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Relationships Between APRN State Practice Authority, Perceived Autonomy, Professionalism, and Interprofessional Team Function Among A National Sample Of APRNs In the U.S.

Patricia Rae Gilman
University of New Mexico

Patricia Rae Gilman
Candidate

College of Nursing
Department

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Dr. Elizabeth Tigges, PhD, RN, PNP-BC Chairperson

Dr. Mark Parshall, PhD, RN, FAAN

Dr. Kim Cox, PhD, RN, CNM

Dr. Sally Cohen, PhD, RN, FAAN

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BY

PATRICIA R. GILMAN

A.S., Nursing, Brainerd Community College, 1986
B.S., Nursing, Augsburg College, 2007
M.S. Advanced Practice Nursing, Winona State University, 2010

DISSERTATION

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by

Patricia Rae Gilman

A.S., NURSING, BRAINERD COMMUNITY COLLEGE

B.S., NURSING, AUGSBURG COLLEGE

M.S., ADVANCED PRACTICE NURSING, WINONA STATE UNIVERSITY

P.H.D., NURSING, UNIVERSITY OF NEW MEXICO

ABSTRACT

Healthcare that includes high performing interprofessional clinical teams (IPTs) is one recommended strategy to provide optimal quality and cost-effective care delivery. Highly functional IPTs are characterized by effective communication, trust, respect, collaboration, information-sharing, and conflict resolution and are more efficient than individual providers working alone. Internally, IPT members' relationships and understanding of both one's own professional identity and others' role and responsibilities are crucial to team functionality and effectiveness. Externally, factors including regulatory practice environments might influence the effectiveness and performance of both individual team members and the team overall. Inconsistencies between states' practice authority (SPA) for advanced practice nurses (APRNs) provides an opportunity to study the effects on IPT function. This study examined relationships between APRN SPA, with perceived autonomy, professionalism, and IPT function in a national sample APRNs (N =222) from across the U.S who worked in IPTs within the past year for at least six months. APRNs in this study perceived a high level of autonomy

and moderate level of professionalism and IPT function. Significant relationships were found between SPA and autonomy. No relationship was found between SPA and IPT function and SPA did not moderate between professionalism and IPT function. However, the direct relationship between SPA and autonomy implies that an indirect relationship could exist that might affect how IPT function is perceived. This study adds to the body of nursing science and informs on strategies for future inquiry regarding team function and APRN policy and regulation.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Strategies that include a comprehensive approach to care while maintaining patient and provider satisfaction and lower costs are necessary to provide high-quality healthcare that meets the needs of individuals with increasingly complex health conditions, many of which require specialized practitioners to manage. Healthcare that includes high performing interprofessional clinical teams (IPTs) is one such strategy. Collectively teams can synthesize, refine, and implement a greater amount of diverse knowledge to make decisions, solve problems, innovate, and execute tasks more effectively and efficiently than any individual working alone (Anonson et al., 2009). High functioning teams are characterized by effective communication, trust, respect, collaboration, information sharing, and conflict resolution among IPT members (Agency for Healthcare Research and Quality [AHRQ]; Interprofessional Education Collaborative Expert Panel [IPEC], 2011). However, IPT function whether actual or perceived might be influenced by both internal (individual behaviors and perceptions) and external (environmental and social) factors that affect the effectiveness and performance of both individual team members and the team overall.

This cross-sectional internet-based self-administered survey study examined the direct and indirect relationships between state practice authority with perceived autonomy, professionalism and IPT function in a national sample of advanced practice nurses (APRNs) in the U.S. Specifically, using an internet-based survey the purpose of this study is to: (1) determine if environmental factors (state practice authority) have a direct or indirect effect on APRN perception of IPT function; (2) examine the extent to which

APRN perception of autonomy and professionalism directly and significantly associate with APRN perception of (IPT) function; (3) determine the extent to which APRN perception of autonomy mediates the relationship between state practice authority and IPT function, and (4) to determine the extent to which state practice authority moderates the relationship between APRN perception of professionalism and IPT function in a national sample of APRNs in the United States.

Interprofessional Team Function

The IOM (2001, 2011) reports that highly functioning healthcare teams have a higher degree of coordination of care and better patient outcomes. According to IPEC (2011), communication, collaboration, trust, and mutual respect are essential components and competencies for highly functional teams. However, some studies suggest conflict among the diverse professions within IPTs due to lack of knowledge about other members' profession and roles and environments such as the traditional hierarchical nature of healthcare structures influence how individuals within IPTs function (Mitchell, Parker, & Giles, 2011). IPTs perform better when all members have knowledge of each other's scope of practice, skill, and expertise and acknowledge each individual's contributions to the team's effectiveness (Almost & Laschinger, 2002; Anonson et al., 2009). Team and individual effectiveness (IPT function) suffer when team members disrespect and devalue other team members (Fagermoen, 1997). Furthermore, team members depend on each other's expertise and competence to fulfill the team's goals (Anonson et al., 2009). The question is, do healthcare structural environments, such as state practice authority, which regulate the scope of practice of APRN team members, change the IPT's function in any way?

Secondly, are there interactions between state practice authority and APRNs' perceptions of professionalism and autonomy that would in turn change how they perceive IPT function? A considerable amount of literature exists about autonomy, professionalism, and IPT function, separately in healthcare settings. However, no studies were found that examine state practice authority, perceived autonomy and professionalism together or their influence on perceived IPT function.

State Practice Authority

In the U.S. over 267,000 APRNs (National Council of State Boards of Nursing (NCSBN, 2017) practice in various settings including rural, urban, inpatient acute care, outpatient and urgent care clinics, public health, and specialty clinics. Significant variation exists among states' practice authority not only in legislative and policy language but also among the four APRN groups. In general, aside from states that do not recognize APRNs or designate practice authority for APRNs, state practice authority falls into three main categories: (1) restricted practice authority refers to practice where the APRN is supervised by a physician, DO, dentist, or chiropractor; (2) reduced practice authority refers to practice under a written agreement between the APRN and physician, DO, dentist, or chiropractor that defines the scope of practice by which the APRN will practice; and (3) full practice authority refers to the ability for APRNs to practice without the oversight or supervision of a physician, DO, dentist, or chiropractor. Refer to the definitions section for complete detail.

Recommendations from the IOM (2001, 2011) clearly support APRN autonomous practice and the implementation of interprofessional team-based care as measures to improve the public's access to comprehensive quality healthcare and lower overall costs.

However, no studies were found that examined APRN practice authority related to the perception of IPT function. Ultimately, the IPT will function more effectively if individual members can fulfill his or her professional role. The APRN, as a member of the interprofessional clinical practice team (IPT), contributes to the functionality and performance of the team, that in turn, leads to measurable team outcomes. Therefore, it is important to study factors, including regulatory environments, which support or threaten how APRNs perceive autonomy and professionalism that in turn relates to how IPT function is perceived.

It is worth mentioning that not all states recognize the APRN title, even though APRNs may be nationally certified and legally title protected, nor do all states acknowledge the education and training that prepares APRNs for autonomous practice within their scope of practice regulation. The focus of this study involves the state practice authority environment. However, even in states that provide legislative language for full scope of practice, some organizations (healthcare institutions, systems, and insurers) reduce or restrict APRN practice authority (National Governor's Association, 2012). Restrictions to APRN practice authority applied at the organizational level prevent the APRN from fulfilling their professional role and have the potential for ambiguity and confusion among IPT members. Studies indicate that practice environments where administrators model and support full scope of practice yield higher levels of collaboration among team members (Almost & Laschinger, 2002; Regan, Laschinger, & Wong, 2016), thereby contributing to a higher level of team function. This study examined how state practice authority directly or indirectly affects IPT function among a sample of APRNs in the U.S.

Professional Identity

Multiple factors influence how individual practitioners perceive their function within their respective professional roles and work settings. The literature on professional identity and professionalism cites education, values, and traditions within the discipline as major contributing factors to professional identity development (Baumann & Kolotylo, 2009; Godfrey & Crigger, 2017). Acquiring professional identity is a socialization process that begins with formal entry-level education and develops over the course of the professional's career (Godfrey & Crigger, 2017; MacIntosh, 2003). Professional identity is a component of overall identity that develops through social influences such as societal status, interactions with others (professional and social), and interpretations of experiences (Godfrey & Crigger, 2017; Johnson, Cowin, Wilson, & Young, 2012). Others have defined professional identity in nursing as a reflection of individual values and beliefs as a guide for decision-making, interaction, and action regarding caring for patients (Fagermoen, 1997). Accordingly, foundational concepts of nursing including decision-making, interaction, and action are analogous to practice autonomy and fundamentally necessary to both identify oneself and function as an APRN. This study uses two dimensions of professional identity, perceived autonomy and professionalism, to examine how they relate to state practice authority and perceived IPT function.

