality conundrum.

Chapter 3

Psychometrics of a Psychological Ownership Questionnaire in a Sample of Advanced Practice Nurses

Background

The nursing work environment influences important nursing and patient outcomes such as nurse burnout and turnover, nurse and patient satisfaction, and patient mortality and failure to rescue rates (Aiken, Clarke, Sloane, Lake, & Cheney, 2008). Much of this body of work emerged from the Magnet Hospital movement, which studied nurse practice environment (Aiken, Smith, & Lake, 1994; Choi & Boyle, 2014). Researchers have investigated nursing work environment outside of the Magnet context as well. Laschinger and colleagues identified workplace empowerment as a key factor in nurse work environments (Laschinger, Finegan, Shamian, & Wilk, 2001). Autonomy is found to impact nurse outcomes by several researchers (Dempster, 1990; Finn, 2001), and recently, links between organizational climate and nurse practitioner practice were found (Poghoysan, Nannini, Stone, & Smaldone, 2013). Consistently this work has identified concepts of nurse control over practice, increased autonomy and empowerment, participation in decision-making, good working relationships, and supportive leadership as crucial to the above-mentioned outcomes.

Although emerging repeatedly in nursing literature, the reason for the relationship between these work environment factors and improved nurse and patient outcomes is unclear. The conventional explanation is based on Donabedian's Structure-Process-Outcome Framework, which postulates that improving work environment structural factors will improve processes, leading to improved outcomes (Donabedian, 1980; Irvine,

Sidani, & Hall, 1998; Stone, et al., 2007). Other popular theories include Kanter's Theory of Structural Empowerment, which links worker empowerment to improved outcomes (Kanter, 1977, 1993; Laschinger, Almost, & Tuer-Hodes, 2003), and Hackman and Oldham's Job Characteristics Model (JCM), which links job design to employee response (Hackman & Oldham, 1975; Landeweerd & Boumans, 1994). The common thread in these theories is the relationship between structural job design and improved employee motivation or job outcomes.

The Theory of Psychological Ownership, an extension of the JCM (Pierce, Jussila, & Cummings, 2009), describes how work environment psychologically impacts the worker, and may provide a more nuanced explanation for the connection between factors in the work environment and nurse and outcomes. Ownership is a condition emerging early in human development that stems from what can and cannot be controlled (Seligman, 1975). Psychological ownership is "a state where an individual feels as though the target of ownership is 'theirs'" (Pierce & Jussila, 2011, p 29). The core concept is the feeling of possessiveness and a sense of control over the target. Organizational behavior research has determined the workplace can provide the circumstances necessary for development of psychological ownership (Pierce, Kostova, & Dirks, 2001). The aim of this report is to acquaint the nursing community with the Theory of Psychological Ownership as it relates to the nurse work environment and describe its measurement in a nursing population.

Psychological Ownership

Organizations provide opportunities for ownership through the way work is structured and the degree to which employees control their work (Pierce & Jussila, 2011).

Employees may develop psychological ownership to different targets in the workplace including jobs, tasks, ideas, or the organization itself (Mayhew, et al., 2007). The two types most commonly studied are job and organization. Job-based psychological ownership describes feelings of ownership over the specific duties and role one performs in an organization, whereas organization-based psychological ownership is feelings of ownership toward the organization itself. These are context-specific attitudinal states, involving the current position in the current organization, and can vary over time based upon changes in the work environment.

The Theory of Psychological Ownership proposes three routes humans take in the formation of the feelings of ownership: experienced control, intimate knowledge, and self-investment (Pierce & Jussila, 2011). Only one of the three routes is necessary to foster feelings of ownership. Several important bodies of work have identified *experienced control* as the core characteristic in development of possessive feelings (Csikszentmihalyi & Rochberg-Halton, 1981; Rudmin & Berry, 1987; Sartre, 1943/1969). The more one feels control and influence over an object, the more it becomes part of the self (Pierce & Jussila, 2011). Highly autonomous jobs allow greater levels of control, thereby increasing the possibility of developing ownership. The Theory of Psychological Ownership posits that a causal relationship exists between degrees of control or autonomy inherent in a job, and the psychological ownership an employee perceives. Autonomy and control are historical tenets of nurse work environment research (Finn, 2001).

Intimate knowledge of a subject is a second route to ownership feelings (Pierce & Jussila, 2011). It has been suggested that by knowing an object passionately, the object

becomes a part of oneself (Beaglehole, 1932). Organizations create opportunities for intimate knowledge by increasing the information an employee has about their work (mission, short and long term goals, how their effort fits in with the overall plan). The more intimately they connect with the work, the more likely ownership feelings will develop. This principle is demonstrated in nursing practice environment research, where increasing access to organizational information is found to empower nurses, giving them an increased sense of purpose in the organization, and leading to improved nursing outcomes (Laschinger, Almost, & Tuer-Hodes, 2003; Ning, Zhong, Libo, & Qiujie, 2009).

Finally, *investment of self* can be fostered in the organization by encouraging employee participation. As investment into an object increases, ownership emerges because the object has essentially emerged from oneself (Pierce & Jussila, 2011). The more of one's ideas, skills, and physical, psychological and intellectual energies one invests in one's job, the more one makes it one's own, and the greater the chance ownership will develop. Nursing research has linked investment of self-practices such as work engagement (Van Bogaert, Wouters, Willems, Mondelaers, & Clarde, 2012), and shared governance (Houser, ErkenBrack, Handberry, Ricker, & Stroup, 2012) to increased nurse and patient outcomes.

Fostering these workplace routes to psychological ownership can have positive consequences. Research links psychological ownership to outcomes such as internal and intrinsic motivation, job satisfaction, organizational commitment and self-esteem, experienced responsibility, improved in-role and extra-role performance, increased personal sacrifice and acceptance of change (Pierce & Jussila, 2011). Of the positive

outcomes noted, it is the experienced responsibility that could be viewed as most relevant to patient care. Psychological ownership links the organization or job to the employee, leading to a heightened sense of responsibility for work outputs. The worker owns the output. Work outputs, in the context of nursing, are patient outcomes, the implication being a nurse who develops psychological ownership for his/her job will feel an increased sense of responsibility for the health outcomes of the patient.

Measurement of Psychological Ownership

Research on the Theory of Psychological Ownership began in the 1990s, and several scales have been developed to measure it and related concepts, but the most commonly utilized measured was one described by Van Dyne and Pierce (2004). The reported scale utilized questions worded to measure organizational-based psychological ownership. To develop the scale, the authors had three field studies, and concluded that a 4-item single-factor structure demonstrated homogeneity and unidimensionality of the psychological ownership construct. Two field test confirmatory factor analyses (CFA) of the 4-item scale in diverse populations of US employees and supervisors in fields such as engineering, clerical, accounting, and technology, and revealed good fit, $\chi^2(2) =$ 3.69/3.74, $p>.05$, RMSEA .05/.06, CFI .99/.99. The authors reported good internal consistency reliability with Cronbach's α of .90-.93, and a 3-month test-retest in one study revealed moderate stability, $r=.72$ ($p<.001$), which is expected in attitude measures (Waltz, Strickland & Lenz, 2010). A review of more than 30 studies in over 8 countries, in a variety of organizations and occupations, and on employees at various hierarchical levels revealed this tool demonstrated good internal consistency reliability with α scores of .72-.97 (Pierce & Jussila, 2011). As these studies represented a variety of employee

positions, organizations, and countries leading to acceptance of the measure's organization-based psychological ownership generalizability.

In 2011, Brown & colleagues extended the Van Dyne & Pierce tool for job-based psychological ownership (Pierce & Jussila, 2011). A six-item measure, tested in Singapore and US reported similar reliability and validity statistics with Cronbach's α of .96 and .93 respectively, and CFA factor loadings of .70-.92. In 2014, Brown & colleagues further extended the job-based measure to include the routes of experienced control, intimate knowledge, and investment of self, based on the theory described above, to the original scale measuring presence of psychological ownership resulting in a 21-item, four-factor measure. The reported four subscales held strong internal consistency with α scores of .94 for experienced control, .92 for intimate knowing, .92 for investment of self, and .96 for psychological ownership. CFA showed good fit of the four-factor structure with $\chi^2(6) = 8.26$, $p>.05$, RMSEA=.03, CFI=.98, SRMR=.02.

Despite the obvious overlap between components of the Theory of Psychological Ownership and factors distinctive in nursing work environments, to date the author found only two nursing studies enlisting the concept of psychological ownership. One study was reported in Korea without English translation (Yoo, Yoo, & Kim, 2012), and one study in Malaysia that found that psychological ownership mediated the relationship between spiritual and emotional intelligence and caring behavior among nurses (Kaur, Sambasivan, & Kumar, 2013). In the Kaur study, the six-item job-based psychological ownership scale was translated into Malaysian and administered to 448 hospital nurses. Overall internal consistency was strong, with Cronbach's α of .88. CFA (χ^2=1.12, p=.772, RMSEA=.005, RMR=.0062, GFI=.99, NFI=.99, CFI=.99 indicated good fit of

the scale to the data. Factor loadings were not reported. The purpose of the current report is to extend knowledge in the nursing literature of The Theory of Psychological Ownership by describing the psychometric properties of the Psychological Ownership Questionnaire described by Brown and colleagues (2014) in an advanced practice nursing population. As nursing practice environment has a recognized effect on nurse and patient outcomes, establishing reliability and validity of a psychological ownership measure in a nursing population adds a tool to the available accouterment to unpack this complex construct.

Methods

Design and Procedures

This multi-level cross-sectional analysis was part of a larger study designed to examine the relationship between hospital environmental factors and advanced practice registered nurse (APRN) perceptions of practice environment in one state. An electronic survey in Qualtrics was sent to Florida APRNs. Informed consent was granted by clicking a box indicating understanding and granting of informed consent, leading participants to the survey. No compensation was given for participation. The survey was distributed to APRNs by two methods: it was forwarded to them by nurse executives in their hospital, or they were recruited directly through email addresses obtained through the state Board of Nursing. Inclusion criteria included any APRN (nurse practitioner [NP], nurse anesthetist [CRNA], nurse midwife [CNM], or clinical nurse specialist [CNS]) licensed and working in a Florida hospital. The study received was approved by the University of Miami Institutional Review Board. Electronic informed consent preceeded the survey questions. No compensation was given for participation.

Sample

A total of 22,729 APRNs were identified as licensed in Florida in January 2016, of these APRNs 81% had a working email address on file. A total of 724 APRNs responded to the survey, with 100 (14%) indicating they did not work in hospitals leaving 624, or 9% sample. Of these, 82 surveys were discarded due to lack of informed consent or completion of only demographic data, leaving 542 (7%) usable surveys. APRNs were from 119 of 259 registered Florida acute care hospitals, and average number of nurses in a single hospital was 2.23. Table 7 describes sample demographics. The mean age was 48.1 years (SD=10.86), with 86% Caucasian and 82% female. Nearly 80% held a MSN as their highest nursing degree, while 13% were DNP-prepared. The sample consisted of 61% NPs, 30% CRNAs, 7% CNM, and 1% CNS.

Measures

The Psychological Ownership Questionnaire (POQ) is a tool designed to measure the presence of the 3 routes to psychological ownership: Control, Knowledge, and Investment of Self, as well as the degree of psychological ownership perceived in a workplace (Brown, Pierce, & Crossley, 2014). The POQ has 21 items and 4 subscales. Items are scored on a 4 point Likert-type scale (1 *strongly agree*, 2 *agree*, 3 *disagree*, 4 *strongly disagree*). The 4-factor subscale was originally measured using a 7-point Likert-type scale, however, for this study the scale was shorted to 4-points for consistency with another measure used in the parent study.

Statistical analysis

The analysis plan involved preliminarily reviewing the data for missing values, normality and demographic characteristics. Next, construct validity for the psychological ownership construct and proposed subscales was performed utilizing CFA. CFA establishes how well a measure reflects intended latent constructs, and is used when a priori theory recommends an identified variable structure (Kline, 2011). A CFA in Mplus 7.4 (Muthen & Muthen, 1998-2012) tested the factor structure of the POQ 4-Factor Structure (Brown, Pierce, & Crossley, 2014) and of a composite second-order factor, assuming individual hospitals for missing data on the cluster variable. Given the clustered nature of the data (APRNs working in the same hospital), a multi-level approach was used. Multi-level analyses correct the standard errors and test statistics obtained when fitting a single model to complex data (Kline, 2011). A WLSMV estimator was used. Two measurement levels were modeled, within-group and between-group. Within-group analyses utilize scores from individual nurses, whereas between-group analyses utilize hospital mean statistics. Psychological ownership is a nurse-level construct, so only the within-level factor structure was analyzed. Finally, in order to establish measure reliability, a Cronbach's alpha was calculated for each subscale.

Results

Missing Data

Of the 21 observed items on the POQ, missing data ranged from 6-8% with the psychological ownership subscale containing the most items with missing data. One

hundred and twenty-two (23%) of participants did not identify their hospital. Missing data was handled using maximum liklihood.

Confirmatory Factor Analysis

Table 8 lists the Intraclass Correlations (ICC) for the items indicating the proportion of total score variability explained by the hospital-level grouping. ICC describes the ratio of between level variation to total variation (Kline, 2011). For instance, an ICC of .10 indicates APRNs in that hospital are 10% more likely to have similar scores on that item than score selected at random, and is a general cutoff indicating the need for multi-level modeling. Only two variables in this sample had an ICC greater than .10 (.12 for *I have invested many of my ideas into this job*, and .11 for *the work I do at this organization is mine*), confirming psychological ownership was primarily a nurse-level construct, i.e. most (88% or more) of variation was at the nurse-level. However, two-level modeling was performed for the CFA, to account for the design effect clustering of nurses in hospitals may have on scores. Cronbach's alpha of the entire measure was .92. Subscale Cronbach alpha statistics were as follows: experienced control = .88, intimate knowledge = .77 investment of self = .84, and psychological ownership = .91 indicating good measure and subscale reliability.

Model results revealed a good fit of the model to the data, $\chi^2(395) = 429.523$, $p = .112$, RMSEA =.130, and CFI = .994. As shown in Figure 4, items for the four subscales had statistically significant strong factor loadings with standardized estimates ranging from .77 to .94. The 4 subscales also had significant factor loadings with the second order factor Composite Psychological Ownership, with standardized estimates ranging from .56 to .95. Table 8 depicts R^2 values at the within level, with standard errors and *p*-

values. All observed variables had R^2 values near or greater than .60 with *p*-values <.001. As this data was analyzed at the categorical level, these R^2 values represent pseudo-R^2. However, it still suggests that a significant amount of the variance in the item scores is explained by the model. The latent second order variables R^2 values were less impressive, ranging from the low end of .31 on the experienced control and .47 on the intimate knowledge subscales, to .60 on the investment of self subscale. The psychological ownership subscale, which was the historical single-factor tool commonly used to measure psychological ownership had an R^2 value of .90.

Overall, 84% of APRNs surveyed reported favorable responses (*strongly agree or agree*) on the Composite Psychological Ownership score (Table 8). Subscale analyses revealed the highest favorable scores in Intimate Knowledge (94%) and Investment of Self (93%) subscales. APRNs scored the subscale of presence of Psychological Ownership 84% favorable. The lowest favorable ratings were given to the Control subscale, with 59% favorable scores recorded.

Discussion

The Psychological Ownership Questionnaire performed well in an advanced practice nursing population, indicating the subscales of the Psychological Qwnership Questionnaire is measured as intended by this instrument. Factor loadings were significant and strong for all items on the four subscales: experienced control, investment of self, intimate knowledge, and presence of psychological ownership. This is not surprising given the overlap of fundamental constructs in psychological ownership and nurse practice environment.

The factor loadings and R^2 values of the subscales control and intimate knowledge on the global construct of total psychological ownership were low in comparison with other subscales, suggesting that these routes were less distinct compared to the other routes to psychological ownership. This data was obtained on APRNs practicing in hospital environments. Hospitals, as organizations, are known for their bureaucratic, hierarchical power structures (McGibbon, Peter, & Gallop, 2010), and are less empowering for APRNs than ambulatory settings (Almost & Laschinger, 2002). Control, empowerment, and decision making are interwoven organizational structures that impact the development of psychological ownership (Pierce, O'Driscoll, & Coghlan, 2004), therefore it is predictable that these latent factors may be less consequential to hospital APRNs' overall psychological ownership score.

In conjunction with the control subscale's lower R^2 and factor loadings, it was also the route scoring the lowest favorable ratings, with only 59% of respondents indicating they *strongly agreed or agreed* on the items, compared with over 80% on all other subscales. In contrast, the factor loadings and R^2 values of the subscales of investment of self and the presence of psychological ownership are significantly higher. The majority of respondents in this study are prepared at the master's or doctoral level and work full time. This educational and time investment may alone account for the high apportionment of investment of self to total psychological ownership.

In interpreting the above scores, the *presence* of psychological ownership appears to exist at a high level in this APRN sample (84% responding favorably), as well as 94% favorable scores on intimate knowledge, and 93% on investment of self. Psychological ownership can be measured at the job or organizational level, depending on the wording

of the question, (e.g. I feel this job is mine versus I feel this organization is mine). In this study, job-based psychological ownership was measured. Only the final item addressed the organization, and interestingly held the lowest item scores for the psychological ownership subscale (73% favorable). Recent research has suggested job psychological ownership may lead to organizational psychological ownership, but it is ownership for the job itself that leads to many of the previously identified positive outcomes (Peng & Pierce, 2015). Overall, APRNs do not feel a high degree of control in their jobs, but do feel knowledgeable about, and invested in their jobs leading to a high degree of psychological ownership.