A well-developed sense of professional identity is necessary for the APRN to perform autonomously within the IPT because it establishes knowledge of the scope of practice and work APRNs do. A strong sense of one's professional identity also allows the individual to distinguish the difference between oneself and other professionals within the IPT and is known as self-categorization (Tajfel & Turner, 1979). Consequently,

as an IPT member, it is reasonable to consider that any factor that threatens APRN professional identity or its components also threatens the ability of the IPT to achieve optimal function.

Autonomy

Weston (2010, para. 13) provides the definition of nurse autonomy as "the ability to act according to one's knowledge and judgment, providing nursing care within the full scope of practice as defined by existing professional, regulatory, and organizational rules." Dempster (1990) defined autonomy as the state of being independent, free, and self-directing. In Dempster's study, nurse practitioners describe perceived autonomy as an essential component of APRN practice and necessary in the ability to practice to the full extent of their skill and knowledge.

A significant amount of literature exists regarding APRN autonomy. The most frequently addressed issues related to APRN autonomy are prescriptive authority and patient safety. Evidence suggests autonomous practice is not only necessary for APRNs to practice to the fullest extent of their education and training (Dempster, 1990), but also is safe, high-quality care for patients (Newhouse et al., 2011). Restrictive practice policies, such as certain state laws and regulations, reduce APRN autonomy (Pan, Straub, & Geller, 1997). Some studies suggest that restrictive regulatory practices contribute to higher public safety risks and limit the public's accessibility to healthcare (Rudner Lugo, O'Grady, Hodnicki, & Hanson, 2010). Since autonomy is a necessary component of optimal APRN function, it is logical to assume that autonomy is a significant contributor to IPT function because if the APRN is unable to perform as an independent contributor the team will be unable to rely on him or her as a fully functioning team member, thus

implying that the APRN may perceive less effective IPT functioning. This study sought to determine if APRNs' perceived autonomy has a direct effect or mediates the relationship between state practice authority and IPT function.

Professionalism

Professionalism is a complex multidimensional concept, and a consensus on its definition does not exist (Young, 2010). Furthermore, the terms professionalism and professional identity have been used interchangeably making concise measurement challenging. Key attributes of professionalism identified in the literature include autonomy, knowledge, competence, professionhood, accountability, advocacy, collaborative practice, and commitment (Baumann & Kolotylo, 2009; Young, 2010). Environmental attributes of professionalism in nursing include control of nursing practice, quality of nursing work life, professional support, shared governance, and environmental culture and climate (Baumann & Kolotylo, 2009). A study of Canadian nursing faculty and students identified these same professional and environmental attributes (Akhtar-Danesh et al., 2013). Hampton and Hampton (2000, p. 218) defined professionalism as the "behavioral orientation that professionals possess toward their field, such as sense of calling and belief in public service." Hampton and Hampton's definition suggests professionalism is the manifestation of one's professional identity, making it separate from, but a component of professional identity. This study focused on professionalism because no reliable instrument could be found to measure professional identity in the APRN population. Furthermore, no study was found that examined the relationship between professionalism and APRN perception of IPT function. In this study, that

relationship was explored; in addition, the possible moderating effect of state practice authority between perceived professionalism and IPT function was examined.

Conceptual Framework

The conceptual framework for this study is supported by identity theories and the primary theory guiding this study is professional identity theory (PIT), which is an extension of social identity theory [SIT] (Tajfel and Turner, 1979). Professional identity theory provides the conceptual rationale for linking the professional identity constructs of professionalism and autonomy to perceived IPT function. However, professional identity theory alone is insufficient for explaining the potential association of distal factors (state practice authority) between perceived autonomy, professionalism, and IPT function . As such, the use of the PIT is augmented by the inclusion of place-identity (Proshansky, Fabian, & Kaminoff, 1983), which in this study is a way of explaining the hypothesized relationships between state practice authority and perceived autonomy, professionalism, and perceived IPT function.

Purpose of the Study

The primary purpose of this study is to examine the relationships between state practice authority, perceived autonomy, professionalism, and IPT function in a national sample of APRNs in the U.S. Aims include: (1) to determine if state practice authority has a direct or indirect effect on APRN perception of IPT function; (2) to examine the extent to which APRN perception of autonomy and professionalism directly and significantly associate with APRN perception of IPT function; (3) to determine the extent to which APRN perception of autonomy mediates the relationship between state practice

authority and IPT function, and (4) to determine the extent to which state practice authority moderates the relationship between APRN perception of professionalism and IPT function in a national sample of APRNs in the United States. See Figures 1 and 2 for the proposed relationships.

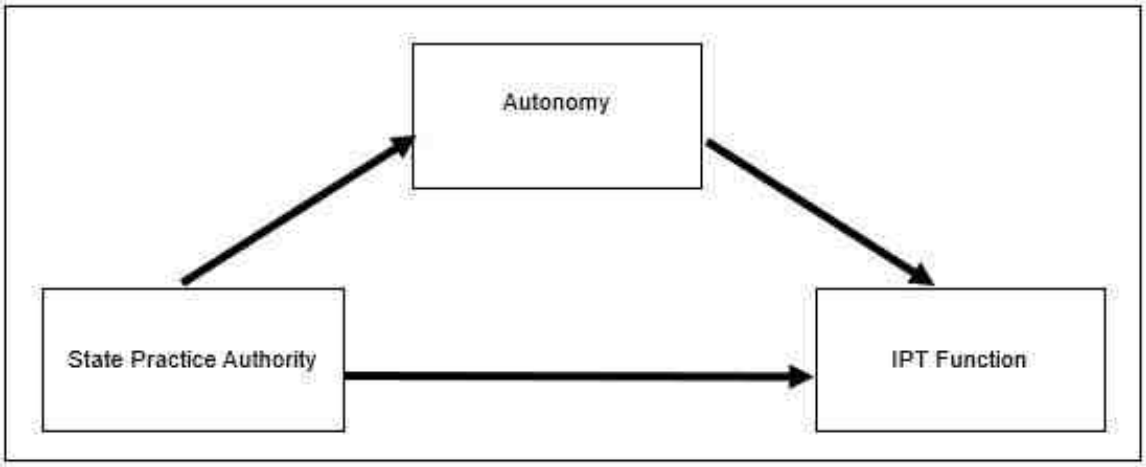


Figure 1. Conceptual model of proposed mediating relationships: The mediating role of perceived autonomy between state practice authority and APRN perceived IPT function.

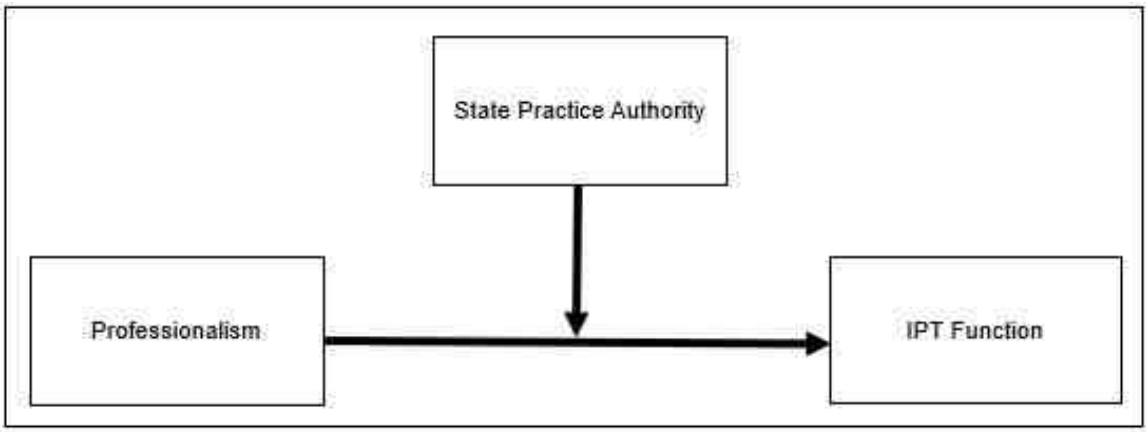


Figure 2. Conceptual model of proposed moderating relationships: The moderating role of state practice authority between professionalism and perceived IPT function.

Research Questions

Research Question 1. Is the level of state practice authority associated with perceived IPT function in a national sample of APRNs?

Research Question 2. Is the relationship between state practice authority and perception of IPT function mediated by autonomy in a national sample of APRNs? See Figure 1.

Subquestion 2a. Is there a relationship between state practice authority and perceived autonomy in a national sample of APRNs?

Subquestion 2b. Research question 3: Is there a relationship between perceived autonomy and perceived IPT function in a national sample of APRNs?

Research Question 3. Is professionalism associated with perception of IPT function in a national sample of APRNs?

Subquestion 3a. Does state practice authority moderate the relationship between perceived professionalism and perception of IPT function in a national sample of APRNs? See Figure 2.

Scope of the Study

Study Design

This study is a quantitative cross-sectional self-administered survey of nationally certified APRNs from all clinical practice settings in the U.S. where an APRN license is required for employment. Practice settings might include, inpatient or outpatient units or departments, primary or specialty clinics, surgery or birthing centers, or clinical research settings. The study participants consist of a national sample of nationally certified APRNs including nurse midwives (CNMs), nurse practitioners (CNPs), clinical nurse specialists (CNSs), and certified registered nurse anesthetists (CRNAs) who currently or within the past year practice within an interprofessional clinical practice team for at least six months with members of two or more professions. Six thousand email invitations were sent to certified APRNs between March 18, 2018 and April 8, 2018 with a link to

participate in a structured, self-administered internet-based survey. The email addresses were obtained through a purchased national email list from Exact Data, a private marketing firm, that acquires data for marketing lists from various sources based on Dun and Bradstreet records in the Business Database; all email addresses are direct contacts, not sales or generic information (Exact Data, 2017). The list conforms to Federal Trade Commission rules regarding email solicitation.

Study data were collected using REDCap [Research Electronic Data Capture] (Harris et al., 2009) tools hosted at the University of New Mexico Health Sciences Center. The statistical analyses for the study are ANOVA, correlations, multiple regression, and path analysis. The analyses included appropriate tests of assumptions and goodness of fit using IBM SPSS® 25.0 and IBM SPSS AMOS® 24.0.

Definitions

APRN (advanced practice registered nurse). A subset of nurses prepared with advanced, graduate-level nursing knowledge to provide direct patient care in four roles i.e. certified nurse-midwife (CNM), certified nurse practitioner (CNP), clinical nurse specialist (CNS), and certified registered nurse anesthetist [CRNA] (NCSBN, 2008).

APRN state practice authority (IV). For this study, APRN practice authority is the state's scope of practice law or regulation under which the APRN is licensed and practices. The level of state practice authority (restricted, reduced, full) is defined by the state the participant indicates is the primary state of practice. See Chapter 2, Table 1 for levels of practice authority by state. The definitions for each level are adopted and modified for this study from the definitions by the National Council of State Boards of Nursing APRN Advisory Committee Consensus Model (2008) as follows:

1. Restricted practice authority: requires direct supervision in the presence of a licensed, physician (MD), osteopath (DO), dentist (DDS) or podiatrist with or without a written practice agreement. For this study, this category includes APRNs described by NCSBN as either (a) independent practice but supervised or not specified prescribing or (b) supervised and not specified in both practice and prescribing.
2. Reduced practice authority: requires a collaborative agreement between the APRN and his or her medical colleague which is a written agreement that specifies scope of practice and medical acts allowable with or without a general supervision requirement by an MD, DO, DDS or podiatrist. For this study, this category includes APRNs described by NCSBN as having either (a) independent practice but with collaborative agreement for prescribing or (b) collaborative agreement for both practice and prescribing.
3. Full practice authority: the ability for APRNs to practice with no requirement for a written collaborative agreement, no supervision, and no conditions for practice including the authority to prescribe medications and treatment within the APRN's licensure, certification, and scope of practice laws. For this study, this category includes APRNs described by NCSBN as having both independent practice and independent prescribing.

Autonomy (mediator). The conceptual definition of nurse autonomy is "the ability to act according to one's knowledge and judgment, providing nursing care within the full scope of practice as defined by existing professional, regulatory, and organizational rules" (Weston 2010, ¶ 3). Operationally, the participant's scale score

from the Dempster Practice Behaviors Scale [DPBS] (2009) represents APRN practice autonomy. The DPBS is a 30-item 5-point Likert scale self-report instrument designed to measure autonomy in practice by assessing behaviors, actions, and conduct related to practice autonomy. Subscales include readiness, empowerment, actualization, and validation. The author has given permission to use the instrument for this study.

Interprofessional team. As defined in the Institute of Medicine's (IOM) Report, *Health Professions Education: A Bridge to Quality*, (2003), "an interdisciplinary [interprofessional] team is composed of members from different professions and occupations with varied and specialized knowledge, skills, and methods" (p. 54). Members of an IPT communicate and work together as colleagues to provide quality individualized care for patients. For this study, an interprofessional clinical practice team is a group of two or more members from different healthcare professions (both clinical and nonclinical) of which the APRN is a member. Examples include but are not limited to: physician, nurse (LPN/RN), pharmacist, physical therapist, nutritionist, social worker, and clergy who work in clinical settings.

Perception of IPT function (DV). According to TeamSTEPPS® (American Institutes for Research, 2010) framework effective highly functional teams exhibit behaviors that reflect trust, respect, accountability, and reliability for each member of the team (AHRQ website, n.d.). Highly functional teams keep each member informed, adapt to unexpected circumstances, and hold each other accountable to the goals and expectations of both team members and the team overall.

The scale score from the TeamSTEPPS® T-TPQ for Office-Based Care (American Institutes for Research, 2010) survey questionnaire represents the APRN's

perception of his or her IPT's function for this study. The T-TPQ is a publicly available 35-item self-report instrument that measures individual team members' perception of group-level team skills and behavior using a 5-point Likert scale. Core components of teamwork measures within the T-TPQ instrument include team structure, leadership, communication, mutual support, and situation monitoring.

Professional identity. The concept of professional identity in nursing is defined as "a sense of oneself that is influenced by characteristics, norms, and values of the nursing discipline, resulting in an individual thinking, acting, and feeling like a nurse" (Godfrey & Crigger, 2017, p. 379). Since no valid/reliable instrument specifically measuring professional identity of APRNs was available, this study employed measures for autonomy and professionalism which are major attributes of professional identity.

Professionalism. Conceptually, professionalism is defined as the behaviors professionals display towards their profession. For this study the operational definition of APRN's perception of professionalism is the total score from the Professionalism Scale questionnaire (Hampton & Hampton, 2000). The scale measures professionalism in nurse midwives and is an adaptation of Snizek's (1972) modified version of the original Hall's Professionalism Scale. The Hampton and Hampton version of the Professionalism Scale is a 23-item 7-point Likert scale self-report instrument designed to measure five constructs of professionalism in midwives including belief in public service, sense of calling, professional association, autonomy, and self-regulation. The scale has been modified for use with APRNs for this study. Authors were unavailable for permission to use and modify the Professional Scale for Midwives.

Limitations

Internal Validity

Ambiguous temporal precedence. The cross-sectional design limits the ability to determine causality between variables because of the potential bidirectional or reciprocal causal relationship between variables. For example, does one's perception of professionalism and autonomy cause negative (or positive) perception of IPT function or vice versa? A pretest–posttest design improves on the ability to determine which is cause and which is effect (Shadish, Cook, & Campbell, 2001, pp. 55, 392). However, the large sample size, time constraints, and cost make pretest–posttest design impractical for this study.