Limitations

Study results must be viewed in light of several limitations. This study was conducted on hospital APRNs in Florida, and may not be generalizable to APRNs in other geographic regions or practice settings. It is possible that CNOs who are aware of practice environment restrictions in their facilities may be reluctant to complete the survey. Additionally, the low return rate limits generalizability to hospital APRNs in Florida. The large amount of missing data on the cluster variable effects on the mean cluster size of this study and may affect the standard errors. However, near identical results were obtained when treating missing cluster variable data as a single group versus individual groups which lends more integrity to the accuracy of the CFA results. Lastly, this sample overestimates CRNAs as a percentage of APRNs. In Florida 21% of APRNS are CRNAs (FCN, 2014), whereas nationally the number is 23% (U.S. Bureau of Labor Statistics, 2014). In this sample 30% identified as CRNAs, thus over-sampling of CRNAs may bias results.

Summary

Psychological ownership is contemporary concept that has substantive applications for nursing research. Further research using this measure would be warranted in RN populations, particularly in Magnet versus non-Magnet hospitals, and continued studies in APRN populations outside of the acute care setting would be valuable as well. Examination of this psychological ownership measure in states with few APRN barriers versus states with many barriers, and rural versus non-rural APRN practices may also ferret out differences these environmental factors have on psychological ownership ship development. Additionally, this measure could be used in investigations of interventions that are intended to increase psychological ownership in nurses and resultant changes in nurse, organization, and patient outcomes. Evidence suggests fostering job psychological ownership improves employee/organizational performance and outcomes in other fields (Pierce & Jussila, 2011). Given continuing healthcare reform efforts and the spotlight on efficiency and quality outcomes, increasing nursing psychological ownership has great potential as an area of inquiry.

Chapter 4

Psychological Ownership and Organizational Climate in an Advanced Practice Nurse Sample

Background

Advanced Practice Nurses (APRN) are posited as a solution to the U.S. healthcare cost-quality dilemma by numerous sources (Institute of Medicine [IOM], 20100, National Governor's Association [NGA], 2012). However, existing barriers hamper this endeavor. Federal and state barriers to APRN practice such as restrictive state laws barring prescribing, and Medicare reimbursement policies are steadily collapsing (IOM, 2015). In contrast, organizational-level environmental barriers, which receive far less attention, appear to be expanding (Neft, Okechukwu, Grant, & Reede, 2013). Improving healthcare cost and quality is the principle focus of healthcare reform efforts. Research is needed into organizational-level factors that impact this goal (IOM, 2010).

Work environment is a global well-researched concept within and outside of nursing (Sleutel, 2000). Organizational climate is a work environment component addressing the worker perception of the environment (Reichers & Schnieder, 1990), and may be a good heuristic for perceived organizational-level APRN barriers to practice. Analysis of APRN practice environment research reveals organization factors found to improve working conditions in RNs and other occupations are also important to APRNs (Schirle, manuscript in preparation, 2016). These include autonomy, empowerment, control over practice, participation in decision making, respect, and good relationships. In addition, APRN practice is influenced by outside forces of state law, reimbursement practices, and unfamiliarity with role. Presence of these organization factors in the work

environment are found to psychologically impact APRNs through improved job satisfaction leading to increased productivity, decrease job stress, burnout, and turnover. Absence of these factors are perceived as barriers to practice. Notably, the psychological effects of these barriers to practice can have financial consequences for organizations through decreased productivity and turnover, but the reason for these effects often goes unexplored.

The Theory of Psychological Ownership details how work environment psychologically impacts a worker, and postulates that a causal relationship exists between organizational structures and processes in a job and the psychological ownership (PO) an employee feels for the job and work outcomes (Pierce & Jussila, 2011). These feelings of ownership may explain in part why certain characteristics that allow for more autonomy and control lead to improved outcomes.

The purpose of this study is to investigate the role of psychological ownership in the relationship between characteristics of the APRN work environment and perceptions of their organizational climate.

Theoretical Underpinnings

Ownership is an integral part of the human condition which arises for three main reasons, or roots: 1) the need to feel efficacy or effectance, 2) the need to express a self-identity, and 3) the need to have a place or home (Pierce & Jussila, 2011). Feelings of ownership satisfy these needs by allowing one to feel useful by successful control of an object or concept, allowing for an outward expression of one's uniqueness, or creating a

space to inhabit or dwell. All of these roots are found in multiple contexts, including employee's organizations.

It is believed that feelings of ownership develop in the workplace in accordance with an organization's structure, processes, and job design (Pierce & Jussila,2011). Three routes are postulated to foster the development of psychological ownership, control, intimate knowledge, and investment of self. The ability to control one's environment is key to feeling effective, and is perhaps the most important characteristic linked to development of feelings of PO. The Theory of PO postulates that a causal relationship exists between degrees of control inherent in a job and the PO and employee feels. Additionally, the more intimate knowledge and investment of self an employee has toward a job, the more psychological ownership will develop. Only one of these routes is needed for the feelings to arise.

According to The Theory of Psychological Ownership, these roots and routes lead to development of psychological ownership toward a job, organization, or the work itself. Once ownerships feelings are established, positive outcomes such as increased motivation, job satisfaction, organizational commitment, and experienced responsibility have been found to result (Pierce & Jussila, 2011).

Although relatively new, The Theory of Psychological Ownership has been used many times as a theoretical basis for research in the fields of business, marketing, and technology. Despite the obvious overlap of the features of this theory and those fundamental to nursing work environment research, the researcher could only find two studies that employed the psychological ownership *concept* in published nursing research, and none that used the Theory of Psychological Ownership as a research

framework to investigate the nursing practice environment. One study out of Korea did not have English translation (Yoo, & Yoo, 2012). Kaur & colleagues (2013) published a study in Malaysia that found psychological ownership mediated the relationship between individual characteristic of the nurse, spiritual and emotional intelligence, and caring behavior. This study aims to investigate the role psychological ownership may play in the APRN practice environment, and hypothesizes a mediating role between APRN work environment and perceptions of organizational climate.

Hypothesis 1. There is a positive relationship between APRN scope of practice as reported by CNO's and APRN's perceptions of organizational climate. (Fig.1)

Hypothesis 2. There is a positive relationship between APRN scope of practice as reported by CNO's and APRN's perceptions of psychological ownership.

Hypothesis 3. There is a positive relationship between APRN's perceptions of psychological ownership and APRN's perceptions of organizational climate.

Methods

Design

A two-level cross-sectional survey design was used. An electronic survey, powered by Qualtrics Survey Software, was sent to Chief Nursing Officers (CNO) and APRNs in Florida hospitals. Informed consent was granted by clicking a box indicating understanding and granting of informed consent, leading participants to the survey. No compensation was given for participation. CNOs were recruited by postcard, email, and networking from hospitals licensed as acute care facilities in one Southern state. Long-term care, rehabilitation, and psychiatric facilities were excluded from the study. Data were collected through Qualtrics survey software. APRNs were recruited in one of two

ways: 1) they were forwarded an email link to the survey from the CNO at the facility, or 2) they were contacted directly through an email list obtained from the state Board of Nursing. Inclusion criteria included any APRN (nurse practitioner [NP], nurse anesthetist [CRNA], nurse midwife [CNM], or clinical nurse specialist [CNS]) licensed and working in a Florida hospital.

Sample

CNOs were recruited by postcard, email, and networking from hospitals licensed as acute care facilities in one Southern state. Long-term care, rehabilitation, and psychiatric facilities were excluded from the study. Data were collected through Qualtrics survey software. APRNs were recruited in one of two ways: 1) they were forwarded an email link to the survey from the CNO at the facility, or 2) they were contacted directly through an email list obtained from the state Board of Nursing. Inclusion criteria included any APRN (nurse practitioner [NP], nurse anesthetist [CRNA], nurse midwife [CNM], or clinical nurse specialist [CNS]) licensed and working in a Florida hospital. Two hundred and twenty-six facilities met the hospital inclusion criteria. 42 CNOs responded, with 32 usable surveys (14% yield). A total of 22,729 APRNs were licensed in Florida in January, 2016, of which 81% supplied working emails to the Board of Nursing. An unknown number of APRNs work in Florida hospitals, however, a 2014 nursing workforce report reviewed data collected during license renewals, and reported 73% of licensed Florida APRNs were working as APRNs, and of these, 44% reported working in hospitals (FCN, 2014). Extrapolating from this data, a January, 2016 estimate would provide a 7300 APRNs calculated population. 724 APRNs responded to the survey, with 100 indicating they did not work in hospitals,

leaving 624, or 9% sample. Of these, 542 (7%) usable surveys resulted. APRNs were from 119 of 226 registered Florida acute care hospitals, and average hospital cluster size was 2.23 APRNs from a single hospital. Table 9 provides demographic data about sample hospitals and APRNs. The majority of responding hospitals were either urban (39%), or suburban community (55%), and half held teaching status. Ownership was overwhelmingly Not-For-Profit (74%). In the APRN sample, the mean age was 48.1 years (SD=10.86), with the majority of the sample consisting of Caucasian females. Nearly 80% held a MSN as their highest nursing degree, while 13% were DNP-prepared. 61% were NPs, 30% CRNAs, 7% CNM, 1% CNS, and 1% mixed.

Measures

CNO Hospital Characteristics. CNOs were asked to complete a measure developed for this study describing hospital demographic characteristics (bed number, ownership, etc.), 10 scope of practice items (ability to admit, discharge, write orders, etc.), and 4 items rating APRN institution practice visibility (inclusion on committees, voting member of medical staff, etc.) (Table 9). Items were obtained from similar studies addressing APRN practice environment (Chumbler, Geller, & Weier, 2000; Anen, 2015). A composite scope of practice score was obtained for each hospital, weighted for independence of the activity permitted in the hospital, with higher weights given for independent activity, and lower weights for activities permitted, but requiring a physician co-signature *(3-independent, 2-with co-signature, 0-not permitted, range 0-30*).

APRN Demographics. Common APRN demographic data of age, gender, race, type, degree, years in practice, hours worked/week, and certification were collected to

describe and compare the sample with other APRN practice environment studies (Table 1).

Organizational Climate. The APRN Organizational Climate Questionnaire (APRN-OCQ) is an adaptation of the Nurse Practitioner Primary Care Organizational Climate Questionnaire developed by Poghosyan and colleagues (2013) for use in primary care nurse practitioners. Minor adaptations were made for use by all APRNs in acute care settings (e.g. change NP to APRN). The measure includes 28 items and 4 subscales of Professional Visibility, APRN-Administration Relations, APRN-Physician relations, and Independent Practice & Support. Items are scored on a 4 point Likert-type scale (*1-strongly agree, 2-agree, 3 disagree, 4 strongly disagree*). A composite Organizational Climate score was tallied with lower scores indicating greater perceptions of organizational climate. Example items include, "I feel valued by my organization" and "Administration is well informed of the skills and competencies of APRNs". Internal consistency reliability in this sample was Cronbach's α of above .90, with subscale alphas of Professional Visibility .87, NP-Administration Relations .95, NP-Physician Relations .90, and Independent practice and support .89 (Poghosyan, Nannini, Stone, & Smaldone, 2013).

Psychological Ownership. The Psychological Ownership Questionnaire (POQ) is a designed to measure the 3 routes to psychological ownership: Control, Intimate Knowledge, and Investment of Self, as well as the presence of psychological ownership perceived in a workplace (Brown, Pierce, & Crossley, 2014). The POQ has 21 items and 4 subscales. Items are scored on a 4 point Likert-type scale (*1-strongly agree, 2-agree, 3-disagree, 4-strongly disagree*). The 4-factor subscale was originally measured using a 7-

point Likert-type scale, however, for this study the scale was shorted to 4-points for consistency with the APRN-OCQ. Example items include "I have invested many of my ideas into this job", and "I sense that this job is MINE". Initial reliability testing in this sample was strong: Cronbach's α for subscales as .92 for Intimate Knowing, .92 for investment of self, .94 for experienced control, and .96 for psychological ownership (Brown, Pierce, & Crossley, 2014).

Data Analysis

Preliminary analyses involved reviewing the data for missing values, normality, and demographic characteristics. Next, to establish measure reliability, a Cronbach's alpha was calculated for each measure. Finally, due to the nested nature of the study and the presence of latent factors of organizational climate and psychological ownership, multilevel structural equation modeling (MSEM) was employed to simultaneously establish construct validity, and test the proposed hypotheses. SEM progresses in two stages (Kline, 2011). The first stage is to develop an adequate measurement model of both the organizational climate and psychological ownership latent variables to ensure construct validity of the measures. The second stage tests the hypothesized model measuring the relationships between APRN practice environment, organizational climate, and psychological ownership. Given the clustered nature of the data (APRNs working in the same hospital), a multi-level approach was used. Multi-level analyses correct the standard errors and test statistics obtained when fitting a single model to complex data (Kline, 2011). A WLSMV estimator was used. Two measurement levels were modeled, within-group and between-group. Within-group analyses utilize scores from individual

nurses, whereas between-group analyses utilize hospital mean statistics. Psychological ownership is a nurse-level construct, so the SEM model was analyzed at the within-level.

MPLUS 7.4 provides several goodness of fit measures used in this study including chi-square, root mean square error of approximation (RMSEA; acceptable fit is < .08; good fit is < .05), comparative fit index (CFI; good fit >.90 and excellent fit > .95), and Tucker Lewis index (TLI; good fit >.90 and excellent fit > .95) (Muthen & Muthen, 1998-2012).

Results

Missing Data

Of the 28 observed items on the APRN-OCQ, missing data ranged from 1-5% with the APRN-physician relations subscale containing the most items with missing data. Of the 21 observed items on the POQ, missing data ranged from 6-8% with the Psychological Ownership subscale containing the most items with missing data. 122 (22.5%) of APRNs did not fill out the cluster variable hospital ID question of the survey, and these individuals were analyzed as belonging to individual hospitals. Four of the 10 scope of practice items had one missing data item (4%), and 31% of CNOs responded they did not know about scope of practice on at least one variable in their institution (range 3-13% of unknown per variable). Of the 4 practice visibility items, 3 items had one missing data item (4%), and one item (are APRNs voting members of medical staff) had 3 missing values (12%). Finally, 21% of CNOs responded they did not know on at least one practice visibility item in their institution, with higher percentages of unknown items (7-21%). APRN missing data was handled through maximum liklihood. CNO missing data was handled by case-wise deletion.

Descriptives

Scope of Practice

Table 9 provides descriptive information on all variables in the model. Analysis of the Scope of Practice items reveals most APRNs are permitted to perform all functions in this study with physician co-signature (48-69%). The most common items permitted independently were performing history and physicals and writing consult orders (35%), and the least common was writing orders for controlled substances (3%). In the Practice Visibility items, 30% of respondents indicated they had a APRN Director in their facility, and more CNOs responded they had APRN representation on the credentialing committee (29%) than on other important hospital committees (18%). Few respondents indicated APRNs were voting members of hospital medical staff (7%).

Organizational Climate

Overall, APRNs reported a moderately high Organizational Climate score (62% rating a favorable score of strongly agree or agree, M=64.6, range 28-107, SD=14.5) (Table 9). The measure rating scale *(1-strongly agree, 2-agree, 3-disagree, 4-strongly disagree*) rated lower scores as better perception of the construct. In the Organizational Climate subscales, the lowest rating was in the APRN-Administration Relations factor (43% favorable, M=24.07, range 9-36, SD=5.8), and the highest rating is in the APRN-Physician Relations factor (81% favorable, M=13.46, range 7-25, SD=4.0).

Psychological Ownership

APRNs reported a high overall Psychological Ownership score (82% favorable, M=38.49, range 21-73, SD=9.5), again lower scores indicated better perception of the

construct. In the psychological ownership subscales, the lowest score was in the Control factor (59% favorable, M=14.00, range 6-24, SD=4), and the highest scores are in the Intimate Knowledge factor (94% favorable, M=6.31, range 4-15, SD=1.9), and Investment of Self factor (93% favorable, M=7.71, range 5-18, SD=2.5).

Measurement Models

Tables 10 & 4 list the Intraclass Correlations (ICC) for study indicators, indicating the proportion of total score variability explained by hospital-level grouping. ICC describes the ratio of between level variation to total variation (Kline, 2011). For instance, an ICC of .10 indicates APRNs in that hospital are 10% more likely to have similar scores on that item than score selected at random, and is a general cutoff indicating the need for multi-level modeling. In the POQ, only one of twenty-one variables in this sample fit this definition, *(I have invested many of my ideas into this job*-.10), confirming psychological ownership as primarily a nurse-level construct, however, in the APRN-OCQ, eight of twenty-eight were above .10 with a range of .102 (*In my organization, there is constant communication between APRNs and administration) to .184 (APRNs are represented in important committees in my organization),* signifying the larger effect of hospital group on organizational climate scores. Of items with ICC over .10, four were items in the APRN-administration subscale.

Organizational Climate

The four-factor structure suggested by Poghosyan, et al. (2014) was used as the basis for CFA on the APRN-OCQ. The initial analysis revealed good to excellent fit to the data, $X^2(724) = 934.065$, $p < 001$; RMSEA = .023; CFI = .973; and TLI = .971. Items

for the four first order factors, and the subscales with the second-order factor Organizational Climate all had statistically significant strong factor loadings with most standardized estimates >.75 (Table 10). Table 4 also depicts R^2 values at the within level, with standard errors and *p*-values. Nearly all observed variables had R^2 values > .50 and all had *p*-values <.001. As this data was analyzed at the categorical level, these R^2 values represent pseudo-R^2. However, it still holds that a significant amount of the variance in the item scores is explained by the model. The latent second order variable R^2 values ranged from .51 to .91 with p-values <.001.