Testing. The TeamSTEPPS® program and the T-TPQ (American Institutes for Research, 2010) have been used in some healthcare settings as a process improvement tool. Dempster's Practice Behaviors Scale (Dempster, 1990, 2009) has been used in several studies involving APRNs (Bahadori & Fitzpatrick, 2009; Cajulis & Fitzpatrick, 2007; DeKeyser Ganz, Toren, & Faldon, 2016; Maylone, Ranieri, Quinn Griffin, McNulty, & Fitzpatrick, 2011; Petersen, Keller, Way, & Borges, 2015) and the Professionalism Scale has been used in a study of CNMs (Hampton & Hampton, 2003) and NPs (Settersten, 1991). The possibility exists that some APRNs have had experience with the questionnaires in their work setting or in other studies. Knowing the questions and responses prior to the survey could influence how APRNs think they should respond based on previous scores.

Construct Validity

Mono-method bias. This study uses three internet-based self-report instruments. Instruments that have both positive and negative response questions are intended to reduce mono-method bias.

Instrumentation. Since the instruments used in this study have been found to be reliable and valid in measuring the constructs of interest in a variety of populations including some APRNs and IPTs with APRN members, it is reasonable to expect that the constructs are appropriately matched to the measures in this APRN population.

External Validity

Interaction of causal relationship with units. This study sample is a subset of the total APRN population and might not represent the general APRN population. The list from which this sample is obtained is an "opt-in" list where individuals choose to participate. APRNs who are not on this list might not have the same perceptions of those who are on the list.

Secondly, using one member-group (APRNs) to represent IPT function is less optimal than obtaining information from multiple healthcare professionals. However, this study's focus is APRNs' perception of their clinical practice team's function and is not measuring a team's performance outcomes or comparing team members' perceptions of team function. Time constraints, access to and availability of participants, and cost are factors in choosing to survey the APRN group over multiple professional groups that make up IPTs.

Interaction of causal relationships with settings. This national sample is intended to provide a diverse representation of APRNs in multiple contexts. Differences

between work settings such as urban vs. rural, community health centers vs. academic treatment centers, or hospitals vs. clinics could influence the scores on the questionnaires.

Sampling errors. According to Dillman, Smyth, and Christian (2014), sampling error occurs whenever obtaining a portion of the total population for a survey; it is unavoidable in this study. Nonresponse error was a concern since the individuals within the sample frame might choose not to complete the survey resulting in less than optimal sample size. However, the sample size was adequate ($N = 222$) to perform all of the analyses used in this study.

Statistical Conclusion Validity

Low statistical power. Participants might choose not to respond to the email invitation to participate or the potential for emails to end up in spam mail exists. The emails on the purchased list have been validated by the marketing firm as current accurate emails. To mitigate nonresponse, Dillman et al. (2014) suggest multiple survey methods. However, with the large sample requirement for this study, multiple survey modes, such as the email plus direct mail, are cost prohibitive for this project.

Violated assumptions. Appropriate tests including tests for normal distribution of interval or ratio item/scales scores and bivariate correlations and variance inflation factor for multicollinearity were conducted to ensure assumptions were not violated (Pallant, 2013).

Human Subjects

Confidentiality. The data were collected through an anonymous electronic survey using REDCap. Study data were collected and managed using REDCap tools hosted and

stored on a secure server at the University of New Mexico. The email list was not downloaded with the survey responses from REDCap and was deleted at the end of the data collection period (ending four weeks after the initial survey invitation was sent). The downloaded deidentified data were stored on the coinvestigator's password protected computer in a private office with limited access. Raw data are stored in a file accessible by the principle and coinvestigators on a secure server housed at the University of New Mexico for a period of three years and then deleted.

Anonymity. No information was collected regarding participants' personal identifying information or specific employer.

Psychological. Potential anxiety related to survey questions exists. Participation is voluntary and email requests to participate included an informed consent for voluntary participation or resignation.

Assumptions

Assumption 1. The ability to practice in a manner representing the education and training that identify with and fulfill the nurse's professional role will support effective IPT function resulting in better overall individual and team performance and improved patient outcomes (Machin, Machin, & Pearson, 2012; Poghosyan & Liu, 2016; Weiland, 2015).

Assumption 2. The attainment and development of professional identity as implied by high levels of autonomy and professionalism scores are essential for the APRN to be a successful autonomous member of the IPT.

Assumption 3. State practice authority contributes to how an APRN perceives their autonomy.

Assumption 4. State practice authority might moderate a relationship between professionalism and IPT function.

Significance of the Study

This study examined the direct and indirect relationships of state practice authority with perceived autonomy, professionalism, and IPT function in a national sample of APRNs in the U.S. These relationships have not been studied in the APRN population to date and represent a contribution to the current state of the science of nursing knowledge regarding IPT function.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

This chapter starts with an overview of the conceptual framework using identity theories to provide a characterization of a highly functional interprofessional team (IPT). Secondly, a review of the current research literature regarding IPT function in the healthcare setting, advanced practice state practice authority, nurse autonomy, and professionalism will be presented.

Conceptual Framework

This study postulates relationships between and among APRN state practice authority and the constructs of perception of interprofessional team (IPT) function, autonomy and professionalism [professional identity components] (See Figures 1 and 2). The conceptual framework is supported by identity theories and the primary theory guiding this study is professional identity theory (PIT), which is an extension of social identity theory [SIT] (Tajfel & Turner, 1979). Professional identity theory provides the conceptual rationale for linking perceived professional identity constructs of autonomy and professionalism to perceived IPT function. However, professional identity theory alone is not sufficient in explaining the potential association of distal factors (state practice authority) to perceived autonomy, professionalism, and IPT function. As such, the use of the PIT is augmented by the incorporation of place-identity (Proshansky et al., 1983) used in this study as a means to explain the hypothesized relationships of state practice authority to APRN perception of autonomy, professionalism, and IPT function.

Identity Theories

A formal theory of professional identity does not exist. Rather, professional identity is an extension of social identity theory. Therefore, a brief historical background of identity theory development is presented to clarify the relevance of professional identity as a framework for this study.

Erik Erikson (1963) was one of the first psychodynamic theorists to explore and define the concept of identity as a life-long developmental process influenced and shaped by environmental (e.g., social, economic, political) factors (Skorikov & Vondracek, 2011). Erikson (1963, 1968) posited that identity is the interaction between an individual's social and cultural context that begins in early adolescence and continues throughout the lifespan.

In contrast to Erikson's psychodynamic theory which is based on Freudian concepts, Tajfel and Turner (1979) introduced social identity theory based on the psychosocial influences' interaction with individuals and groups which is the foundation for the development of professional identity theory. These theories provide insight about how psychosocial influences interrelate with professionals, such as APRNs, in establishing who they are, what they do, and how they fit into a professional role within the professional diversity of interprofessional teams.

Social Identity

Social identity theorists focus on identity as categories, collective self, groups and intergroup processes (Bothma, Lloyd, & Khapova, 2015). Tajfel and Turner (1979) viewed the concept of identity through a psychosocial lens by exploring the interrelations of social factors (prejudice, privilege, and competition) and individual thought and

behavior within and between groups. In-group relations not only reflect individuals' perception of self but also how the individual integrates into a group and how the group perceives the individual. Social identity theory [SIT] expands on in-group dynamics (relationships and interactions with members of the same group) to include attitudes and relationships of in-groups toward members of other groups (out-groups). Typical examples of in-group-out-group relationships in social identity literature include the differences and conflicts between medicine and nursing. Using SIT as a framework to explain classification (labeling) differences between individuals, Turner (1982) introduced the concept of self-categorization which considers how individuals embrace group beliefs, values, and behaviors of the in-group while separating themselves from the out-group. Consequently, groups become hierarchical in nature whereby individuals strive to become part of the highest-level group through discrimination, stereotyping, and possibly hostile behaviors (Bothma et al., 2015). Accordingly, group members adopt not only a sense of belonging but also develop a sense of pride and prestige as they perceive themselves as a member of an elite in-group with a higher social status than that of the out-group(s). In-group-out-group behaviors in a diverse environment, such as the IPT, might be a factor in both individual member performance and IPT function overall.

Professional Identity

Professional identity relates to how an individual perceives self as a professional in a professional role. The professional self is a combination of both the individual's moral-ethical characteristics (social and environmental influences) and educational preparation (social and professional influences) during which time the individual gains role definition, knowledge, and responsibility (Cardoso, Batista, & Graça, 2014). This

identity process develops and matures through feedback mechanisms from interactions with the individual's experiences with his or her respective professional environments. See Figure 3 for a depiction of professional identity development as it relates to the relationships in this study.