Psychological Ownership

The four-factor structure suggested by Brown and colleagues (2014) was used as the basis for the POQ CFA. The initial analysis revealed good fit of the model to the data, $X^2(395) = 429.523$, $p = .1117$, RMSEA=.13, and CFI = .994, TLI = .993. Items for the four first order factors, and the subscales with the second-order factor Composite Psychological Ownership all had statistically significant strong factor loadings with standardized estimates ranging from .65 to .93 (Table 11). In the POQ, most observed variables had R^2 values near or greater than .5 with p-values <.001. The latent second order variables R^2 values ranged from the low end of .38 on the investment of self subscale, to .78 on the control subscale. All subscale R^2 values were statistically significant with p-values <.001.

Hypothesis Tests

The original study model hypothesized relationships between hospital level factors (scope of practice items such as were APRNs permitted to write orders, admit

patients to hospital, etc. and practice visibility items such as position on hospital committees) and APRN perceptions of psychological ownership and organizational climate (Figure 5). SEM is considered a large sample statistical technique (Kline, 2011). Only 31 CNOs responded to the survey, and of those, only 26 had corresponding APRN respondents in their hospitals (or clusters). Due to this low CNO response rate, and small amount of hospital-APRN clusters, SEM techniques could not be performed on cross-level data, therefore for Hypothesis 1 and 2, SEM was not performed and instead…. The APRN data did allow for SEM, with results reported below.

The hypothesized relationship between APRN psychological ownership and organizational climate showed good fit to the data, $X^2(2438) = 2871.082$, $p < .001$, RMSEA=.018, CFI = .952, and TLI = .951. Results show a positive relationship between psychological ownership and organizational climate ($B = .665$, $p < .001$) in support of Hypothesis 3.

Hypothesis 1 and 2

To examine the relationship between APRN practice environment and APRN psychological ownership and organizational climate perception, the composite scope of practice score was calculated for each responding hospital, and Pearson's *R* statistic was used to test the correlation between APRN-OCQ and POQ scores in a hospital and the total scope of practice for that hospital at the within level. APRN organizational climate and psychological ownership scores were reverse scored for these analyses. In this sample, no correlation was detected between scope of practice and organizational climate, leading to rejection of Hypothesis 1 ($r = .178$, $p = .068$), nor between scope of

practice and psychological ownership leading to rejection of Hypothesis 2 (r = -.056, p = .574) (Table 12).

Follow-up Analyses

Subscale and item-level correlations.

Further analyses were performed using a more fine-grained approach to investigate the relationship between APRN scope of practice and organizational climate subscale and item-level data. Significant positive Pearson's r statistics are reported in the relationship between scope of practice scores and the perceptions that administration understands APRN skills and competencies (r=.256, p= .006), and values the APRN role (r=.196, p=.040), and that APRNs and physicians collaborate in organization (r=.209, p=.030).

Significant negative correlations were detected between scope of practice and the psychological ownership subscale of Investment of Self (r=-.252, p=.010), particularly in the item-level scores of the perception that APRNs invested their self (r=-.241, p=.014), their ideas (r=-.215, p=.029), and invested a lot (r=-.335, p=.001) into their work.

Covariate analysis.

Covariate effects of demographic variables were analyzed first using multiple regression, then significant variables were included in the SEM path analysis. Two significant factors were included in the SEM model- type of APRN, and educational degree. Significant covariates were discovered in NP versus CRNA (B=.329, p<.001) and MSN versus DNP degree (B=.098, p=032), in relationships with Organizational Climate. No other significant covariate relationships were detected.

Practice visibility.

In addition to scope of practice items, CNOs were also surveyed about APRN practice visibility in the organization. In further analysis of the relationship between practice visibility scores and organizational climate scores, a significant positive correlation was detected between the Practice Visibility score and the perception that APRNs perceive committee representation in the organization (r=.364, p<.001), feel valued in the organization *(r*=.198, *p*=.040), and perceive they get regular feedback from administration (*r*=.237, *p*=.014).

Significant negative correlations were detected between Practice Visibility and the Psychological Ownership subscale of Investment of Self (*r*=-.252, *p*=.010), specifically in the items of investment of a major part of one's self (r=-.268, p=.008), one's talents (*r*=-.199, *p*=.050), and one's life (*r*=-.209, *p*=.039) into one's job.

Discussion

This study tested the relationship between the characteristics of APRN work environment of scope of practice and organizational climate, and their relationship to feelings of psychological ownership. As hypothesized, there is a positive relationship between Psychological Ownership and Organizational Climate. Overall, in this study APRNs achieved the highest Organizational Climate scores in their relations with physicians, and the lowest scores in their relations with administration. In particular, APRNs do not perceive equal treatment with physicians by administration, nor that they are represented on hospital committees, and they scored low on several APRN-administration communication items. Working relationships is a commonly investigated factor in APRN practice environment research. A recent review suggests relations with

physicians may be improving over time. However, relationships with administration continue to function as a barrier to practice corresponding with the current study results (Schirle, submitted for publication).

In reviewing covariate data, differences were found in Organizational Climate scores by type of APRN. In particular, NPs perceived greater scores on all Organizational Climate subscales than CRNAs. One explanation for this difference could be in the differences in how their work is structured. CRNAs tend to work primarily in hospital operating and obstetrical suites (AARP, 2010), and may not be as visible or interactive with other hospital personnel, including administration. In addition, CRNAs often do not control pace or scheduling, as these elements are generally products of operating scheduling staff (Cardoen, Demeulemeester, & Belien). NPs, in contrast, have a more varied role, and are more mobile throughout the hospital environment. This may explain the improved professional visibility, administration and physician relations, and independent practice perceptions.

A surprising finding involved the differences detected by highest degree held. MSN-prepared APRNs recorded higher scores on Professional Visibility, APRN-administration relations, and Independent Practice subscales. In particular, MSN-prepared APRNs believed administration understood their role, felt less restricted, and more integral to the organization. DNP-prepared APRNs scored the lowest of all degree types. This relationship held after controlling for age and years as a nurse an APRN. DNP is a relatively new degree compared to the more established BSN, MSN, and PhD. In addition to this adolescent status, considerable contention has erupted in recent years from both physician and nursing groups regarding this degree (Herships, 2009; Meleis &

Dracup, 2005). This division may manifest in friction from medicine and nursing colleagues alike at the clinical level.

In the psychological ownership measure, the lowest APRN scores were found in the Control subscale (59% favorable), and the highest in the Intimate Knowledge (94%), followed by Investment of Self (93%), then Psychological Ownership (84%). This study was performed in hospital APRNs, an environment known for highly structured hierarchical environments allowing for less control over work (McGibbon, Peter, & Gallop, 2010). As only one route to Psychological Ownership is needed, results suggest APRNs derive the high degree of Psychological Ownership outside of control over their work and through intimate knowledge and investment of self.

NPs perceive more control over their environment, feel more familiar with their work, perceive they can invest more ideas, and perceive more organizational Psychological Ownership than CRNAs. CRNAs, however, perceive more depth of knowledge of their jobs, and higher job and work related Psychological Ownership. These findings mesh with the differences in work environment discussed above, and also in the differences in education between the two groups. CRNAs are certified in the relatively narrow field of anesthesia leading to a deep knowledge of this highly specialized area. NPs are trained in a more global fashion as acute or primary care, and in one of six population foci (family, adult-gerontology, neonatal, pediatrics, women's health, and psych/mental health), (National Council of State Boards of Nursing [NCSBN], 2008). No differences were detected in Psychological Ownership by degree type.

Although a relationship could not be determined between scope of practice and overall Organizational Climate, a strong relationship is detected between increased scope of practice and perceptions that administration understands APRN skills and competencies, is open to APRN ideas, is working to improve APRN working conditions, communicates with APRNs, and that APRNs feel valued in the organization. Improved Practice Visibility was also found to improve APRN perceptions of feeling valued in the organization. Causal relations cannot be determined by correlational data, so it is unclear whether improved scope of practice leads to these improved Organizational Climate items, or improving the administration communication and overall relationship leads to increased APRN scope of practice. Regardless of causation, given that APRNs Organizational Climate scores were lowest in administration relations and in particular, communication variables, efforts to improve communication with APRNs appears to be an area requiring increased administration attention.

Scope of practice scores revealed results antithetical to the Theory of Psychological Ownership. In this study, negative correlations were detected between increased scope of practice and depth of knowledge, comprehensive understanding, and investing a lot into one's job. Negative correlations were also found between a hospital's Practice Visibility score and items related to intimate knowledge of, and investment of self into one's work. The reason for these perplexing correlations is unclear, but may be due to the fact that nursing education can be lacking in leadership skills required in these advanced roles (IOM, 2010). In particular, recent efforts are focused on increasing advanced practice nurse's preparation to be included in system-level decision making, a skill historically lacking in basic nursing education. Although improving scope of

visibility of nurses in hospitals is correlated with improvement in many variables related to administration relations and feeling valued by an organization, internally APRNs may feel less prepared for the increased knowledge and skills required by these endeavors leading to lower Psychological Ownership scores.

CNOs report lack of knowledge on both APRN scope of practice and practice visibility variables, lending support to the idea that CNOs may not be the best informants of APRN practice. Previous research has documented that non-APRN supervisors may be unfamiliar with APRN job elements leading to an environment where APRN concerns are unheard or misunderstood (Almost & Laschinger, 2002). This problem may be compounded in the complex hospital environment where APRNs rely on administrators as their link to the broader organization, and may explain the concerning APRN-administration findings in this study. Creation of an APRN Director position has been found to improve APRN satisfaction and organizational outcomes (Rhodes, Fusilero, & Williams, 2010). In the current study, APRNs in hospitals with an APRN Director recorded better scores on perceptions that administration is open to their ideas and is committed to improve APRN working conditions versus those without. Implementation of an APRN Director position may lead to improvement in many of the low-scoring Organizational Climate administration components in this study. In addition, this solution may improve APRN scope of practice, as an administrator who can articulate the APRN role to organization decision-makers should ultimately lead to improved understanding of the role in the organization. Lack of understanding of APRN role is linked to decreased scope of practice (Kleinpell, 1997), likewise, in this study, increased perception of administration understanding of role was correlated with increased scope of

practice. Finally, in order to function effectively in this role, the APRN Director will need to possess or acquire the leadership skills to function in the broader organizational context to avoid demoralizing pitfalls such as decreased sense of knowledge or investment of self, found in this study.

Limitations

This study was conducted on hospital APRNs in one southern state, and may not be generalizable to APRNs in other geographic regions or practice settings. Additionally, the low return rate limits generalizability to hospital APRNs in Florida. The large amount of missing data on the cluster variable of hospital ID effects on the mean cluster size of this study and may affect the standard errors. However, near identical results were obtained when treating missing cluster variable data as a single group versus individual groups which lends more integrity to the accuracy of the CFA results. The small number of CNO-APRN clusters necessitated correlational statistics limiting the causal interpretation of findings. Lastly, this sample overestimates CRNAs as a percentage of APRNs. In Florida 21% of APRNS are CRNAs (FCN, 2014), whereas nationally the number is 23% (U.S. Bureau of Labor Statistics, 2014). In this sample 30% identified as CRNAs, thus over-sampling of CRNAs may bias results.

Summary

Organizational-level barriers continue to hamper effective APRN utilization as a solution to the US healthcare cost and quality concerns (IOM, 2015). Specific practice environment factors such as decreased autonomy, poor relations, and increased physician oversite are found to act as barriers to APRN care (Schirle, working paper). This study

has identified a strong relationship between APRN organizational climate factors and psychological ownership. As psychological ownership has been linked to improved job and organizational outcomes such as organizational commitment, self-esteem, productivity, experienced responsibility, and performance in previous research (Pierce & Jussila, 2011), improving APRN organizational climate *and* psychological ownership could be the answer to improving organizational outcomes. Specific actions such as improving communication with APRNs, improving control over work environment, including APRNs in organizational committees only after they have attained the skills necessary to function in these non-clinical settings, and use of an APRN Director may help improve these barriers.

More research is needed in the areas of APRN-administration relations, specifically in communication. Additionally, further investigation should focus on the concept of psychological ownership in nursing populations, and specifically, the relationship between increased APRN scope of practice and involvement in organizational committees and routes to psychological ownership identified in this study. Finally, further exploration of the DNP practice environment is necessary. Practice environment and psychological ownership are potentially important concepts to consider in investigating barriers to practice. This study establishes a relationship exists between the two, however the dynamics of the relationship need further investigation as we work toward the goal of mitigation of all barriers to APRN practice in order to maximize the APRN role in improving national health outcomes.

Chapter 5

Conclusion

APRNs have been promoted as one solution to the US healthcare cost and quality crisis, but this remedy cannot be realized without removal of existing barriers (IOM, 2010). The current focus on healthcare reform has propelled this topic into a national spotlight, but the research into specific APRN practice environmental barriers, and its impact on APRNs and patients, is only recently emerging. This study aimed to investigate the relationship between common organizational-level barriers to APRN practice environment to perceptions of organizational climate, and the role psychological ownership may play in the relationship. The study investigated APRN practice environment through 2 domains, scope of practice and organizational climate, and sought to answer the following question: what is the relationship between APRN scope of practice in a hospital, APRN's perceptions of organizational climate, and the sense of psychological ownership that APRN's have in their jobs?

Empirical Findings

The main empirical findings are specific to the three manuscripts, and will be summarized here to address the three research hypotheses:

1. No relationship was identified between APRN scope of practice in a hospital, and APRN perceptions of organizational climate.

2. No relationship was identified between APRN scope of practice in a hospital, and APRN perceptions of psychological ownership.

3. There is a positive relationship between APRN perceptions of organizational climate and psychological ownership.

First, it was hypothesized that a positive relationship exists between the scope of practice an APRN is permitted in a hospital and the overall perception of a positive organizational climate. This hypothesis was rejected. The organizational climate tool used in this study identified OC as being comprised of four different factors: professional visibility (including understanding of the APRN role), administration-APRN relations, administration-physician relations, and independent practice and support. Scope of practice was measured by the extent to which APRNs were permitted to perform a number of clinical activities independently in the hospital. Although no relationship was identified between the two concepts, nuanced relationships at the subscale and item level were detected that warrant further exploration, notably in the context of findings of critical APRN practice barriers uncovered in exploration of APRN practice environments.

The integrative literature review preceding this study identified several scope of practice items that function as particularly critical barriers to APRN practice. These included the inability to admit patients to a hospital, the necessity of having orders co-signed by physicians, not having a specific panel of patients, and lack of prescriptive authority. Only two, admitting patients and order co-signature, are pertinent to acute care APRNs. APRNs in this study were not permitted to independently perform most functions in the scope of practice survey. Furthermore, very few hospitals permitted hospital admitting privileges for APRNs confirming these barriers exist in the present study similar to previous findings.

Although no relationship was detected in scope of practice and overall perceptions of organizational climate, several aspects of organizational climate were significantly related to APRN scope of practice. A strong positive relationship was identified between APRN scope of practice and the perception that administration understands the APRN role, is open to APRN ideas, is working to improve APRN conditions, communicates with APRNs, and APRNs are valued in the hospital. The vast majority of these items relate to the APRNs relationship with hospital administration. APRN practice environment literature reveals good working relations are important to improved APRN practice, and although difficulties with physician relations may be improving, relationship struggles persist with administrators (Schirle, submitted for publication. Indeed, in this study, APRNs score the lowest in their perceptions of administration-APRN relations, and the highest in physician-APRN relations. It is also interesting to note that intraclass correlations for the administration-APRN subscale were highest of all factors, indicating this manifestation is a hospital-level construct, and not an individual one. In other words, the relations with administrators is perceived similarly by APRNs in the organization. On whole, study results suggest APRNs continue to struggle with relations with hospital administrators, and, although the temporal relationship is unclear, as scope of practice increases in a facility, so do the positive perceptions of administration,

The second hypothesis proposes a positive relationship between scope of practice and the perception of psychological ownership in a hospital. The psychological ownership tool used in this study identified psychological ownership as being comprised of four different factors: control over practice, intimate knowledge of one's job,

investment of self into one's job, and presence of psychological ownership. No relationship was detected between a hospital's APRN scope of practice and the overall routes and presence of psychological ownership leading to rejection of Hypothesis 2, but, similar to findings above, nuanced significant relationships in scope of practice and psychological ownership items were uncovered identifying the presence of a complex relationship between constructs. As psychological ownership has been found to positively impact worker performance and outputs in previous research (Pierce & Jussila, 2011), this measure will be useful as a tool to investigate what nursing practice environment factors foster development of psychological ownership and whether this corresponds to improved patient outcomes.

It should first be noted that since the Theory of Psychological Ownership has not previously been used in a nursing population CFA results confirmed the subscales of psychological ownership measure worked as designed in this APRN sample. Overall, APRNs in this study scored high on perceptions of psychological ownership. The highest scores were in the subscales of intimate knowledge and investment of self, and the lowest scores were in the control factor. In spite of these overall positive findings, negative correlations were detected between scope of practice and the subscale of investment of self, especially in the items of investment of ideas and investing a lot into one's job. This finding is antithetical to the tenets of the Theory of Psychological Ownership and the results of the literature review where increasing control, autonomy, empowerment, and decision making should improve both perceptions of psychological ownership and APRN practice environment. Increasing independence in the scope of practice items should theoretically lead to increased levels of these factors, but, as indicated earlier, very few

hospitals permitted APRNs to perform the scope of practice functions independently, and most required at minimum a physician co-signature. It is possible as scope of practice increases in a facility (i.e. as APRNs are permitted to perform a function such as write a consult order), they are still devoid of control, autonomy, and empowerment due to the continued physician co-signature restriction. Therefore, their workload increases without the corresponding authority, leading to decreased feelings of investment of self. Interestingly, no relationship was detected with scope of practice and control, indicating increases in this factor did not lead to increased perceptions of control over work.

The third hypothesis proposes a relationship between good organizational climate perceptions and the development of psychological ownership, and this relationship is confirmed. A strong positive correlation is reported between the two constructs, indicating that practice environments with good APRN organizational climates also foster APRN psychological ownership feelings, although, again, a causal inference cannot be made. Overall APRNs in this study reported moderately high organizational climate scores and high psychological ownership scores, but nuances to this relationship were also investigated.

The Theory of Psychological Ownership posits that as control over, intimate knowledge of, and investment of self in a job increases, circumstances improve for the development of psychological ownership. In particular, the organizational climate factors of professional visibility and independent practice correspond with the psychological ownership control over practice factor, and should foster development of APRN psychological ownership. Intimate knowledge and investment of self are not constructs measured in the organizational climate tool. Additional variables related to a hospital's

practice visibility score do capture some of the construct. For instance, serving on hospital committees, having a role in the credentialing and privileging process, and having voting rights can foster intimate knowledge of how one's job evolves and is related to organization mission and goals. These roles can also increase one's investment of oneself as these activities require skills and duties outside of regular clinical activities. A suggestion of a possible mediating role of psychological ownership between scope of practice and organizational climate was theorized in the study proposal. Although mediation could not be tested due to the small number of hospital/APRN clusters, correlational data suggests this mediating relationship may be reversed.

In investigating the relationship between scope of practice and organizational climate, the only significant items were found in the administration-APRN relations subscale, a subscale not containing psychological ownership constructs, and a negative relationship was determined between scope of practice and some psychological ownership factors, as discussed above. An alternative mediating pathway could exist between scope of practice and psychological ownership through organizational climate. In other words, as APRN scope of practice improves in a hospital, perceptions of organizational climate improve, and this leads to increased psychological ownership.

Practice visibility scores were found to be significantly related to several psychological ownership and one organizational climate item. The organizational climate item of feeling APRNs were valued in the hospital was positively related to increased practice visibility, however, negative relationships was detected between increasing practice visibility and the psychological ownership subscales of intimate knowledge and investment of self. A possible explanation was posited that this relationship represented

lack of APRN proficiency in assuming duties related to these activities, or could also be the result of long-standing gender and power maldistribution present in hospital settings. Either of these conditions could lead to a demoralizing state where psychological ownership is diminished.

Covariate analysis of the study model revealed that significant differences existed with regards to APRN type and highest degree. Differences in NP and CRNA educational preparation and job design factors such as mobility of the APRN about the facility and contact with other healthcare occupations may explain the differences in APRN type. The differences in MSN versus DNP degree organizational climate scores is perplexing and merits further investigation.

Theoretical Implications

These results hold implications for how the psychological ownership construct is conceptualized in acute care APRN populations. Control is hypothesized as the most important route to psychological ownership in the Theory of Psychological Ownership, and studies in other professions have provided empiric evidence of this concept. APRNs in this study demonstrate high levels of psychological ownership despite lower scores on the control route. APRNs in hospitals are in the unique position of being highly educated and skilled workers in an environment known for centralized, hierarchical, low-control environments. In addition, the healthcare industry, and especially advanced practice nurses, are highly influenced by outside forces such as Federal, State, accrediting agency, and third-party payer regulations. Although the theory allows only one route is necessary for the development of ownership feelings, the theory promotes the control route as most influential. Most studies have been carried out in business, marketing, and technology

fields. Few are as regulated and influenced by outside factors as advanced practice nursing. Further investigation is needed to fully appreciate any unique contributions to the theory these factors may hold.

Policy Implications

Many of the suggestions regarding APRNs as a solution to the US cost and quality concerns center around the primary care setting, a setting known for less structural barriers to practice. Hospitals also require reform efforts as payment policies are moving toward quality and outcome based strategies, yet the immutable infrastructure makes implementation of suggested reform efforts challenging. This study offers hospital administrators empirical evidence that administrator-APRN relations continue to be strained, improvement in scope of practice is associated with improvement in these relations, and specific actions such as improvement in APRN communication may improve overall organizational climate perceptions. In addition, caution may be advised in enacting suggestions of placing APRNs on hospital committees without adequate preparation first. A recent report on progress of the IOM's 2010 Future of Nursing Report recommendations determined that not only should health care decision makers ensure that nurses are represented in key leadership positions, but that care should be taken to ensure they are provided with opportunities to develop the leadership skills necessary to successfully assume these positions (IOM, 2015). Historically, nursing education has not included leadership or governance content. The premature placement of APRN on these organizational governing committees without these skills may have led to the perplexing practice visibility findings in this study.

Further Research

The trend of increasing use of APRNs for provision of care shows no signs of abating, yet, in this study and others, administration-APRN relations are strained. Also, in the present study, increased scope of practice was associated with improvement in these relations but the temporal relationship is not defined. Longitudinal studies that investigated what strategies improve this relationship, and whether improvement in administration-APRN relations improved scope of practice or vice versa would be valuable.

In addition, CNOs in this study indicated they were not aware of specifics of APRN practice, and may not be the best informants of APRN scope of practice or practice visibility. More studies are indicated using alternate sources of this information. Possibilities include credentialing and privileging committee members, existing proprietary databases such as locum tenens agencies, or APRNs themselves. The fact that nursing leaders in an organization are not familiar with aspects of advanced practice nursing practice is concerning, but not surprising. As previously noted, APRNs cross barriers with physician responsibilities, and organizations may be struggling with the appropriate structures and processes in which to manage them. Further research into best practices for APRN management is also suggested.

This study was unable to determine a relationship between scope of practice factors and organizational climate, nor establish a mediation path for psychological ownership. The alternative option of organizational climate acting as a mediator between scope of practice and practice visibility and the development of psychological ownership would be a worthwhile study. As positive outcomes to psychological ownership have

been established, improvements in organizational climate that foster its development could be used to investigate improvement in patient outcomes.

The findings that involvement in hospital committees is associated with less investment of self and perceptions of intimate knowledge of one's job needs further investigation. Studies investigating whether increasing leadership and board preparation skills leads to improvement in these factors, and whether overall this leads to better APRN, organization, and patient outcomes are warranted.

Finally, the differences in NP versus CRNA and MSN versus DNP organizational climate and psychological ownership scores should be further investigated. Qualitative investigation may be required, in addition to studies exploring mitigation strategies to improve CRNA and DNP practice environments.

Limitations

Several limitations constrain this study's generalizability. The most important limitation regarded the use of CNOs as informants of hospital APRN characteristics. This tactic led to several problems. A pilot study was performed with three former hospital administrators, who indicated the information requested should be known to CNOs, however, a number of CNO respondents indicated they did not know portions of the data requested. This may have contributed to missing data, and low response rate. In addition, CNOs are also busy, hard to reach individuals. Recruitment methods of email, postcard mailing, and phone calls were unproductive, leaving networking through personal connections as the only effective method in this study. This also may have led to low response rate and response bias. The data collection plan called for CNOs to

complete the hospital characteristics survey, and forward the APRN survey to APRNs working in their hospitals. The majority of APRN data resulted from direct contact through the board of nursing email list. This resulted in only 26 hospitals with corresponding APRN data, a response rate too low to employ multi-level SEM or mediation techniques. The necessity to use correlational statistical techniques resulted in loss of multi-level capabilities. Multi-level SEM statistical methods would have allowed much more powerful conclusions to be drawn about the relationship between hospital practice environment and APRN organizational climate and psychological ownership.

A second limitation involved the amount of APRN missing data on the cluster variable. Although statistical models were run treating this data as extremes of all belonging to one hospital, or all belonging to separate hospitals, and SEM results were nearly identical, the amount of missing data decreased the mean cluster size and undoubtedly, the number of hospital/APRN cluster pairs.

Additional limitations include limited generalizability due to location in one southern state and oversampling of CRNAs as a proportion of APRNs.

Summary

Psychological ownership is contemporary concept that has substantive applications for nursing research. Fostering job psychological ownership has been found to improve employee/organizational performance and outcomes in other fields such as a recent study of Chinese technology workers which identified a positive relationship between psychological ownership and increased job satisfaction, organizational citizenship behaviors, and lower turnover (Peng & Pierce, 2015), and can be an important

addition to nursing practice environment research. Given the importance of APRNS to continuing healthcare reform efforts and the spotlight on efficiency and quality outcomes, a compelling case exists to identify and implement means to increase APRN practice environment *and* psychological ownership. This study establishes a relationship between the two exists, however the dynamics of the relationship is needs further investigation as we move toward maximizing the APRN role in improving national health outcomes.

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Figure 1. Multilevel Path Analysis Model

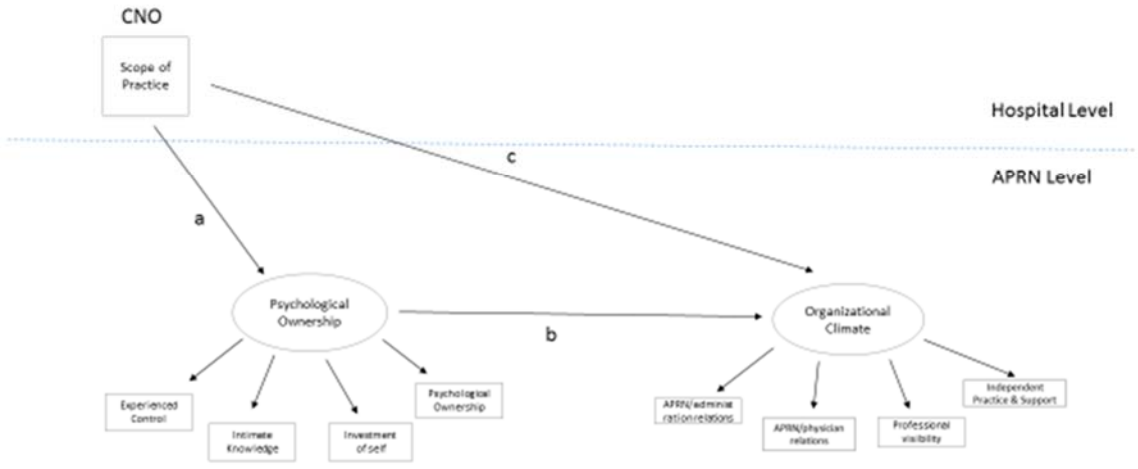


Figure 2. Literature Search Results

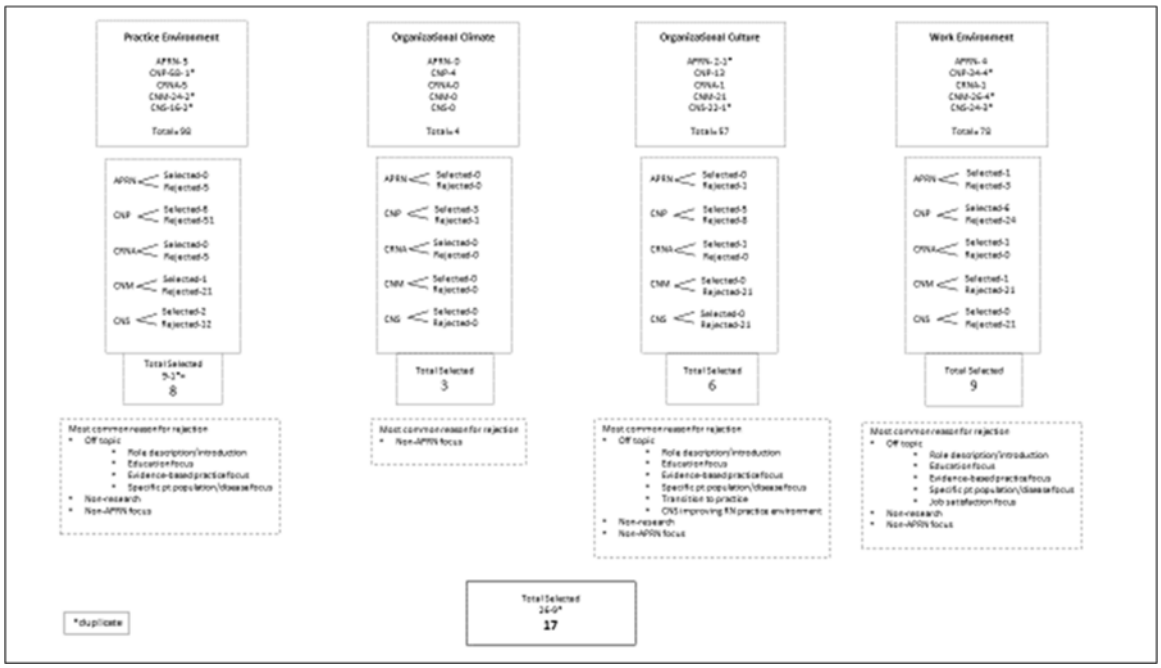


Figure 3. Number of peer-reviewed published studies investigating APRN practice environment by decade

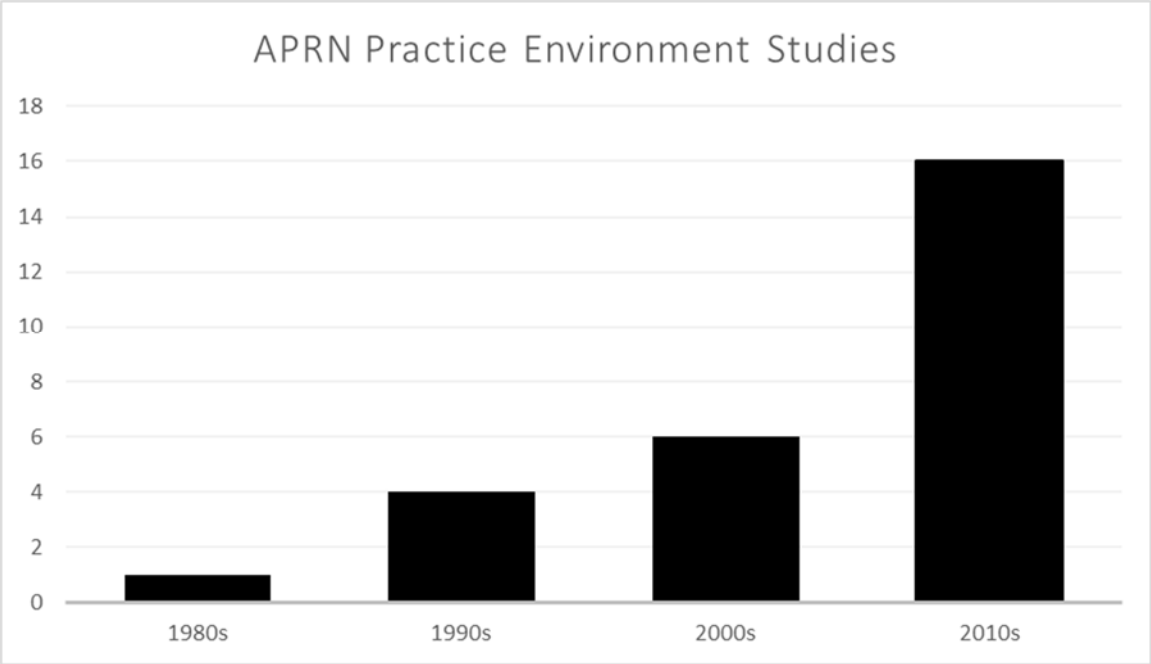
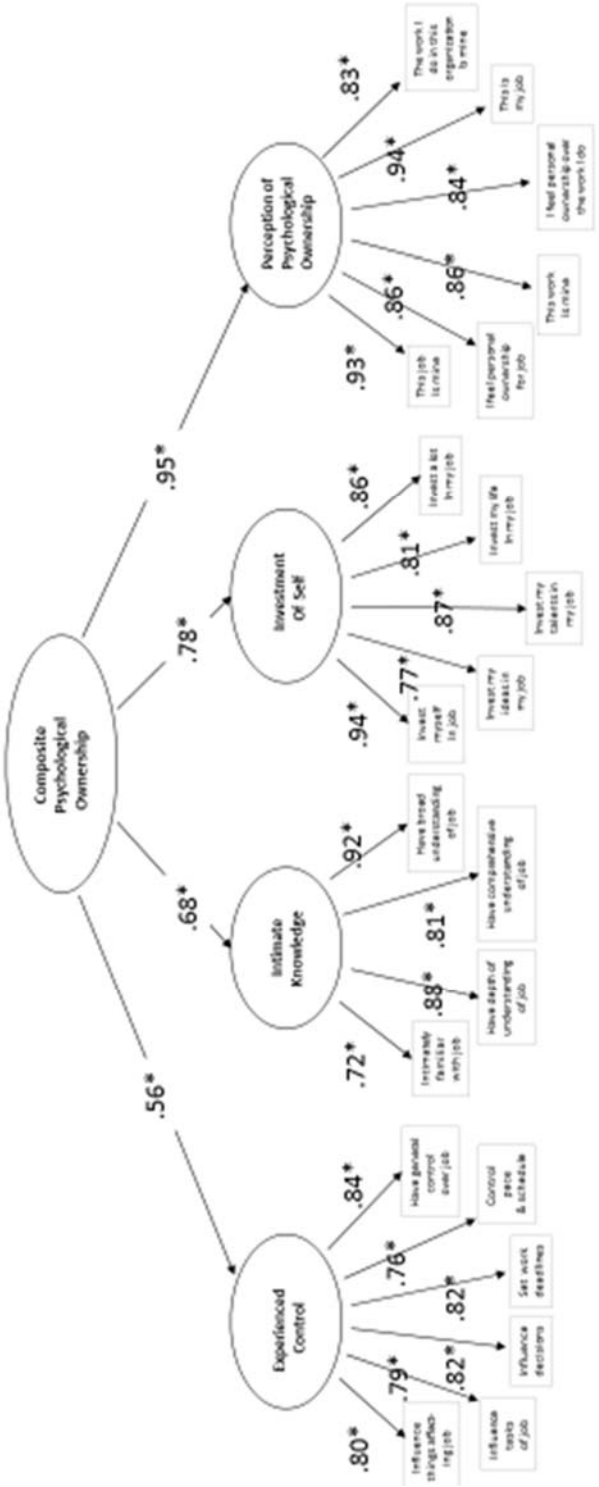


Figure 4. CFA for Psychological Ownership Questionnaire Model



This figure depicts the factor loadings of first and second order latent factors of the POQ.* indicates p-values<.001.