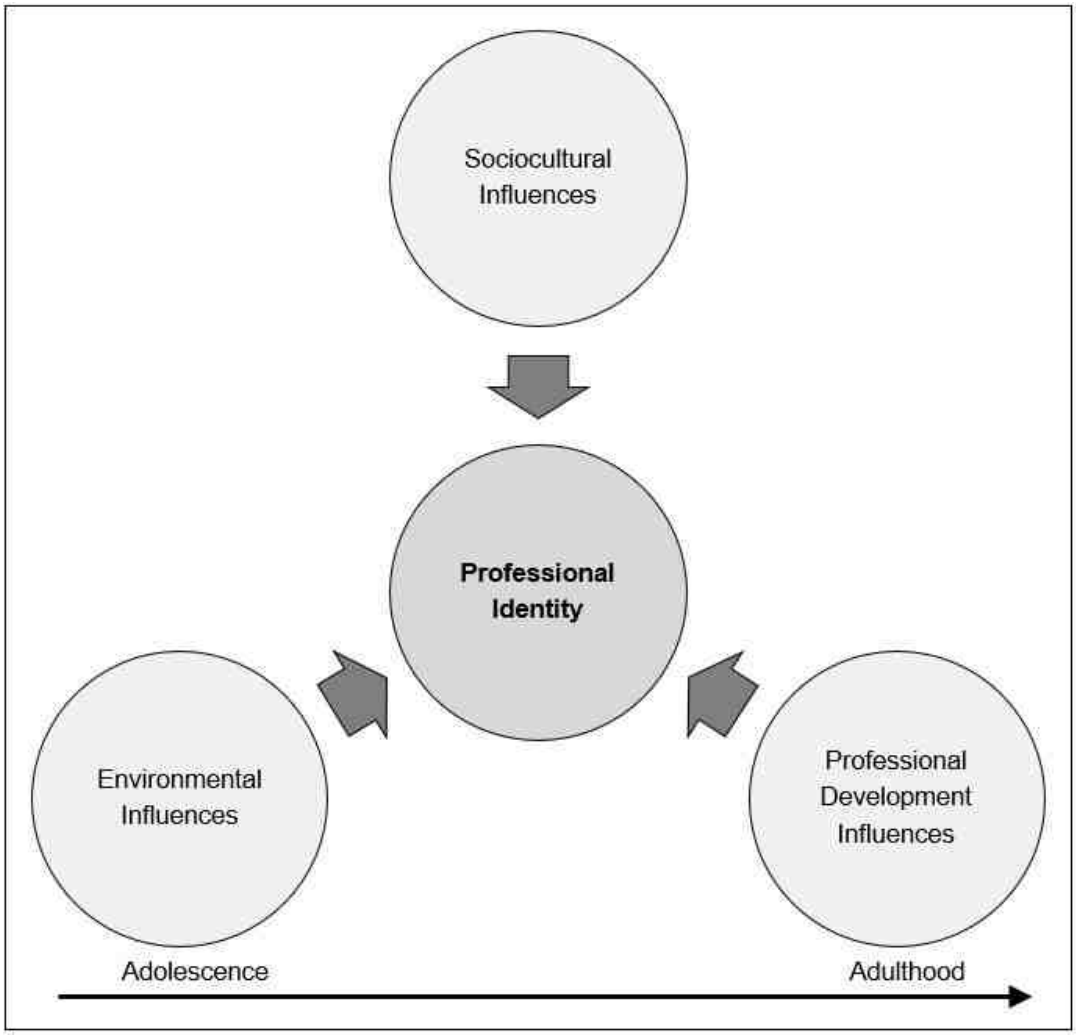


Figure 3. Conceptual diagram depicting the factors that influence an individual's professional identity development across the lifespan.

Theoretically, professional identity theory implies that effective IPT function is dependent on each team members' internalization of their own professional identity. Therefore, all professionals within the IPT observe, interpret, and derive meaning through

a professional lens that constitutes a professional worldview. Thus, IPT members will perceive their team's function through their respective professional lens which suggests a link between perception of IPT function and professional identity (autonomy and professionalism). For example, APRN autonomy, as a component of professional identity, implies that the APRN has the knowledge and skill to do a job within a specific professional scope. If regulatory practice authority restricts autonomy, a conflict between what the APRN expects to do and actually does within the IPT might exist, which in turn might drive how the APRN interprets the IPT experience.

Moreover, for teams to function at the highest level, team members need to have knowledge and understanding of the work-related responsibilities of others on their team (Almost & Laschinger, 2002; Anonson et al., 2009). Based on social identity theory (Tajfel & Turner, 1979), professional identity development is a key driver in the ability to differentiate between the professional role and responsibilities of one's self and other IPT members.

In the context of IPTs as a social group, APRNs' contribute knowledge and expertise to the team's function as a unique professional who is different from others on the IPT. According to identity theorists, individuals attach meaning to themselves to define who they are and what they do in the workplace through personal attributes, social group membership, and work roles (Ashforth, Harrison, & Corley, 2008). Fundamentally, professional identity shapes behaviors, attitudes, and emotions in the context of the professional's work (Siebert & Siebert, 2005). Professional identity is a combination of how one sees oneself and the social self where the individual identifies with a professional group with common attitudes and goals (Caza & Creary, 2016). One way

individuals learn role definition and expectations is through interactions with other members in the same group. (Caza & Creary, 2016; Tajfel & Turner, 1979). Therefore, fulfilling the professional group's expectations and constructing one's professional identity gives meaning to the role and associated group. Consequently, doing meaningful work (a purpose in life) is analogous to having a sense of well-being, value, and worth in society, i.e., a meaningful life (Tajfel & Turner, 1979). Therefore, as emphasized in this discussion thus far, socialization is important in forming professional identity and professional identity is important in meaningful work, which in turn is fundamental for highly functional IPTs.

Professional identity construction and nursing. The development of professional identity in all professions begins with the education and socialization processes within the profession and continues to evolve throughout the professional's career (Godfrey & Crigger, 2017). APRN professional identity is based on the longstanding principles, practice standards, and ethics of nursing (American Nurses Association [ANA], 2015). Professional identity development represents both the individual (self) and the collective (nursing profession) dimensions of the concept of identity and characterizes two stages of identity, the development and professional stages (Cardoso et al., 2014). Crigger & Godfrey (2014) emphasize that both psychological paradigms, referring to character-building and being and social paradigms, referring to socialization and doing, must be present to establish an individual's professional identity. For the profession of nursing, academic nursing programs are responsible for initiating the socialization of nursing students into the profession. The student nurse becomes familiar with the philosophy, values, ethics, mores, rules, and expectations associated

with being and acting as a nurse. During the initial stage, the student experiences the act of being a nursing professional through didactic as well as clinical encounters so that at the time of entry into the workforce the transition from student to professional is achieved. This process of indoctrination is foundational in the development of professional identity.

APRNs begin the journey of new professional identity formation with the entry into an APRN program (development stage) where the foundations of nursing philosophy are reintroduced and explored and the APRN renews the association of self with the profession at a higher level with new knowledge and new skills (Cardoso et al., 2014; Crigger & Godfrey, 2014; Godfrey & Crigger, 2017). The professional stage builds on the philosophical foundations of nursing and professional identity continues to mature as the APRN enhances both individual identity (values, beliefs, independent thinking, and decision-making), and social identity (social skills: group interaction, collaboration, and communication with others) necessary to work in an interprofessional environment. As a nurse transitions to the APRN role, a new identity begins to form while retaining the original nursing identity. According to identity theorists, this transition is a critical point at which a conflict between nurse and APRN identity occurs and as the conflict is resolved, the APRN's professional identity emerges and begins to develop (development stage) and mature (professional stage). Essentially, the cycle of professional identity development begins each time a change in jobs, roles, status, or events takes place throughout the course of one's nursing career (Schwartz et al., 2013). Literature has mainly focused on the development stage of nurses' professional identity. This study's focus is the professional stage of APRN professional identity which includes autonomy and professionalism.