Figure 5. SEM for Study Model

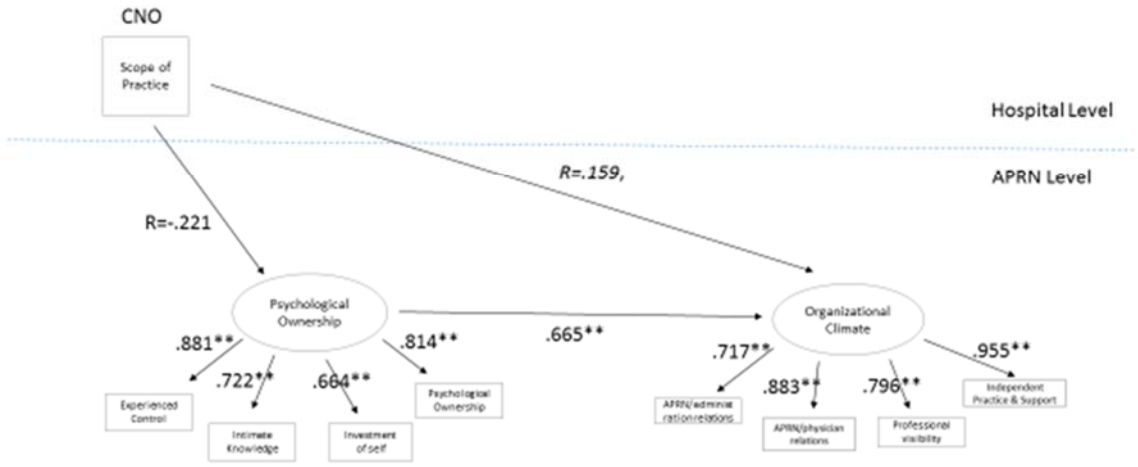


Figure depicts the CFA for latent constructs of Psychological Ownership and Organizational Climate in an APRN population, including factor loadings for each item. ** indicates significance < .001 level. Path Analysis is depicted for the proposed relationship between Psychological Ownership and Organizational Climate with Beta estimate significant at the <.001 level. Pearson's Correlations are depicted for the proposed cross-level relationships between Scope of Practice and APRN Psychological Ownership and Organizational Climate constructs.

Table 1.

Major Differences between Organizational Climate and Organizational Culture Concepts

	Climate	Culture
Concept characteristics	Concrete, measureable, set of work environment characteristics as perceived by employees that affect behavior	Global, difficult to measure, may be subconscious, pattern of assumptions of a group
Concept first popularized	1968 Litwin & Stringer	1979 Pettigrew
Discipline	Psychology and Sociology	Anthrology
Research techniques	Quantitative, etic approach	Qualitative, emic approach
Theoretical basis	Positivist, Lewin Field Theory	Social Constructivist, Critical Theory

Note. Table content reflects a composite of historical data obtained from Denison, D. (1996), Schein, E.H. (1990), and Schnieder, B. (1990).

Table 2.
Statistical Tests to Validate Aggregation of Individual Level Data to Higher Level Concept

Test	Symbol	Description	Accepted Values/limitations
Index of within group agreement	r_{wg}	Compares the variability of a given variable within a specific group to an expected variance	Aggregate if $r_{wg} > .7$. Only measure that allows assessment and comparison of individual unit consensus
Eta-Squared	η^2	Compares within-group and between-group variability in a single measure across an entire sample	Aggregate scores if *F* test is significant. Values suggest percent of variance explained by which group an individual belongs to (i.e. η 2 of .25 suggests 25% of variance is between groups and 75% is within groups) /affected by small sample size (<25)
IntraClass Correlation coefficient	ICC(1)	Similar to η 2. Estimates the proportion of the total variance explained by group membership	Aggregate if *F* test is significant. Larger the ICC, the more inter-individual agreement/ Not affected by sample size
IntraClass Correlation coefficient	ICC(2)	Assesses the reliability of the group measure (similar to Cronbach's alpha) A variation of ICC(1) that	Acceptable if > .7. Group means are considered more reliable if larger sample/ accounts for sample size

		adjusted for group size using the Spearman-Brown formula.	
Within and between group analysis	WABA	Assesses the extent of within-group and between-unit variance on more than one measure. Considers covariance in separate measures.	Considers *whole* (group level relationship of 2 shared constructs- aggregates to group level- weak correlation at individual level, but between group scores variance and covariance substantially), parts (within group variance and covariance reflects individuality of scores at team level- or "frog-pond construct) , or equivocal (non-significant within and between group variance or covariance- consider individual level relationship)

Note. Statistical description obtained from Klein & Kozlowski, (2000).

Table 3.
Elements of Common Work Environment Theories Influencing Nursing Research

Herzberg 2-Factor Theory	**Hackman & Oldham Job Characteristics Theory**	**Kanter's Theory of Structural Empowerment**	**Peters & Waterman Themes of Organizational Excellence**	**14 Forces of Magnetism**
Motivators (e.g. challenging work, recognition for achievement, responsibility, opportunity to do meaningful work, involvement in decision making, sense of importance to an organization) that give positive satisfaction, arising from intrinsic conditions of the job itself, such as recognition, achievement, or personal growth,[4] *and* **Hygiene factors** (e.g.status, job security, salary, fringe benefits, work conditions, good pay, paid insurance, vacations) that do not give positive satisfaction or lead to higher motivation, though dissatisfaction results from their absence	**Core Job Characteristics** (skill variety, task identity, task significance, autonomy, and feedback) prompt the following **Psychological States:** Experienced Meaningfulness of the Work, Experienced Responsibility for the Outcome of the work, and Knowledge of Results of the work And eventually lead to intrinsic motivation for work	Workers are more effective when they have: access to information, access to resources, support, and opportunity for advancement	**8 Themes** **-A bias for action**, active decision making **- 'getting on with it'**. Facilitate quick decision making & problem solving tends to avoid bureaucratic control **-Close to the customer** - learning from the people served by the business. **-Autonomy and entrepreneurship** - fostering innovation and nurturing 'champions'. **-Productivity through people**- treating rank and file employees as a source of quality. **-Hands-on, value-driven** - management philosophy that guides everyday practice - management showing its commitment.	1.**Quality Nursing Leadership** 2.**Decentralized organizational structure** 3.**Participatory management style**, 4.**Competitive & flexible personnel policies that encourage professional growth** 5.**Professional models of care** 6.**Focus on Quality care** 7.**Quality Improvement focus** 8.**Encourages nurses as expert resources in organization and outside organization** 9.**Autonomy** 10.**Partners with community** 11.**Nurses are encouraged as teachers**

	Stick to the knitting - stay with the business that you know. **-Simple form, lean staff** - some of the best companies have minimal HQ staff.Simultaneous loose-tight properties - autonomy in shop-floor activities plus centralized values.	12.**Nurses are viewed as essential to organizations goals** 13.**Collaborative working relationships are fostered** 14.**Professional development is supported.**

Table 4.
Variables and Characteristics in Quantitative APRN Practice Environment Research

Study	Sample	Method	Variables
Almost & Laschinger. 2002 *Workplace Empowerment, Collaborative Work Relationships, and Job Strain in Nurse Practitioners*	licensed NPs in Ontario, Canada Convenience sample of all NPs registered in one province in Canada	Cross-sectional predictive design	Demographics CWEQ (Empowerment) -opportunity -support -information -resources JAS- formal power ORS- informal power Stichler Collaborative Behavior Scale -NP:MD collaboration -NP: manager collaboration Job Content Questionnaire- job strain
Anen & McElroy 2015 *Infrastructure to Optimize APRN Practice*	US Acute Care hospitals in 27 utilizing APRN and PAs Hospitals self-selected to participate	Ongoing survey and database development	Demographics Researcher created data collection tool focused on 6 strategic areas -Leadership -Human Resources -Credentialing & Privileging -Competency Assessment -Billing & Reimbursement -Measurement/Impact
Brom, Melnyk, Szalacha, & Graham 2014 *Nurse Practitioners' Role Perception, Stress,*	Acute care NPs Convenience sample at one academic medical center	Cross sectional descriptive survey	Demographics Workplace characteristics including reporting structure Role Perception- researcher created measure including questions of overall role perception, scope of practice, and barriers to practice MNPJSS- Job Satisfaction

Satisfaction, and Intent to Stay at a Midwestern Academic Medical Center			-collegiality -professional/social/community interaction -challenge/autonomy -professional growth -time -benefits Stress-1 researcher created question Intent to stay- 1 researcher created question
Byers, Mays, & Mark 1999 *Provider Satisfaction in Army Primary Care Clinics*	Army Primary Care NPs and PAs in Virginia, North Carolina and Washington Convenience sample of all providers in 9 Military Clinics in 3 states	Cross-sectional descriptive design	**DV**: Army-created tool measuring job satisfaction **IV**: -Demographics -Thibideau & Hawkins Advanced Practice Model measuring medical versus nursing practice style -Dempster Autonomous Practice Scale- measuring autonomy -Strichler Collaborative Behavior Scale measuring collaboration -Information giving- measuring providers preference for giving patient information
Cheng, Kelly, Carlson, & Witt 2014 *The Intention of Advanced Practice Registered Nurses to Remain in Positions at Family Planning Clinics Serving Low-Income Women*	APRNs working in Title X clinics in US (APRN type not identified) Convenience sample of APRNs participating in a training session-snowballing from the original convenience sample	Cross-sectional descriptive design	**DV**: - Intent to remain in current position external opportunity -job satisfaction **IV:** demographics general training professionalism distributive justice family responsibility work effort advancement opportunity participation integration routinization
Chevalier, Steinberg, & Lindeke 2006 *Perceptions of Barriers to Psychiatric*	Psych/Mental Health NP and CNSs in Minnesota Convenience sample of NP and PMH CNS in a board of nursing database	Cross-sectional descriptive design	Demographics Washington Consulting Group Practice Barrier Scale -interpersonal barriers -intrapersonal barriers -practice setting -support -reimbursement

Mental Health CNS Practice			-public support for practice Practice Restrictiveness
Chumbler, Geller, & Weier 2000 *The Effects of Clinical Decision Making on Nursing Practitioners' Clinical Productivity*	NPs licensed to practice in Wisconsin and practicing in outpatient settings Convenience sample	Cross-sectional descriptive design	**DV**: Clinical Productivity **IV**: Demographics Researcher created clinical decision making measure -order routine lab tests -order expensive lab tests -order routine radiology studies -order routine CT/MRI studies -refer to specialist -refer to allied health profession (PT/OT) -admit to hospital (removed from analysis due to no affirmative responses) Practice Attributes -salary -proximity to physicians -use of protocols -patient panel -practice area -practice type
Domine, Siegel, Zicafoose, Antal-Otong, & Stone 1998 *Survey of APNs Employed by the Veteran's Health Administration (VHA)*	NP and CNSs in VHA- nationwide survey Convenience sample	Cross-sectional descriptive design	Adaptation of a VHA-developed Questionnaire -demographics -credentials -experience -practice -recruitment and retention -practice barriers
Doran, Duffield, Rizk, Nahm, & Chu 2014 *A Descriptive Study of Employment Patterns and Work Environment*	Combined sample of Specialist RNs, CNS, and APRN-other (which included case managers and nurse anesthetists) licensed in Ontario, Canada Stratified sample	Cross-sectional descriptive design	Demographics NWI-PES -participation in hospital affairs -nursing foundation for quality of care -nurse manager ability, leadership and support -collegial nurse: physician relations Job Satisfaction Intent to leave

Outcomes of Specialist Nurses in Canada			Turnover
Faris, Douglas, Maples, Berg, & Thrailkill 2010 *Job Satisfaction of Advanced Practice Nurses in the Veterans Health Administration*	NP and CNS in VHA Convenience sample	Cross-sectional descriptive Design + One qualitative question r/t barriers to practice was reported.	**DV:** MNPJSS- Job Satisfaction -collegiality -professional/social/community interaction -challenge/autonomy -professional growth -time -benefits **IV:** **Researcher created survey including** -Demographics -Clinical practice specialty -Work setting -Employment status -Current nurse level -Barriers to practice Open-ended qualitative question about barriers to practice
Freeborn, Hooker, & Pope 2002 *Satisfaction and Well-Being of Primary Care Providers in Managed Care*	Primary Care NPs, PAs, and physicians working in Northwest region of Kaiser Permanente HMO (Oregon) Convenience Sample	Cross-sectional descriptive design	**DV**: Researcher created Practice Environment tool -autonomy -patient load -colleague relations -quality of care -patient relations -stress -choose setting again -satisfaction (with income, benefits, pt relationships, continuity of pt care, time with each pt, types of pts seen, ability to refer, autonomy to treat pt, ability to order) **IV**: Type of provider Years with HMO Employment status
Hayden, Davies, & Clore 1982	Graduates of 2 Emergency NP (ENP) schools (sample included 3	Cross-sectional descriptive design	Researcher Created measures: -All respondents: -reasons for entering ENP program,

Facilitators and Inhibitors of the Emergency Nurse Practitioner Role	subsets: those still working as ENP, those working as NP in another field, and those not working as NP) Convenience Sample		-reasons for accepting current position, and for those not working as NP - reason for leaving NP position -For those working as ENP - Indirect factors that facilitate or inhibit the role (job description, position title, salary and benefits, state certification, legal status, and role acceptance) -Direct factors that facilitate or inhibit the role (role autonomy, management of new and follow-up patients, collegial relationships, and record audit)
Hupcey 1993 *Factors and Work Settings that may Influence Nurse Practitioner Practice*	NPs certified in Pennsylvania Randomized sample	Cross-sectional descriptive design	Researcher created measure -Demographics -setting location -Settings that most helped or hindered performance of NP role -Factors in the work setting that helped or hindered role performance
Laschinger, Almost, & Tuer-Hodes 2003 *Workplace Empowerment and Magnet Hospital Characteristics*	3 separate samples were included: 2 with staff nurses and 1 with NPs employed in urban tertiary hospitals in Ontario Canada. Secondary data analysis	Secondary analysis of 3 previous studies using predictive cross-sectional design	CWE-II measuring empowerment -opportunity -support -information -resources JAS- measuring formal power NWI-R measuring magnet characteristics -autonomy -control over nurse practice -nurse-physician relations Job Satisfaction
Lelli, Hickman, Savrin, & Peterson 2015 *Retail Clinics versus Traditional Primary Care: Employee*	Primary care NPs Convenience sample at a national NP conference	Cross sectional descriptive design	Demographics MNPJSS- Job Satisfaction -collegiality -professional/social/community interaction -challenge/autonomy -professional growth -time -benefits Dempster Practice Behavior scale (DPBS)-Autonomy -readiness

Satisfaction Guarenteed?			-empowerment -actualization -valuation
Lindeke, Jukkala, & Tanner 2005 *Perceived Barriers to Nurse Practitioner Practice in Rural Settings*	NPs licensed in Minnesota that self-identified as practicing in rural setting Convenience sample	Trend study replicating a 1996 study ranking barriers to practice	Demographics Washington Consulting Group Practice Barrier Scale -interpersonal barriers -intrapersonal barriers -worksite support -reimbursement -public support for practice
Meeusen, Van Dam, Brown-Mahoney, Van Zundert, & Knape 2011 *Understanding Nurse Anesthetists' Intention to Leave their Job: How Burnout and Job Satisfaction Mediate the Impact of Personality and Workplace Characteristics*	CRNAs working in Dutch hospitals and clinics Convenience sample	Cross-sectional Descriptive Design	Researcher created measures -demographic -turnover intention -job satisfaction Maslach Burnout Inventory Work Context Characteristics Tool (TOMO) created for Dutch Workforce -task content -social environment -colleague interaction and support -supervisor relationship -rewards Gallup Work Climate Questionnaire (derived from Herzberg 2-Factor Theory and Hackman & Oldham Job Characteristics Model) -know chief's expectations -have tools to do my job -I can do what I'm best at -recognition -chief appreciates me -my development is encouraged -my opinion counts -mission says my job is important -colleagues give quality work -best friend at work -my progress is tracked -opportunities to learn and grow Myers-Briggs Personality Type Indicator
Meeusen, van Dam, Brown-Mahoney, van	Dutch CRNAs Convenience sample	Cross-sectional Descriptive Design	Researcher created measures: -Sickness absences -perceived general health

Zundert, & Knape 2011 *Work Climate Related to Job Satisfaction among Dutch Nurse Anesthetists*			-job satisfaction Gallup Work Climate Questionnaire (derived from Herzberg 2-Factor Theory and Hackman & Oldham Job Characteristics Model) -know chief's expectations -have tools to do my job -I can do what I'm best at -recognition -chief appreciates me -my development is encouraged -my opinion counts -mission says my job is important -colleagues give quality work -best friend at work -my progress is tracked -opportunities to learn and grow
Pasaron 2013 *Nurse Practitioner Job Satisfaction: Looking for Successful Outcomes*	NPs and physicians from one children's hospital Convenience sample	Cross-sectional Correlational Design	MNPJSS- Job Satisfaction -collegiality -professional/social/community interaction -challenge/autonomy -professional growth -time -benefits NP Snapshot Survey - NP demographics - employment/human resource details -orientation - practice setting - specialty - # collaborating NPs -barriers to practice Physician NP Survey - Physician demographics - Confidence in NP knowledge/decision making - Factors inhibiting NP role implementation - Factors facilitating NP role implementation - Suggested Improvements for NP role - Suggestion for NP Orientation - Patient satisfaction with NP role
Poghosyan, Nannini, Finkelstein,	NP graduates of one school in New York	Instrument development design	NPPCOCQ -professional visibility -NP: administration relations

Mason, & Shaffer 2013 *Development and Psychometric Testing of the Nurse Practitioner Primary Care Organizational Climate Questionnaire*	Convenience sample		-NP: physician relations -independent practice and support
Poghosyan, Shang, Liu, Poghosyan, Liu, & Berkowitz 2014 *Nurse Practitioners as Primary Care Providers: Creating Favorable Practice Environments in New York State and Massachusetts*	NPs practicing in primary care in New York State and Massachussetts Convenience Sample	Cross-sectional Descriptive Design	Demographics State of practice NPPCOCQ -comprehension and visibility of NP -NP: administration relations -NP: physician relations -independent practice -organizational support
Poghosyan & Aiken 2015 *Maximizing Nurse Practitioner' Contributions to Primary Care Through Organizational Changes*	NPs practicing in primary care in 2 Northeastern states Purposive sample in 2 states to minimize effect of state scope of practice	Cross sectional descriptive design	Demographics NPPCOCQ -comprehension and visibility of NP -NP: administration relations -NP: physician relations -independent practice -organizational support Researcher created: Do you have a panel of patients? Turnover intent Job Satisfaction (from a 3 item inventory commonly used to assess job satisfaction)

Pron 2013 *Job Satisfaction and Perceived Autonomy for Nurse Practitioners Working in Nurse-Managed Health Centers*	Primary care NPs in Nurse Managed Health Centers nationally A convenience sample of centers belonging to one national nursing center consortium	Cross sectional descriptive design	Demographics MNPJSS- Job Satisfaction -collegiality -professional/social/community interaction -challenge/autonomy -professional growth -time -benefits Autonomy- 1researcher created question Recommendation for NPs to work in a nurse-managed health center- 1 researcher created question
Tilford, Jones, Keesing, & Sheehan 2012 *A Description of Nurse Practitioner Practice: Results of a NAPNAP Membership Survey*	Pediatric NPs belonging to one professional organization Convenience sample	Cross-sectional descriptive design	Researcher developed tool measuring -Demographics -practice site -orientation -employment/contractual factors -visibility -patient familiarity with role -certification/registration -empanelled -productivity -procedures performed -credentialing -QI tracking -evaluation

Table 5.
Major Themes in APRN Qualitative Research Studies

Study	**Population**	**Study Characteristics**	**Major Themes**
Howard & Greiner 1997 *Constraints to Advanced Psychiatric-Mental Health Nursing Practice*	341 Psych-Mental Health CNSs and NPs	Single qualitative question embedded in a mailed quantitative study. "Identify constraints to your practice"	-Reimbursement -Prescriptive Authority -legal control -lack of protocols for prescribing Medications -Admitting Privileges -Bureaucracy -organizations -APRN utilization patterns -limited resources -paperwork overload -Practice Environment (client related Economic and health issues) -clients and interventions -time -Colleagues -physician-related constraints -constraints related to other disciplines -Public Image -Personal -self-regulation -self-limitations
Plager & Conger 2006 *Advanced Practice Nursing: Constraints to Role Fulfillment*	30 CNS and NPs.	Secondary analysis of a larger qualitative study. This study used interpretive phenomenology to describe one theme found in the original study-Constraints to role fulfillment	-Practice Setting -conflict between actual and desired role -nursing vs medical model (time constraints) -lack of role recognition -quality management -Health Care Systems -time -reimbursement -need to work the system -Legal Systems -independent practice -hospital privileges -certification -Environmental Constraints -lack of food and pharmaceuticals

			-lack of long term care facilities -lack of transportation -lack of phones
Poshosyan, Nannini, Smaldone, Clarke, O'Rourke, Rosato, & Berkowitz 2013 *Revisiting Scope of Practice Facilitators and Barriers for Primary Care Nurse Practitioners: A Qualitative Investigation*	23 Primary Care NPs	Focus group and individual interviews utilizing interview guides.	-NP Responsibilities and Roles -Regulatory Environment -Colleagues/Coworkers' Comprehension of NP Role -Work Environment -general observations/stressors -access to medical assistants and other Practice supports -involvement in organizational decisions

Table 6.
Major Findings in APRN Practice Environment Research

Study	Major Study Findings
Almost, et al. 2002	-NPs felt they were moderately empowered with moderate to high level of collaboration with physicians, a moderate level of collaboration with managers, and low level of job strain. - both ANPS and PCNPS related low levels of job strain indicating psychological demands were offset by control over their work. - empowerment and collaboration with physicians and managers had a significantly larger effect on job strain in ACNPs than PCNPs -empowerment was positively correlated to collaboration with physicians and managers, and negatively related to job strain -PCNP were more empowered and had better collaboration with physicians and managers, and lower job strain than ACNPs. -collaboration with physicians was more important to PCNPs while collaboration with managers was more important to ACNPs -a negative relationship was found between empowerment and job strain -ACNP work longer hours with less control over their workload due to hospital routine and environment. -PCNPs have more job flexibility, more varied work assignments, more visibility due to size of organization, and more apparent relevance to centers goals
Anen, et al. 2015	-29% of leaders have a dedicated leader to coordinate and oversee successful APRN practices and integration -44% of organizations have a formal orientation for APRNs that goes beyond general all-employee orientation -4% of organizations feel their orientation is effective, 73% somewhat effective, 25% not effective -86% of organizations grant core privileges to APRNs but there is great variation in those core privileges, and wide variation exists across the country, state and even a health care system. -24% of organizations have an advanced practice committee with a role in credentialing APRNs and PAs -63% of organizations have the same competency review process for physicians, APRNs and PAs. -42% of organizations have an advanced practice committee, and of those 50% develop peer review or competency tools -23% of organizations conduct an annual competency assessment -12% perceive competency assessment to be very effective, 71% somewhat, and 14% not effective -many organizations bill for APRN services under physician NPI, others include APRNs in hospital Medicare cost report (Part A). Less than half are billing for inpatient services.

	-very few organizations are collecting APRN outcomes data. And a majority of those who said yes are actually only collecting data about compliance with documentation and regulatory requirements.
Brom, et al. 2015	-overall NPs were somewhat satisfied with the highest satisfaction involving benefits and challenge/autonomy, and least satisfaction involving intra-practice partnership/collegiality and professional growth. -NP role perception was moderately positively correlated with total job satisfaction score, and the intra-practice and challenge subscales. It was mildly positively correlated with social and professional subscales, and not related to time or benefits. -the majority of participants report to someone in a nursing role (72.1%), with the remaining 20.1% reporting to a physician, and 9.5% to a non-clinician administrator. 23.8% had concerns about their reporting structure. -no differences were detected in overall job satisfaction between types of supervisor, however, more NPs reporting to an NP were satisfied with intra-practice subscale items than those reporting to a nursing administrator, and those reporting to a non-clinician administrator were more satisfied on the professional subscale than those reporting to a nursing administrator. -Average stress level was 6.53 on 1-10 scale. -40% unsure, probably not, or definitely not staying in their positions -Intent to stay was significantly positively correlated with NP role perception scale, and overall job satisfaction and each subscale of job satisfaction. -Stress was significantly negatively correlated with all but one of the job satisfaction subscales (benefits). -Intent to stay was not correlated with stress.
Byers, et al. 1999	-most providers were satisfied with quality of care they provided and the quality of their peers -NP job satisfaction was lower than MDs or PAs -NPs confidence variable mean was higher than MD and PA -no statistical significance was found between provider type on practice style variables -autonomy and collaboration were significant predictors of job satisfaction in all providers
Cheng, et al. 2014	-greater family responsibility and decreased level of involvement in professional organizations led to less intent to leave current position -less routinization, more integration and greater distributive justice is correlated with more job satisfaction -job satisfaction is a mediator for intent to remain in current position.
Chevalier, et al. 2006	-PMH-CNS found their practice significantly more restrictive than NPs -lack of public knowledge was the most frequently chosen barrier to both PMH-CNS (66%) and NP (44%) -lack of understanding of the role by other health professionals was second most frequently barrier by PMH-CNS (49%) and 3RD for NPs (39%) -resistance from physician/psychologist ranked 3rd among CNS (42%) but not found in top 5 NP barriers (27%) -salary lower than other nursing positions was 2nd highest concern for NPs (39%) and 4th for CNS (40%) -rural PMH-CNS ranked lack of peer network second (57%) but it was not ranked among urban CNS -lack of public knowledge #1 for both rural and urban PMH-CNS. -lack of understanding of insurance ranked 3rd for rural CNS but not in top 5 of any other group
Chumbler, et al. 2000	-Increased clinical decision making was significantly predicted by having more years in practice as an NP, treating patients using clinical guidelines, having fewer physicians at their practice site, and working in the family specialty or multispecialty group setting. -NPs that worked in hospital-based clinics had lower levels of clinical decision making.

	-NPs with greater clinical decision making had greater outpatient clinical productivity. -higher outpatient clinical decision making was predicted by higher salaries and working in closer proximity to collaborating physicians. -NPs in hospital settings had lower outpatient clinical productivity. -clinical decision making was the best predictor of outpatient clinical productivity
Domine, et al. 1998	-job satisfaction: 53-60% of all groups (CNS, NP, and CNS/NP) were satisfied most of the time, 7-11% were completely satisfied, 24% of CNS group and 32% of NP group were generally satisfied, and only 4% of NPs & CNSs and 7% of combo were seldom satisfied. -salary was most frequently stated source of dissatisfaction Rank of Barriers to Practice (CNS/NP were small cohort, and not listed): NP 1)Lack/limited prescriptive authority 2)Lack of understanding of NP role by nurses and/or physicians 3)Lack of administrative support 4) Medical staff requirement for cosignature of orders 5)lack of admitting privileges CNS 1) Lack of understanding of NP role by nurses and/or physicians 2) Lack/limited prescriptive authority 3) Lack of administrative support 4)Lack of autonomy 5)No professional recognition
Doran, et al. 2014	-average yearly exit rates from direct practice were significantly higher for APN-other (7.6%) and CNS (6.2%) than staff RN (1.2%) -every APN group scored significantly higher than did staff nurses on all measures of PES and job satisfaction implying a clear association between employment position and job perceptions -only APN-other had significant greater odds of leaving their employment than staff nurses.
Faris, et al. 2010	-age was positively correlated with total job satisfaction, autonomy, professional interaction, and professional growth. -APN tenure with VA was positively correlated with autonomy, professional interaction, and professional growth. -CNSs were significantly higher than NPs on the job satisfaction total scores and intra-practice collegiality, professional growth, and time subscales. -CNSs were significantly more satisfied than NPs in the time factor. - the top 3 barriers to practice from a researcher created list were too many non-APN tasks, lack of administrative support, and inadequate time for research. -On whole, the APNs in this VA setting were minimally satisfied with their job. They were most satisfied with benefits and autonomy and least satisfied with opportunities for professional growth and the level of intra-practice partnership and collegiality. A qualitative open ended question asking for "other barriers" identified the following themes: administrative issues, scope of practice issues, supervisor issues, professional issues, professional recognition, no barriers to practice, financial compensation, and general/scheduling issues.
Freeborn, et al. 2012	-NPs had less time with Kaiser than physicians or PAs and were more likely to be female -PAs were more likely to be employed full time. -physicians and NP/PAs had similar views about professional autonomy, patient load, colleague relations and quality of care.

	-most in all groups reported Kaiser did not interfere with professional autonomy, colleague relations were positive, and care is of high quality. -Most respondents in all groups reported satisfaction with patient relationships, continuity of care, kinds of clinical problems seen, ability to refer to consultants, autonomy to treat patients, and ability to order whatever would help patients. -majority of all groups felt patient loads were too high and there was inadequate time with patients -NP/PAs were significantly less likely than PCP to report stable patient relationships -NP/PAs reported greater work-related daily stress than physicians (mostly due to inadequate time and long hours) -NP/PAs were significantly less likely to choose setting again. -NP/Pas were significantly less satisfied with salary and benefits -NP/Pas had higher levels of satisfaction with their medical careers.
Hayden, et al. 1982	**Why did NPs not working in Emergency setting, and NPs not working as NPs (NNP) leave Emergency Nurse Practitioner (ENP) job** -non-acceptance of role by health care colleagues -availability of better job -personal reasons -inability of medicine & nursing to agree to the ENP role -hospital administration refused to permit ENP practice despite physician acceptance - lack of ENP input in role development -inadequate medical backup INDIRECT Facilitators/Barriers to ENP role - 96% held titles of ENP or NP -62% wrote own job description, and 11.3% had job descriptions written by previous NP or NP/MD combo -Salary not reported as a problem -Majority reported role as well-accepted: other NPs and pts were most accepting of role (95.8% and 89.3%) and administration, physicians and supervisory nurses were least accepting (65.5%, 65.5%, and 58.6%). 66.7% believed community at large accepted their role well, but persons in community who were most accepting had been cared by ENP before. DIRECT Facilitators/Barriers to ENP role -the majority of ENPs believed all tasks identified in a researcher created list were appropriate to ENP role but those actually performed personally was varied. (lowest was adjusting dosage of medication-only 37.3% thought it was appropriate and only 1 actually performed). Telephone consultation with patient is another one with varying levels of agreement- a significant positive relationship was found between those that felt it was appropriate and those that performed it. -relationship to physician- all were supervised with 75% directly responsible to MD, 89.7% reported collaborating with physicians on patients, and 27.6% reported working independently. -13.8% reported having a role distinct from physicians -27.6% worked where physicians alone saw pts -ENPs rated autonomy on Likert scale, and all were on maximum end of scale- they reported the least amount of autonomy in the authority measure. May have autonomy to plan and implement their care, but less authority to make ultimate decisions. -autonomy did not vary based on urgent nature of patients, but respondents reported more authority when seeing emergent and urgent patients than non-urgent patients -autonomy was reported as high across all hospital types, but ENPs in community hospitals reported significantly more opportunity to plan their work routine than university hospital ENPs

	-no relationship was detected between autonomy and seeing patients independently, but 75% of ENPs that saw patients independently and/or with MD collaboration indicated maximum autonomy, and ENPs who practiced under protocols perceived minimal autonomy and authority in the ENP role. BARRIERS- 37.9% reported no barriers, of those who did report barriers: 61.1% reported resistance from other health care providers, 38.9% reported legal constraints (these 2 in all hospital types), 17.2% reported lack of confidence as a barrier (all of these were not recent graduates).
Howard, et al. 1997	Major themes derived from qualitative analysis of one written question on otherwise quantitative survey: "Identify constraints to your practice": **Reimbursement**: respondents commented on limitations third party insurers (private and public) placed on ability to see certain patients or be paid for care, and difficulty with managed care providers. **Prescriptive Authority**: statements concerned legal controls or lack of/restricted protocols for prescribing medications when legal controls were not a concern. **Admitting Privileges:** A few respondents commented on practice constraints due to the inability to admit patients to hospitals. Although this was a small number, the authors were struck by the similarity of responses explicitly focused on a single practice characteristic. **Bureaucracy**: Respondents commented on constraints involving organizational type, APRN utilization patterns, limited resources, and paperwork overload. **Practice Environment**: Constraints involved clients' economic and health status and time pressures. **Colleagues**: respondents commented on lack of support and lack of recognition from physicians, social workers, psychotherapists, and nurses. **Image:** general public's view of the basic nursing role was seen as a constraint to practice. **Personal:** self-regulating activities that protect personal time and self-limiting issues such as lack of education and experience were identified as constraints to practice.
Hupcey 1993	-NPs with master's degrees changed jobs more frequently than those without. - there was no one setting that stood out as consistently not being conducive to NP practice (both inpatient and outpatient practices were identified as hindering) -57% said outpatient clinic setting was well suited for their practice -most common help or hinder factor was support (or lack of it) from physicians, co-workers, other NPs and administration, and the main barrier to NP practice was resistance from these individuals. -other factors that helped NP role performance were independence in work setting, continuing education, past experience and education, appreciation of patients, and well-trained co-workers. -other factors that hindered NP role performance were resistance of staff nurses, lack of time, role not understood by administration, inability to write prescriptions, lack of funds, lack of backup supervision, job does not include all aspects of the role, and role not understood by MD.
Laschinger, et al. 2003	-Overall, in the NP and staff nurse populations, participants reported moderate empowering job settings and moderate levels of Magnet characteristics. - Overall, empowerment scores were strongly correlated with NWI-R (Magnet characteristics) scores -access to empowerment structures was significantly related to NWI-R score -NP ratings of work empowerment were higher than those in either sample of staff nurses -NP ratings of workplace magnet characteristics were higher than staff nurses