As described thus far, APRNs' values, beliefs, and identities are the result of socialization into the profession of nursing and continue to evolve in a transformative process as the APRN experiences changes throughout his or her career. Individual factors that contribute to professional identity development include new role responsibilities and conflicts between self-expectations as a professional and what others allow or expect. Environmental factors include laws, regulations, rules, and organizational and group practice settings contribute to individuals' perception of professional identity. Social factors such as sociocultural influences and individual factors such as interpersonal and interprofessional relationships and interactions also contribute to individuals' perception of professional identity and professionalism throughout one's career. The goal for the APRN is to successfully fulfill the expectations of self, the nursing profession, and society as a knowledgeable, qualified, competent autonomous professional. Professional identity theory implies that achievement of such a goal relies not only on the APRN's ability to identify with the role, but also to do the work for which he or she is trained to do.

Place-Identity

Place-identity extends self-identity by considering the environmental aspects that contribute to identity development. Place-identity is derived from self-theory which explains not only the process by which one distinguishes oneself from others, but also how objects, things, spaces, and places relate to and are different from the individual self (Proshansky et al., 1983). Proshansky et al. describe Place-identity as a substructure of self-identity that consists of broadly conceived cognitions that represent memories, ideas,

feelings, attitudes, values, preferences, meanings, and conceptions of behaviors and experience associated with physical settings in individuals' day-to-day existence.

In conjunction with the past physical setting (environmental past), interactions with others shape an individual's place-identity and, essentially, self-identity. These identities are subject to changes that influence day-to-day experiences and life-style, including work-life. Theoretical assumptions of place-identity include a sense of belonging and purpose and a sense of rootedness or centeredness giving meaning to life through a process of engenderment and attachment to geographically locatable places. In other words, individuals develop attachments to places such as birth-places or associated places of growing-up years that are retained throughout the life-cycle.

In this study place identity helps to explain how environmental factors such as state practice authority relate to an APRN's perception of autonomy, professionalism, and IPT function. Place identity implies that the IPT is an environment that reflects each member's sense of belonging and his or her perception and conception of the team's importance in the context of work. Highly functional IPTs depend on each member's optimal performance to achieve the team's goals and expectations to deliver high-quality care. Place identity implies that an APRN's perception of how an IPT functions could be influenced by experiences with environments during training (classroom and clinical environments) or past and present employment settings which could include the state regulatory environments of practice authority.

Summary

Obvious similarities exist between the identity theories described herein. These theories, including place-identity, explain the sociocultural and environmental contexts

within the developmental processes of individuals' ability to achieve successful, fulfilling lives (both private and professional) throughout the life span. Although no universal theoretical framework for professional identity exists, the extant literature, as described in this paper, reflects models and concepts that contribute to our understanding of the fundamentals of professional identity development and its relationship to work environments. Studies among nursing students' professional identity formation and transition to practice are becoming more prevalent. However, empirical research is limited on the professional stage of identity development and the relationship of professional identity with APRN nursing practice and practice environments (Godfrey & Crigger, 2017). This study seeks to contribute to bridging this gap in nursing research.

Environmentally, the concept of "place" incorporates not only physical ties but also emotional ties that influence the ability for professionals to fulfill their respective roles in the professional arena and society. Place-theory as described by Proshansky et al. (1983) implies that APRNs who experience regulatory restrictions on scope of practice that inhibit the ability to perform in a manner by which he or she has been educated and professionally socialized will experience self-identity uncertainty and therefore, professional identity uncertainty. Consequently, the APRN's perception of professional identity (autonomy and professionalism) and IPT function will likely be different from APRNs who practice in less restrictive regulatory environments.

Traditionally, identity theorists mainly focused on the individual self and the profession, and not on the environmental factors regarding professional identity development. This study intends to address this gap by examining the links between APRN practice environments (state practice authority), APRN perception of autonomy

and professionalism as dimensions of professional identity, and perception of IPT function using both professional identity and place-identity as a framework.

Literature Review

Interprofessional Team Function

The existing research literature about IPTs includes a broad range of professions. Studies about team structure and function include management and organizational disciplines, aviation, construction and engineering, education, and healthcare. In the healthcare literature the study of IPTs continues to be a focus of researchers to help inform improvements in care delivery related to quality, patient outcomes, efficiencies, and cost. Studies suggest interprofessional collaboration, communication, and organizational support of autonomous practice are associated with highly functional teams (Almost & Laschinger, 2002; Apker, Propp, & Zabava Ford, 2005; Fagermoen, 1997). The 2001 IOM report, *Crossing the Quality Chasm*, emphasized the need to improve care delivery. The report discussed the use of multidisciplinary teams and the challenges regarding regulating practice authority and overlapping roles. Yet, little is known about the environmental factors such as state regulation on practice authority that could influence how IPTs function. To address this gap, this study examined the direct and indirect relationships of environmental factors, i.e., state practice authority, with APRN perception of autonomy, professionalism, and IPT function.

IPTs, environments, and team behavior. Studies have indicated that highly functional teams exhibit superior communication skills, share knowledge and information, can resolve conflicts, and recognize and respect member roles which ultimately results in better overall team function, less job strain, and improved patient care outcomes. Studies

connect external environmental factors to how teams function. For example, using a cross-sectional nonexperimental study, Almost and Laschinger (2002) surveyed 63 acute care and 54 primary care NPs from Ontario, Canada regarding their perceptions of access to work empowerment (information, support, resources, and opportunity). Out of a possible range of 4 to 20, total empowerment scores for ACNPs (M = 12.89, SD = 2.53) and PCNPs (M = 14.71, SD = 1.95) were moderately high. The overall consensus among NPs was that structural empowerment enhances collaboration with both managers and physicians. NPs in their study perceived a higher degree of trust, respect, autonomy, shared decision-making, and better communication as contributors to effectiveness in their work setting. Thus, NPs in their study experienced less job strain and expressed similar characteristics found in highly functional IPTs. Although Almost and Laschinger's study did not specifically examine the relationships proposed in this study, i.e., perceptions of autonomy, professionalism, or IPT function, it does reflect how the individual APRN perceptions of the work environment, and autonomy in particular, relate to IPT function.

Another study by Anonson et al., (2009) used grounded theory and interviewed 24 IPT professionals from acute care and community-based settings to determine the competencies involved in effective IPT collaborative team practice. The participants in their study felt that shared-leadership within the team was an essential component for effective IPT practice and optimal patient care. They identified self-regulation of team function, willingness to accept leadership roles, and advocacy for team practice as contributors to team effectiveness. The participants also indicated that trust, respect, and communication that includes all team members are important aspects of IPT function

which, in turn, leads to better patient outcomes. The implication is that teams that function within a supportive environment that encourages all members to share in responsibilities, function at a higher level than those in nonsupportive environments.

The two studies mentioned highlight the importance of supportive work environments and behaviors that are characteristic of high functionality within IPTs. Highly functional team behavior reflects the attitudes of individuals within the group about both themselves, as highly valued contributors to their team, and of other members of the IPT who are accepted and valued professionals. Consequently, any team member in alignment with others on the team is socially categorized as an in-group participant. However, according to Tajfel and Turner (1979), social categorization produces an adverse effect within a group by creating subgroups. Within groups, subgroups share a common goal and a higher degree of trust than with members from outside their subgroup. Healthcare settings are excellent illustrations of these types of group interactions.

For instance, the operating room (OR) is an example of the importance of a highly functional IPT environment. Makary et al., (2006) conducted a cross-sectional study of a convenience sample of OR teams in a Catholic health system of 60 hospitals across 16 states ($N = 2135$) using the Safety Attitudes Questionnaire (SAQ). From the communication and collaboration section of the SAQ, each respondent was asked to "describe the quality of communication and collaboration you have experienced with: e.g., surgeons, anesthesiologists, surgical technicians, certified registered nurse anesthetists (CRNA), and OR nurses" [1 = very low, 2 = low, 3 = adequate, 4 = high, 5 = very high] (p. 747). Results of this study found that physicians had the lowest ratings of overall teamwork (3.68 of 5.00) and OR nurses (scrub and circulating) were given the

highest ratings of teamwork (4.20 of 5.00). Additionally, each group rated their peer group teamwork higher than they rated other groups and overall teamwork. This study points out how the social and professional identity aspect of teams' members plays an integral part in the behaviors of team members towards each other and could contribute to overall team function.