	-NP access to information was most strongly related to overall NWI-R (in contrast to staff nurses). -In the NP population, the combination of empowerment and magnet hospital characteristics were significant predictors of job satisfaction (explains 50% of the variance).
Lelli, et al. 2015	-overall primary care NPs were moderately satisfied to satisfied with their current position -overall job satisfaction did not differ between retail and traditional primary care settings -NPs in traditional settings were more satisfied with the interaction subscale than those in retail clinics -NPs in retail clinics were more satisfied with benefits that those in traditional settings -the MNPJSS had lower performance in this study than previously reported (Chronbach's α 0.75 vs 0.96 in original development study). -No significant difference in levels of autonomy in retail vs traditional clinics -NPs in retail clinics had lower valuation scores than those in traditional clinics. -Job satisfaction and autonomy increase with more years of practice and tenure in current practice setting. -No other demographic relationships were found with job satisfaction or autonomy. -Inverse relationship was found between job satisfaction and intent to leave current position after adjusting for covariants such as autonomy and practice setting -Retail clinic NPs were less likely to have intentions to leave their current setting after controlling for autonomy and job satisfaction.
Lindeke, et al. 2005	Ranking of barriers to NP practice with comparison to 1996 study -#1 barrier- lack of public knowledge (up from #2 in 1996) -#2 barrier- lack of understanding NP role by other professional (up from #5 in 1996) -#3 salary- (new) -#4 limited space/facilities- (new) -lack of peer network (down from #1 in 1996- only one with statistical significance)
Meeusen, et al. 2011	-age had a significant negative relationship to turnover intention -burnout and job satisfaction showed significant relationships with turnover intention -burnout was related to only one of the work context characteristics (social environment) -burnout was significantly related to work climate -burnout was also negatively related to the personality characteristics of easy going, compassion, and receptive -job satisfaction was significantly related to all four work context variables (Task content, social environment, supervisor relationship, rewards) - job satisfaction was positively related to work climate. -job satisfaction was related to only one personality factor (easy going). -No direct relation was determined between turnover intention and work context, work climate, or personality. -the relationship between work context, work climate, and personality on job turnover was mediated by burnout and job satisfaction. -turnover intention was 42%
Meeusen, et al. 2011	-perceived general health had a significant correlation with work climate and job satisfaction -no relationship existed between sickness absenteeism and work climate or between sickness absenteeism and work climate or between sickness absenteeism and job satisfaction (low absenteeism rate was determined) -percent of employment and training days had the strongest correlation with work climate. -work climate is positively related to job satisfaction
Pasaron 2013	-Most NPs were oriented by other NPs

	-Most NPs were evaluated by the nursing director assigned to their practice setting and did not feel this person was appropriate to evaluate them. -Most NPs reported collaboration with physicians when managing their patients -Over 40% reported this organization was more restrictive than previous experiences -Overall, NPs in this study had minimal job satisfaction -59% of physician respondents felt the work site improvements for the NP role included increasing their scope of practice. -Physicians reported NPs improved patient care in the areas of quality, satisfaction, accessibility, patient/family compliance and productivity. -The majority of responding physicians had not previously worked with NPs, but reported positive characterizations of them. -Physicians reported orientation and scope of practice needed organizational culture improvement. -results of extrinsic MNPJSS item analysis provided support for Herzog's 2-Factor Theory -both physicians and NPs reported nursing administrative support and lack of understanding of role inhibited the effective and ample implementation of the NP role in this institution. -NPs were very minimally satisfied with their level of challenge and autonomy. -There was a strong relationship between challenge/autonomy and total job satisfaction
Plager, et al. 2006	4 sub-themes were identified from the theme of Constraints to Role Fulfillment from a larger interpretive phenomenological investigation of group and individual APN interviews. **Practice Setting:** -conflict with actual & desired role (due to number of patients- did not allow them to practice in a holistic manner) -Nursing vs medical model (rather than being a physician substitute, desired to offer patients an added difference in health care services. Medical model is favored for economic reasons -Role recognition-patients not sure what we do -quality management- quality improvement initiatives done less in private practice than acute care **Health care systems:** -time- quality vs quantity issues -decreased opportunity for collaboration with colleagues -decreased time for teaching and counseling -conflicts between work and home (leaving less time for professional activities) -time constraints are due to financial reasons-so medical model becomes the more efficient approach -1 NP in a specialty practice did not have to let go of her nursing role (practiced true relation) -reimbursement (getting better) -discussed difficulty getting a UPIN -differential reimbursement by Medicare -lack of reimbursement for nursing activities -Working the system- APNs figure out ways around the barriers (schedule separate appointments, find players and learn good letter writing skills for appealing decisions, obtaining drugs- go directly to pharmaceutical companies) **Legal systems:** -Independent practice- turf battles, and insurance company issues -Privileges- NPs we interviewed were all in a community based practice but described difficulty admitting their pts into hospital from community. **Environmental constraints-** lack of food and pharmaceuticals, lack of long term care facilities, lack of transportation, lack of phones

Poghosyan, et al. 2013	Major themes identified in qualitative analysis of NP group and individual interviews investigating NP practice and organizational climates in primary care: **NP Responsibilities & Roles**: -scope is same as physicians but more holistic, personal care, teaching -ability to develop relationships with patients is hindered by organizational processes related to scheduling- not seeing same patients, only seeing same-day care. Masks contribution of NPs not having own panel -billing put under facility fee so NP services are not transparent **Regulatory Environment**: -affected the way practice environment was configured- administrative burden -NPs make all care decisions but have to wait for physician to sign chart -government policies drive institutional practices, forcing them to complete forms to maximize reimbursement rather than to track who delivers the care -reimbursement policies and billing practices are the main policy challenges that limit NPs abilities to practice within their SOP in most primary care sites -almost no NPs were listed as primary care providers, so pts are unable to list them as their providers which limits choice and renders care invisible- especially in the data. -community health centers do not have reimbursement as an issue as they do not have many patients with private insurance. They received flat rate by public insurers **Colleagues/coworkers comprehension of NP role**: -role not clearly defined- administrators, physicians, staff, and patients do not understand roles and competencies which creates barriers -some NPs stated they were viewed as RNs and did not receive assistance from medicals assistants or nurses because practice administrators did not understand. (there's a lot of boundary mish-mosh because things are not clearly defined for the staff) -organizations make few efforts to define and promote NP role within or outside of the settings- not listed on websites or promotional material **Work Environment**: -work environments that lack appropriate patient-care supports, lack infrastructures to promote NP practice, and poor relations with practice administration and physicians specifically affect ability to practice within their scope of practice. -physicians have better access to resources such as exam rooms, staff support, etc. (believed to be cultural- MAs help doctor's patients first) -Involvement in organizational decisions- NPs have little or no representation at administrative level, therefore they are not involved in decision-making process and no one advocates for promoting organizational structures to promote NP scope of practice. -some NPs felt physicians were supportive, and made up for lack of administrative support. -Lack of respect is a barrier.
Poghosyan, et al. 2013	Tool- results related to tool development
Poshsoyan, et al. 2014	Comparison of NP practice environments in New York (NY), a state with restricted statutory regulations, and Massachussetts (MA), a state with a more open statutory regulations -NY physicians were less likely to collaborate with NPs, ask for suggestions, or seek NP input than MA -more NY NPs disagree that they were able to provide all care within their scope or that they could practice independently than MA NPs -in MA administrators were more likely to share info equally with NPs and physicians, and NPs were more likely to be included in committees within the organization

	-NPs in MA were more likely to report administration is open to NP ideas -more NPs in NY reported their role is not understood, they did not feel valued by their organizations, and they did not have enough resources than those in MA. **multivariate results** -education level was a confounding variable and accounted for in analyses -a significant difference was found in the overall perception of practice environment, and in all five dimensions of practice environment (NP-physician relations, NP-administration relations, support and resources, comprehension and visibility, and independent practice) between NY and MA, and in the 3 different types of practice settings: physician offices, community health centers (CHC), and hospital-affiliated practices (the difference in NP-administrative relations was not significant between organizational type). -Overall, NPs practicing in offices, CHCs and hospitals in MA reported better practice environments on all 5 dimensions than NPs in NY -mean score in NP-physician relations was highest in physician office setting -hospital affiliated practices scored lower than physician offices or CHCs on practice environment dimensions.
Poghosyan, et al. 2015	-39.4% of NPs had their own panel- significantly more in CHC (61%) than hospital clinics (32%) -1:4 said their role is not understood and administration is not well-informed about the skill and competencies of NPs in their organization -NPs who had >10 NPs working in their organization said their role was understood compared with those who had fewer (85% v 75%) -3:4 said they had enough staff and support and NP and physicians had the same support -60% said they were represented in important committees in their practice setting -half report there is constant communication between NP and administration or administration shares info equally between NP and physician. -39.5% report administration treats NP and physicians equally -26% report some level of job dissatisfaction and 13.8% were very dissatisfied. -15% planning on leaving job in upcoming year -1:3 not routinely receiving feedback about their clinical care.
Pron 2012	-On average, responding NPs were satisfied with their current job and 98% would recommend an NP to the Nurse Managed Health Center setting. -NPs were minimally satisfied to satisfied by intra-practice partnership/collegiality and minimally satisfied with professional growth. -The subscale challenge/autonomy had the highest satisfaction score. -Perceived autonomy was high among this population -the challenge/autonomy subscale correlated highly positive with job satisfaction. -The subscale benefits held the second highest job satisfaction score. -The highest rated single item in this population was sense of accomplishment
Tilford, et al. 2012	Results of a survey of Pediatric NPs (PNP) reported by inpatient (IP) versus outpatient (OP) settings: Setting: **OP**: 54% primary care 30.3% specialty care 5.2% school 1.7% own practice 0.7% co-own practice **IP**: 42.3% academic med center, 10.9% specialty, 8% ER, 7.3% Community hosp. ¼ hold academic apt. Report **OP**: 69.6% physician/Med. Dir. 8.2% Nurs. Admin. 7.7% APN Dir. **IP**: 48.1% physician/Med. Dir. 8.9% Nurs. Admin. 19.3% APN Dir 14.1% non-nursing Dir. Orient **OP**: 25.7% none: of those with: 36.8% physician 21.9% NP 60% reported their orientation prepared them for role **IP**: 23.1% none: of those with: 23.8% physician 40.8% NP 57.7% reported their orientation prepared them for role Contract **OP**: 61% yes 13.6% sought legal input **IP**: 66.7% hosp. employee no contract, 10.9% not employee no

	Contract, 23.4% yes- contract- 90% sought no legal input PAY **IP**: 66.9% by hospital- 11% by group-8.8% combination of both Malprac **OP**: 77% no **IP**: 87.5% paid by hospital only Benefits **IP**: 46.3% get contribution for professional organization fees 48.8% get protected time for professional development Research, etc, 64.1% participate in research Visibility **OP**: 49.5% name on door 80.1% business card 81.8% script pad/letterhead/website **IP**: 76.3% business card, script, letterhead 63.8% website Introduce **OP**: 59% F+L name 93.8% as NP 75.4% cred on name tag **IP**: 52.8% F name only 97.6% as NP 92.7% cred on name tag Knowledge **OP**:66.1% believe patient and family familiar with NP role Of role 71.4% believe non-nursing colleagues are **IP**: 54% believe patient and family familiar with NP role 63.2% non-nursing colleagues are Certification **IP**: 72.8% yes NPI **OP**: 93.5% have own 34.9% bill under own 1/3 bill under physician **IP**: 88.1% have own 23.2% bill under own 13.6% bill under physician 37.6% Unable to bill because they are hospital employee Impanel **OP**: 45.7% don't know 28.7% no 25% yes IP: 46.5% don't know 40.2% no 13.4% yes DEA **OP**: 65.5% Yes. Reasons for no: not needing one-don't prescribe Controlled substances, unable-state regulations, cost **IP**: 62.7% yes #pt seen **OP**: 11-20 pt/day (35%), 1-10 (32%) 21-30 (26%) Per day **IP**: 1-10 pt/day (59.5%), 11-20 (31%) Procedures **OP**: few do any, of those: 30% suturing, 22.4% LPs, 7.5% circumcisions **IP**: 54.2% LP, 45.8% suturing, 43.1% Intubation, 33.3% a-line, 33.3% central line, 29.2 dobhoff, 26.4% Chest tube, 22.2% PICC line Credential **IP**: 62% credentialed to do all procedures in SOP, 88% thru Med staff office 7.7% thru hospital nursing model QI track **OP**: 73.2% none, 21.2% patient satisfaction, 13.9% immunization rates, 3% HGA1c, or hospital admission rates **IP**: 73.4% none- of those with QI- patient or family satisfaction, Length of stay, cost containment, hospital acquired infection rates, ventilator days Evaluate **OP**: 34.2% # pt seen/day, 31.7% pt satisfaction, 17.6% don't know 16.2% no performance evaluation **IP**: 29.4% don't know 28.6% no performance evaluation- those With- pay for performance measures, relative value units, Total gross charges.

Table 7.
Sample Demographic Characteristics

Gender (*N*=542)	Male (*N*=98) 18%	Female (*N*=444) 82%			
Age (*N*=486)	Mean 48.1 SD 10.86	Range 26-72			
Race /Ethnicity (*N*=542)	Caucasian (*N*=467) 86%	African American (*N*=28) 5%	Hispanic (*N*=55) 10%	Asian (*N*=15) 3%	Other (*N*=29) 5%
APRN Type (*N* =537)	NP (*N*=332) 61%	CRNA (N=161) 30%	CNM (*N*=35) 7%	CNS (*N*=4) 1%	
Highest degree (*N*=536)	BSN (*N*=19) 4%	MSN (*N*=432) 80%	DNP (*N*=69) 13%	PhD (*N*=16) 3%	
Years as nurse (*N*=542)	M 10.22 SD 7.95	Range 0-46			
Years as APRN (*N*=539)	M 12.87 SD 9.86	Range 0-46			
Years in position (*N*=539)	M 6.4 SD 6.35	Range 0-35			
Hours worked/week (*N*=539)	M 42.74 SD 11.92	Range 4-100			

Table 8. ***POQ item questions, Standardized Factor Loadings, Intraclass Correlations (ICC), within Level R^2 Values with Standard errors (SE), estimate divided by standard error of the estimate (Est./SE) and 2-tailed p-values***

question	Control	Intimate Knowing	Investment of self	Psychological Ownership	ICC	R^2	SE	Est/SE	*p*-value
To what extent do you have influence over the things that affect you on the job?	.80				.08	.64	.04	14.55	< .001
To what extent do you have influence over the tasks or parts of tasks that you will do?	.79				.00	.63	.06	10.69	< .001
To what extent do you influence job-related decisions that will affect you?	.82				.00	.66	.09	7.73	< .001
To what extent do you set your own work deadlines?	.82				.08	.68	.04	15.29	< .001
To what extent do you control the pace and scheduling of the work that you do?	.76				.02	.58	.05	11.93	< .001
In general, to what extent do you have control over your job?	.84				.02	.70	.04	15.80	< .001
I am intimately familiar with what is going on with regard to my job.		.72			.00	.52	.06	8.56	< .001
I have a depth of knowledge as it relates to the job		.88			.05	.77	.06	13.31	< .001
I have a comprehensive understanding of the work that I am asked to do.		.81			.00	.66	.07	9.79	< .001
I have a broad understanding of this job		.92			.04	.85	.07	12.12	< .001
I have invested a major part of "myself" into this job.			.94		.03	.89	.04	22.29	< .001
I have invested many of my ideas into this job			.77		.12	.60	.06	10.74	< .001

I have invested a number of my talents into this job.			.87		.03	.75	.05	16.06	< .001
I have invested a significant amount of my life into this job			.81		.03	.65	.04	16.41	< .001
In general, I have invested a lot in my job.			.86		.07	.73	.04	16.68	< .001
I sense that this job is MINE.				.93	.01	.86	.03	34.20	< .001
I feel a very high degree of personal ownership for this job.				.86	.00	.74	.04	19.28	< .001
I sense that the work I do as part of my job is MINE.				.86	.03	.89	.03	34.88	< .001
I feel a very high degree of personal ownership for the work that I do.				.84	.03	.75	.03	27.22	< .001
I sense that this is MY job.				.94	.00	.71	.04	16.46	< .001
The work I do at this organization is MINE.				.83	.11	.69	.04	18.83	< .001

Table 9.
Demographic Data of Sample Hospitals and APRNs

Hospital Characteristics	**Percentage**	**Mean (Range)**	**SD**
Setting (*N*=32)			
Urban	13 (40%)		
Suburban/Community	17 (53%)		
Rural	1 (3%)		
Other	1 (3%)		
Teaching (*N*=32)			
Yes	16 (50%)		
No	16 (50%)		
Ownership (*N*=32)			
For Profit	6 (19%)		
Not For Profit	23 (73%)		
County	2 (6%)		
CAH	0 (0%)		
Other	1 (3%)		
Part of Healthcare System (*N*=32)			
Yes	28 (88%)		
No	4 (12%)		
# Beds (*N*=29)		M=361 (70-1217)	SD=238
APRN Characteristics			
Age (*N*=486)		M=48.1 (26-72)	SD=10.86
Gender (*N*=542)			
Male	98 (18%)		
Female	444 (82%)		
Race (N=542)			
Hispanic	55 (10%)		
Caucasian	467 (86%)		
African American	28 (5%)		
Asian	16 (3%)		
Pacific Islander	0 (0%)		
Native American	5 (1%)		

Other	29 (5%)		
Type (*N*=537)			
CRNA	161 (30%)		
NP	332 (61%)		
CNM	35 (7%)		
CNS	4 (<1%)		
MIXED	5 (<1%)		
Highest Degree (in nrsg) **(*N*=536)**			
Bachelors	19 (4%)		
Masters	432 (80%)		
DNP	69 (13%)		
PhD	16 (3%)		
Enrolled to advance degree? (*N*=542)			
Yes	68 (13%)		
No	474 (87%)		
Years as:			
RN (prior to APRN) (*N*=542)		M=10.22 (0-46)	SD=8.0
APRN *(N*=539)		M=12.87 (0-46)	SD=9.9
Current Position (*N*=539)		M= 6.42 (0-35)	SD=6.4
Hours worked/week (*N*=539)		M=42.74 (4-100)	SD=12.0

APRN Total Scope of Practice	**M= 18.1 (5.6) Range 0-29**			
	Independent	With Co-sign	No	Don't Know
Admit patients to hospital n=29	4 (14%)	19 (66%)	3 (10%)	3 (10%)
Discharge patients from hospital n=29	5 (17%)	17 (59 %)	3 (10%)	4 (14%)
Transfer patients to another facility n=28	5 (18%)	18 (64%)	2 (7%)	3 (11%)
Perform History and Physicals n= 29	10 (35%)	16 (55%)	1 (3%)	2 (7%)
Write orders for non-scheduled medications n=29	6 (21%)	18 (62%)	2 (7%)	3 (10%)
Write orders for scheduled medications n=30	1 (3%)	16 (53%)	9 (30%)	4 (13%)

Write orders for routine labs/tests n=29	8 (28%)	20 (69%)	0 (0%)	1 (3%)
Write orders for specialty consults n=29	10 (35%)	14 (48%)	2 (7%)	3 (10%)
Write orders for therapy (PT/OT) n=29	6 (21%)	20 (69%)	1 (3%)	2 (7%)
Write orders for specialty tests n=29	7 (24%)	18 (62%)	1 (3%)	3 (10%)
APRN Practice Visibility	**M=1.0 (1.3) Range 0-4**			
	Yes	No	Don't Know	
Representation on Credentialing Committee n=28	8 (29%)	14 (50%)	6 (21%)	
Representation on important non-nursing committees n=28	5 (18%)	17 (61%)	6 (21%)	
Voting member of medical staff n=28	2 (7%)	24 (86%)	2 (7%)	
APRN Director n=27	8 (30%)	19 (70%)	0 (0%)	
Latent Factor/ Subscale	**Mean (Range)**	**SD**	**% Favorable (strongly agree or agree)**	**% Unfavorable (strongly disagree or disagree)**
Total Organizational Climate N=506	**64.59 (28-107)**	**14.5**	**62%**	**38%**
Professional Visibility N=527	10.02 (4-16)	2.6	52%	48%
APRN-Administration Relations N=523	24.07 (9-36)	5.8	43%	57%
APRN-MD Relations N=512	13.46 (7-25)	4.0	81%	19%
Independent Practice and Support N=513	16.98 (8-32)	4.78	71%	29%
Total Psychological Ownership N=494	**38.49 (21-73)**	**9.5**	**82%**	**18%**
Control N=504	14.00 (6-24)	4.0	59%	41%
Intimate Knowledge N=507	6.31 (4-15)	1.9	94%	6%
Investment of Self N=500	7.71 (5-18)	2.5	93%	7%
Psychological Ownership N=496	10.54 (6-24)	3.8	84%	16%

Table 10. ***APRN-OCQ Item Questions, Standardized Factor Loadings, Intraclass Correlations (ICC), within Level R^2 Values with Standard errors (SE), Estimate divided by Standard Error of the Estimate (Est./SE) and 2-tailed p-values***

Question	Professi Visibilit	APRN-Admin Relation	APRN-MD Relations	Independent Practice	IC	R^2	SE	Est/S	*p*-value
In my organization, the APRN role is well understood	.84				.00	.7	.05	13.17	< .001
APRNs are represented in important committees in my organization	..74				.18	.5	.07	7.7	< .001
In my practice setting, staff members have a good understanding about APRN roles in the organization	.81				.00	.6	.05	12.9	< .001
Administration is well informed of the skills and competencies of APRNs	.74				.00	.5	.07	8.5	< .001
APRNs feel valued by my organization		.87			.08	.7	.04	19.21	< .001
APRNs regularly get feedback about their performance from my organization		.68			.07	.4	.04	10.49	< .001
Administration is open to APRN ideas to		.84			.13	.7	.03	21.14	< .001

improve patient care									
Administration takes APRN concerns seriously		.87			.17	.7	.03	22.07	< .001
Administration shares information with APRNs and physicians equally		.74			.05	.5	.04	13.16	< .001
Administration treats APRNs and physicians equally		.79			.12	.6	.04	14.55	< .001
Administration informs APRNs about changes taking place in the organization		.76			.00	.5	.06	9.82	< .001
Administration makes efforts to improve working conditions for APRNs		.85			.09	.7	.04	17.78	< .001
In my organization, there is constant communication between APRNs and administration		.82			.10	.6	.04	17.85	< .001
APRNs feel valued by their physician colleagues			.94		.05	.8	.04	21.19	< .001
In my organization, physicians and APRNs practice as a team			.87		.00	.7	.05	16.67	< .001
Physicians may ask APRNs for advice to provide patient care			.79		.03	.6	.04	15.54	< .001
In my organization, APRNs and physicians collaborate to provide patient care			.90		.00	.8	.05	16.85	< .001
Physicians seek APRN input when providing patient care			.77		.00	.5	.05	11.37	< .001
Physicians in my practice setting trust my patient			.88		.17	.7	.04	19.31	< .001

care decisions									
In my practice setting APRNs have colleagues who they can ask for help			.62		.01	.3	.06	6.72	< .001
Physicians support APRN patient care decisions				.85	.06	.7	.04	20.42	< .001
APRNs are an integral part of the organization				.63	.07	.4	.04	8.91	< .001
APRNs do not have to discuss every patient case detail with a physician				.48	.12	.2	.04	5.25	< .001
In my organization, APRNs freely apply all their knowledge and skills to provide patient care				.78	.02	.6	.04	13.67	< .001
My organization does not restrict APRN abilities to practice within their scope of practice				.81	.10	.6	.04	18.09	< .001
In my organization, APRNs can provide all patient care within their scope of practice				.90	.08	.6	.03	19.40	< .001
Physicians and APRNs have similar support for care management (eg. Help with patient follow up, referrals, laboratories, etc)				.66	.05	.4	.04	9.79	< .001
My organization creates and environment where APRNs can practice independentl y				.84	.01	.7	.04	20.20	< .001

Table 11. ***POQ Item Questions, Standardized Factor Loadings, Intraclass Correlations (ICC), within Level R^2 Values with Standard Errors (SE), Estimate divided by Standard Error of the Estimate (Est./SE) and 2-tailed p-values***

Question	Contr	Intimate Knowledge	Investment of self	Psychological Ownership	IC	R^2	S	Est/S	*p*-value
To what extent do you have influence over the things that affect you on the job?	.87				.06	.7	.0	16.49	< .001
To what extent do you have influence over the tasks or parts of tasks that you will do?	.80				.00	.6	.0	13.09	< .001
To what extent do you influence job-related decisions that will affect you?	.76				.00	.5	.0	10.97	< .001
To what extent do you set your own work deadlines?	.76				.03	.5	.0	12.86	< .001
To what extent do you control the	.69				.03	.4	.0	11.58	< .001

pace and scheduling of the work that you do?									
In general, to what extent do you have control over your job?	.89				.03	.7	.0	15.45	< .001
I am intimately familiar with what is going onwith regard to my job.		.88			.00	.7	.0	11.76	< .001
I have a depth of knowledge as it relates to the job		.83			.04	.7	.0	11.79	< .001
I have a comprehensive understanding of the work that I am asked to do.		.65			.00	.4	.0	6.53	< .001
I have a broad understanding of this job		.80			.02	.6	.0	11.23	< .001
I have invested a major part of "myself" into this job.			.93		.02	.8	.0	17.49	< .001
I have invested many of my ideas into this job			.93		.10	.8	.0	10.00	< .001
I have invested a number of my talents into this job.			.88		.04	.7	.0	17.13	< .001
I have invested a significant amount of my life into this job			.79		.00	.6	.0	11.75	< .001
In general, I have invested a lot in my job.			.81		.07	.6	.0	12.03	< .001
I sense that this job is MINE.				.91	.00	.8	.0	28.39	< .001
I feel a very high degree of personal ownership for this job.				.88	.00	.7	.0	21.60	< .001
I sense that the work I do as part of my job is MINE.				.89	.02	.7	.0	21.29	< .001
I feel a very high degree of personal ownership				.85	.01	.7	.0	16.08	< .001

for the work that I do.									
I sense that this is MY job.				.92	.00	.8	.0	36.29	< .001
The work I do at this organization is MINE.				.83	.09	.6	.0	17.46	< .001

Table 12. Correlation between average APRN Organizational Climate score/Hospital and Hospital Total Scope of Practice and Practice Visibility			
Bivariate Comparison	*n*	*r*	*p*
Scope of Practice score with APRN OrganizationalClimate score	*106*	.178	.068
Professional Visibility subscale score with Scope of Practice score	*109*	*.132*	*.170*
Role understood item with Scope of Practice score	*112*	*-.057*	*.554*
Committee representation item with Scope of Practice score	*110*	*.158*	*.100*
Staff understand APRN role item with Scope of Practice score	*113*	*.125*	*.187*
Admin. Understand APRN role item with Scope of Practice score	*113*	***.256***	***.006****
APRN-Admin relations subscale score with Scope of Practice score	*109*	*.156*	*.106*
Admin value APRN role item with Scope of Practice score	*111*	***.196***	***.040****
APRNs get regular feedback from admin with Scope of Practice score	*111*	*.142*	*.137*
Admin open to ideas from APRN with Scope of Practice score	*109*	*.177*	*.065*
Admin take APRN concerns serious with Scope of Practice score	*109*	*.115*	*.235*
Admin share info equally with Scope of Practice Score	*111*	*.156*	*.103*
Admin treat APRN and physicians equal with Scope of Practice score	*111*	*.091*	*.341*
Admin informs APRN of changes with Scope of Practice score	*111*	*.054*	*.572*
Admin improve APRN working conditions with Scope of Practice score	*112*	*.141*	*.137*
Admin communicates with APRN with Scope of Practice score	*112*	*.037*	*.696*
APRN-MD relations subscale score with Scope of Practice score	*106*	*.135*	*.167*
MDs value APRNs with Scope of Practice score	*107*	*.172*	*.076*
APRNs and MDs work as team with Scope of Practice score	*108*	*.186*	*.053*
Physicians seek APRN advice with Scope of Practice score	*107*	*.043*	*.660*
APRNs and MDs collaborate with Scope of Practice score	*108*	***.209***	***.030****
Physicians seek APRN input with Scope of Practice score	*107*	*.079*	*.416*
Physicians trust APRN decisions with Scope of Practice score	*107*	*.125*	*.201*
APRNs have someone to ask for help with Scope of Practice score	*108*	*.055*	*.569*
Independent Practice subscale score with Scope of Practice score	*107*	*.132*	*.170*
MD supports APRN with Scope of Practice score	*108*	*-.002*	*.986*
APRNs are integral to institution with Scope of Practice score	*108*	*.125*	*.198*
APRNs do not need to discuss every detail with Scope of Practice score	*108*	*.041*	*.671*
APRNs apply knowledge in scope of practice with Scope of Practice score	*107*	*.034*	*.726*
Does not retrict APRN scope of practice with Scope of Practice score	*108*	*.056*	*.567*

APRNs give all care in scope of practice with Scope of Practice score	*107*	*.181*	*.062*
Management support APRNs with Scope of Practice score	*107*	*.015*	*.876*
Environment for independent practice with Scope of Practice score	*107*	*.168*	*.083*
Practice Visibility score with APRN OrganizationalClimate score	*101*	.050	.621
Professional Visibility subscale score with Practice Visibility score	*104*	*.110*	*.265*
Role understood item with Practice Visibility score	*110*	*-.056*	*.568*
Committee representation item with Practice Visibility score	*107*	***.364***	***.000****
Staff understand APRN role item with Practice Visibility score	*108*	*- .040*	*.681*
Admin. Understand APRN role item with Practice Visibility score	*109*	*-.022*	*.820*
APRN-Admin relations subscale score with Practice Visibility score	*104*	*.127*	*.200*
Admin value APRN role item with Practice Visibility score	*108*	***.198***	***.040****
APRNs get regular feedback from admin with Practice Visibility score	*107*	***.237***	***.014****
Admin open to ideas from APRN with Practice Visibility score	*105*	*.126*	*.199*
Admin take APRN concerns serious with Practice Visibility score	*104*	*.031*	*.751*
Admin share info equally with Practice Visibility Score	*108*	*- .010*	*.917*
Admin treat APRN and physicians equal with Practice Visibility score	*107*	*.079*	*.418*
Admin informs APRN of changes with Practice Visibility score	*107*	*- .080*	*.415*
Admin improve APRN working conditions with Practice Visibility score	*109*	*.101*	*.297*
Admin communicates with APRN with Practice Visibility score	*108*	*.014*	*.882*
APRN-MD relations subscale score with Practice Visibility score	*102*	*.003*	*.976*
MDs value APRNs with Practice Visibility score	*102*	*-.009*	*.925*
APRNs and MDs work as team with Practice Visibility score	*103*	*.118*	*.234*
Physicians seek APRN advice with Practice Visibility score	*102*	*-.076*	*.448*
APRNs and MDs collaborate with Practice Visibility score	*103*	*.128*	*.198*
Physicians seek APRN input with Practice Visibility score	*102*	*-.066*	*.512*
Physicians trust APRN decisions with Practice Visibility score	*103*	*-.158*	*.112*
APRNs have someone to ask for help with Practice Visibility score	*103*	*.102*	*.307*
Independent Practice subscale score with Practice Visibility score	*101*	*-.083*	*.408*
MD supports APRN with Practice Visibility score	*103*	*-.121*	*.224*
APRNs are integral to institution with Practice Visibility score	*103*	*-.001*	*.990*
APRNs do not need to discuss every detail with Practice Visibility score	*103*	*-.190*	*.055*
APRNs apply knowledge in scope of practice with Practice Visibility score	*102*	*-.134*	*.180*

Does not retrict APRN scope of practice with Practice Visibility score	*103*	*-.060*	*.548*
APRNs give all care in scope of practice with Practice Visibility score	*102*	*-.004*	*.968*
Management support APRNs with Practice Visibility score	*101*	*.007*	*.946*
Environment for independent practice with Practice Visibility score	*102*	*.042*	*.673*
Scope of Practice score with Psychological Ownership score	*103*	-.056	.574
Control subscale score with Scope of Practice score	*105*	*.114*	*.245*
I can influence things affecting practice with Scope of Practice score	*106*	*.140*	*.152*
I can influence my tasks with Scope of Practice score	*106*	*.120*	*.219*
I influence job related decisions with Scope of Practice score	*106*	*.029*	*.765*
I set work deadlines with Scope of Practice score	*105*	*.035*	*.721*
I control pace and scheduling with Scope of Practice score	*105*	*.059*	*.552*
I have control over my job with Scope of Practice score	*105*	*.180*	*.066*
Intimate Knowledge subscale score with Scope of Practice score	*105*	*-.088*	*.372*
Intimately familiar with my job with Scope of Practice score	*105*	*-.032*	*.743*
I have a depth of knowledge of my job with Scope of Practice score	*106*	*-.078*	*.425*
I have a comprehensive understanding with Scope of Practice score	*105*	*-.064*	*.519*
I have broad understanding of job with Scope of Practice score	*106*	*-.118*	*.228*
Investment of Self subscale score with Scope of Practice score	*103*	***-.252***	***.010****
I invest a major part of myself in my job with Scope of Practice score	*103*	***-.241***	***.014****
I invest many of my ideas in my job with Scope of Practice score	*103*	***-.215***	***.029****
I invest my talents into this job with Scope of Practice score	*103*	*-.160*	*.107*
I invest my life into this job with Scope of Practice score	*103*	*-.059*	*.556*
I invest a lot into my job with Scope of Practice score	*104*	***-.335***	***.001****
Psychological Ownership subscale score with Scope of Practice score	*103*	*-.062*	*.537*
This job is mine with Scope of Practice score	*103*	*-.018*	*.853*
I feel personal ownership for job with Scope of Practice score	*104*	*-.079*	*.424*
I sense this job is my job with Scope of Practice score	*104*	*-.132*	*.182*
I sense the work I do is mine with Scope of Practice score	*104*	*-.048*	*.625*
I feel personal ownership for the work with Scope of Practice score	*104*	*-.035*	*.723*
The work in this organization is mine with Scope of Practice score	*104*	*-.001*	*.988*
Practice Visibility score with Psychological Ownership score	*97*	-.114	.265
Control subscale score with Practice Visibility score	*99*	*.025*	*.804*
I can influence things affecting practice with Practice Visibility score	*101*	*.013*	*.896*
I can influence my tasks with Practice Visibility score	*101*	*-.002*	*.986*
I influence job related decisions with Practice Visibility score	*101*	*.014*	*.888*

I set work deadlines with Practice Visibility score	*99*	*.018*	*.859*
I control pace and scheduling with Practice Visibility score	*100*	*.038*	*.707*
I have control over my job with Practice Visibility score	*100*	*.043*	*.670*
Intimate Knowledge subscale score with Practice Visibility score	*100*	*-.188*	*.061*
Intimately familiar with my job with Practice Visibility score	*100*	*-.105*	*.299*
I have a depth of knowledge of my job with Practice Visibility score	*101*	*-.183*	*.067*
I have a comprehensive understanding with Practice Visibility score	*100*	*-.193*	*.055*
I have broad understanding of job with Practice Visibility score	*101*	*-.138*	*.169*
Investment of Self subscale score with Practice Visibility score	*98*	***-.254***	***.012****
I invest a major part of myself in my job with Practice Visibility score	*98*	***-.268***	***.008****
I invest many of my ideas in my job with Practice Visibility score	*98*	*-.164*	*.106*
I invest my talents into this job with Practice Visibility score	*98*	***-.199***	***.050****
I invest my life into this job with Practice Visibility score	*98*	***-.209***	***.039****
I invest a lot into my job with Practice Visibility score	*99*	*-.167*	*.099*
Psychological Ownership subscale score with Practice Visibility score	*97*	*-.041*	*.693*
This job is mine with Practice Visibility score	*98*	*-.008*	*.936*
I feel personal ownership for job with Practice Visibility score	*99*	*.019*	*.853*
I sense this job is my job with Practice Visibility score	*99*	*-.099*	*.331*
I sense the work I do is mine with Practice Visibility score	*99*	*-.025*	*.803*
I feel personal ownership for the work with Practice Visibility score	*99*	*-.101*	*.320*
The work in this organization is mine with Scope of Practice score	*99*	*-.014*	*.888*

Significant correlation