Other studies have examined the complexity of team behavior and how diversity can influence how team members perceive themselves and others on the team, a concept known as professional identity salience (Mitchell & Boyle, 2015). Mitchell and Boyle point out that social categorization produces both negative and positive effects on the diversity within groups and leads to team innovation and a willingness to acquire another point of view. In their cross-sectional study surveys were distributed to 301 members of 70 IPTs and their team leaders across an assortment of healthcare organizations in the UK. Team members consisted of nurses (51%), physicians (10.5%), and the remaining 38.5% was comprised of paramedical professionals, biomedical scientists, welfare workers, pharmacists, dieticians, psychologists, dentists, occupational and physiotherapists, podiatrists, opticians, and radiographers. Team leaders mainly consisted of nurses (53%) and physicians (14%). Aspects of team function measured included, professional diversity (IV), professional identity salience [mediator] (the individual's ability to self-categorize, recognize and categorize others, and distinguish self from others), open-mindedness norms (moderator), and team innovation (DV) with team size and team tenure as control variables. Mitchell and Boyle applied structural equation modeling techniques (similar to analysis proposed for this study), which was helpful in determining that professional salience was positively and significantly associated with innovation

when open-mindedness norms were greater than 5.2 (effect size .30; $t = 2.00$, $p = .05$) and when open-mindedness norms were less than 3.5, professional salience was negatively and significantly associated with innovation (effect size −.32; $t = 2.00$, $p = .05$). Based on these findings, the researchers concluded that "open-mindedness determines whether professional salience operates to build or undermine innovation" (*p.* 875). They equate innovation to team effectiveness and, as other studies have suggested, team effectiveness predicts outcomes. The study reiterates the importance of effective team function and individual team members' ability to integrate professional identity and social identity in a team setting to fulfill the expectations of both self and the team.

IPT and patient outcomes. Patient outcomes are a main concern for both healthcare providers and payers and studies suggest that higher functioning teams have better patient outcomes. For example, Roblin, Howard, Ren, and Becker (2011) conducted a comparative study of 14 primary care teams ($N = 190$ practitioners and 146 support staff) in 2000 and again in 2002 ($N = 239$) in a large managed care organization in Atlanta, GA to evaluate if a managed care group model of team function influenced the short-term health of Medicare beneficiaries ($N = 991$). Teams consisted of physicians, APRNs, physician assistants, nurses, healthcare assistants, and receptionists. Measures included overall patient physical and emotional health as determined by quality measures such as Healthcare Effectiveness Data and Information Sets (HEDIS), the Medicare Health Outcomes Survey (HOS), the SF-36, and mental component summary (MCS) scores. Team functioning was measured by the total scores from the Primary Care Team Practice Survey. The study reported generally higher physical and mental health scores among participants with one or more major morbidities assigned to higher functioning

teams at the two-year follow-up ($\beta = 0.106$, $p = .06$). This study involved managing care across the continuum of care by coordinated efforts from multiple providers which would imply that effective functionality of the IPT is a key factor in positive outcomes.

Similarly, other studies about IPT function and team member behaviors indicate that IPTs with high levels of collaboration, trust, and communication among team members will likely achieve team goals with better team and patient outcomes overall. For example, in a descriptive observational study of 42 general practice teams with variable skill-mix across the UK, Bower, Campbell, Bojke, and Sibbald (2003) concluded that significant relationships exist between team effectiveness, chronic disease management outcomes and team structure and process. Team effectiveness was measured by the total scores on the Health Care Team Effectiveness scale. Chronic disease management outcomes were measured by using health record data and scores from the General Practice Assessment Survey (GPAS). Team structure was measured by a variety of components that comprise teams (i.e., skill mix, size, business model, length of employment). Team process was measured by total scores on the Team Climate Inventory (TCI) which reflects how well team members communicate, share information, accept innovative ideas, discuss and review procedures, hold each other accountable, share team objectives and goals, and value teamwork. In general, higher TCI scores were predictive of higher GPAS ($p = .005$) and team effectiveness scores ($p = < .001$), suggesting that teams that function well will have better team and patient outcomes which is consistent with other studies.

Studies that associate team effectiveness with improved patient outcomes span the spectrum of healthcare settings from acute care to outpatient and long-term care including

federal institutions. For example, Strasser et al. (2005) conducted a prospective observational study of 50 IPTs that treated stroke patients at VA inpatient rehabilitation units across the U.S. Interprofessional teams consisted of rehabilitation physicians, nurses, occupational and physical therapists, social workers, and speech-language pathologists. Team function was measured using four scales for team relations, six scales for team actions, and two scales for organizational context related to team function. Outcomes included (a) patients' functional assessment as determined by a staff assessment tool that measures motor and cognitive functions, and (b) discharge to home and length of stay data obtained from healthcare records. The researchers reported three of the ten team functioning measures were significantly associated with patient functional improvement and team effectiveness was associated with length of stay ($p < .05$).

TeamSTEPPS® T-TPQ. The measure for IPT function for this study is the TeamSTEPPS® T-TPQ for Office-Based Care questionnaire that was revised from the original T-TPQ developed through a collaborative effort between the U.S. Department of Defense and Agency for Healthcare Research and Quality (AHRQ) for use in acute care in 2006 (American Institutes for Research, 2010). The T-TPQ was developed to measure the individual team member's perception of group-level teamwork skills within a given medical work setting using five core dimensions i.e., team structure, leadership, situation monitoring, mutual support, and communication. The T-TPQ has been shown to be an excellent measure for team function. Keebler et al. (2014) conducted a confirmatory factor analysis using data from 1,700 U.S. Army medical facility IPT staff who completed the T-TPQ questionnaire. Keebler concluded that all five dimensions are important and independent components for measuring individual perceptions of

teamwork (CFA: TLI = 0.942 [≥ 0.95], CFI = 0.947 [≥ 0.96] and RMSEA = 0.057 [≤ 0.06; CI 90 = 0.056–0.059]). Reliability for each dimension was good with Cronbach's alpha at 0.91 for team structure, 0.95 for leadership, 0.94 for situation monitoring, 0.92 for mutual support, and 0.93 for communication. Cronbach's alpha was 0.98 for overall reliability among this group of 1700 healthcare professionals including NPs and support staff.

Other researchers have used the T-TPQ to measure the effectiveness of TeamSTEPPS® program to facilitate quality improvement among IPTs. One recent example was an interventional initiative at the University of Kansas that included TeamSTEPPS® as one of four interventions in the pediatric service. From pretraining to 12 months' post training the mean T-TPQ scores improved from 3.32 to 4.11 on attitudes toward team structure, from 2.80 to 4.15 for leadership, from 3.54 to 3.93 for situation monitoring, from 3.95 to 4.32 for mutual support, and from 3.68 to 4.39 for communication [$p < .05$] (Scotten, Manos, Malicoat, & Paolo, 2015). Teams included professionals from the Schools of Nursing, Health Professions, and Medicine along with hospital personnel including, nurses, CNSs, physicians, residents, interns, students, therapists, and informatics, dietary, and pharmacy personnel. This study suggests that improvements in team behaviors and skills, as indicated by increased T-TPQ scores, will reflect a higher level of team function.

As described, high functioning teams have characteristics consistent with effective communication, collaboration, trust, and respect among team members. Although the studies in this review are not specific to the U.S. and the culture and geographic factors among them might differ, the behaviors associated with team function

(communication, collaboration, trust, and respect) are universal. Additionally, environments that support these behaviors also contribute to improved team effectiveness that, in turn, improves patient outcomes. Although the studies described thus far suggest that highly functional teams are associated with better team effectiveness and better patient outcomes in a variety of settings, further studies are needed to explore additional factors. For example, environmental factors such as state practice authority and individual level factors including autonomy, and professionalism might contribute to how IPTs function. This study addresses this gap by examining the possible direct and indirect relationships that exist between state practice authority and APRN perception of autonomy, professionalism, and IPT function.

States' Practice Authority

This section discusses state practice authority, as a possible contributor to APRN perception of autonomy, professionalism, and IPT function. The literature suggests that excessive rules and regulations impose a threat to APRN autonomy as shown by low empowerment scores in studies by Bahadori and Fitzpatrick, (2009) and Petersen et al. (2015). Additionally, the inconsistent language across states that describes APRN scope of practice in legislative and organizational laws, rules, and regulations potentially contributes to APRN practice authority ambiguity among IPT members. However, the relationship between practice authority and how APRNs perceive their autonomy and IPT function is unclear. As indicated in the study by Petersen et al., APRNs with less oversight reported greater levels of autonomy. Therefore, it is conceivable that the relationship between state practice authority and IPT function could be mediated by APRNs' perception of autonomy, which is one focus of this study.

Although APRNs, themselves, are often familiar with their respective state laws regulating practice, other professional colleagues and IPT members may lack such knowledge. Hence, it is plausible that this lack of knowledge affects team functioning. However, the hypothesis is yet to be tested.

State regulatory and legislative language pertaining to APRN practice authority include license to practice, certificate of recognition, approval to practice, authority to practice, recognition, and certification or license with prescriptive privileges or prescriptive authority (NCSBN, 2017). Further adding to the confusion is the inconsistency among which regulatory agencies oversee practice authority within each state; in some states, a board of nursing regulates APRN practice, in other states, the Department of Health or the Board of Medicine regulates APRN practice. Some states require an additional oversight from a Board of Pharmacy. Some states limit APRN practice authority to specific APRN groups such as nurse practitioners (NPs), certified registered nurse anesthetists (CRNAs), and certified nurse midwives (CNMs), but exclude clinical nurse specialists (CNSs) i.e., not specifying "CNS" in the descriptions of APRN or not providing legislative language for prescriptive authority.

As of September 2017, nineteen states and the District of Columbia have enacted legislation for APRN full practice authority (independent) for one more APRN types. Twenty-nine states have reduced or restricted practice authority for one or more of the four APRN categories and one state does not specify any scope of practice authority (NCSBN website, 2017) as shown in Table 1. Full practice authority does not necessarily mean the APRN has prescriptive authority.

Table 1.
State Practice Authority Levels for APRNs by State

State	Practice authority [a]				Prescriptive authority			
	CNM	CNP	CNS	CRNA	CNM	CNP	CNS	CRNA
Alabama	CA	CA	R	R	CA	CA	NS	NS
Alaska	F	F	F	F	F	F	F	F
Arizona	F	F	CA	R	F	F	CA	R
Arkansas	CA	CA	CA	CA	CA	CA	CA	CA
California	CA	CA	NS	R	CA	CA	NS	NS
Colorado	F	F	F	F	F	F	F	F
Connecticut	F	F	F	F	F	F	F	F
Delaware	F	F	F	F	F	F	F	F
District of Columbia	F	F	F	F	F	F	F	F
Florida	CA	CA	NS	CA	CA	CA	NS	CA
Georgia	CA	CA	CA	R	CA	CA	CA	R
Hawaii	F	F	F	F	F	F	F	F
Idaho	F	F	F	F	F	F	F	F
Illinois	CA	CA	CA	CA	CA	CA	CA	CA
Indiana	CA	CA	CA	R	CA	CA	CA	R
Iowa	F	F	F	F	F	F	F	F
Kansas	CA	CA	CA	R	CA	CA	CA	NS
Kentucky	CA	CA	CA	CA	CA	CA	CA	CA
Louisiana	CA	CA	CA	R	CA	CA	CA	R
Maine	F	F	F	R	F	F	F	F
Maryland	F	F	R	R	F	F	NS	NS
Massachusetts	F	CA	CA	R	F	CA	CA	R
Michigan	NS	NS	NS	NS	NS	NS	NS	NS
Minnesota	F	F	F	F	F	F	F	F
Mississippi	CA	CA	NS	R	CA	CA	NS	NS
Missouri	CA	CA	CA	CA	CA	CA	CA	CA
Montana	F	F	F	F	F	F	F	F
Nebraska	CA	F	R	F	CA	F	NS	F
Nevada	F	F	F	F	F	F	F	F
New Hampshire	F	F	NS	F	F	F	NS	F
New Jersey	CA	CA	CA	R	CA	CA	CA	NS
New Mexico	F	F	F	F	F	F	F	F
New York	CA	NS	NS	NS	CA	NS	NS	NS
North Carolina	CA	CA	R	R	CA	CA	NS	NS
North Dakota	F	F	F	F	F	F	F	F
Ohio	CA	CA	CA	R	CA	CA	CA	R
Oklahoma	R	R	R	R	R	R	R	R
Oregon	F	F	F	F	F	F	F	F
Pennsylvania	NS	CA	NS	NS	NS	CA	NS	NS
Rhode Island	F	F	F	F	F	F	F	F
South Carolina	CA	CA	CA	CA	CA	CA	CA	CA
South Dakota	F	F	R	R	F	F	NS	NS
Tennessee	CA	CA	CA	CA	CA	CA	CA	CA
Texas	CA	CA	CA	CA	CA	CA	CA	CA
Utah	F	F	F	F	F	F	F	F
Vermont	F	F	F	F	F	F	F	F
Virginia	R	R	NS	F	R	R	NS	F
Washington	F	F	F	F	F	F	F	F
West Virginia	F	F	F	F	F	F	F	F
Wisconsin	CA	CA	CA	CA	CA	CA	CA	CA
Wyoming	F	F	F	F	F	F	F	F

Note. APRN = advanced practice nurse; CNM = Certified Nurse Midwife; CNP = Certified Nurse Practitioner; CNS = Clinical Nurse Specialist; CRNA = Certified Registered Nurse Anesthetist; F = full practice authority CA = reduced practice authority-needs collaborative agreement; R = restricted practice-needs physician signature or oversight; NS = not specified/no data available. [a] For this study, full practice authority includes only APRNs with both full practice and prescriptive authority. APRNs with CA or NS prescriptive authority are included in reduced or restricted category for practice authority. APRNs with NS for both practice and prescriptive authority will not be included in data analysis. State's level of APRN practice authority based on data from the National Council of State Boards of Nursing website. (2017). NCSBN website accessed 11/29/2017 at https://www.ncsbn.org/2017Septmapwithpoints.pdf

The NCSBN website uses the terms independent, not-independent, and prescriptive authority to identify each level of practice authority. However, some controversy exists among the healthcare professions regarding the term "independent" practitioner; the term misrepresents the nursing profession as isolationist and not collaborative with other healthcare professions such as medicine. For clarity, this study will define the three state APRN practice authority levels as follows:

1. Restricted practice authority: requires direct supervision in the presence of a licensed, physician (MD), osteopath (DO), dentist (DDS) or podiatrist with or without a written practice agreement. For this study, this category includes APRNs described by NCSBN as either (a) independent practice but supervised or not specified for prescribing or (b) supervised and not specified in both practice and prescribing.
2. Reduced practice authority: requires a collaborative agreement between the APRN and his or her medical colleague which is a written agreement that specifies scope of practice and medical acts allowable with or without a general supervision requirement by an MD, DO, DDS or podiatrist. For this study, this category includes APRNs described by NCSBN as having either (a) independent practice but with collaborative agreement for prescribing or (b) collaborative agreement for both practice and prescribing.
3. Full practice authority: the ability for APRNs to practice with no requirement for a written collaborative agreement, no supervision, and no conditions for practice including the authority to prescribe medications and treatment within the APRN's licensure, certification, and scope of practice laws. For this study,

this category includes APRNs described by NCSBN as having both independent practice and independent prescribing.

All practice levels in all states require APRNs, like physicians, to have current state licensure as an APRN in a specific area or population of practice such as family, acute care, primary care, adult/gerontology, pediatric, or psychiatric, among others. However, the difference is such that laws and regulations regarding physicians' licensure enable a physician to practice in any state without restriction once licensure is obtained in the state of practice. Since state-to-state regulation is not consistent for APRNs, this disparity between medical and APRN regulatory practice authority standards suggests a barrier to practice for APRNs and an opportunity to study the relationships that state practice authority environments have with APRN perceived autonomy, professionalism, and IPT function. No studies were found that examined the relationships of state practice authority with APRN perception of IPT function.

Autonomy

This study proposed that a relationship exists between an APRN's perception of autonomy and IPT function. Conceptually, practice autonomy refers to a state of being independent, free, and self-directing (Dempster, 1990), and the ability to exercise well-thought-out independent judgment and discretionary decision-making within one's scope of practice (Batey & Lewis, 1982; Keenan, 1999; Weston, 2010). In conjunction with scope of practice, autonomy is an important aspect of APRN practice. For example, Piil, Kolbaek, Ottmann, and Rasmussen (2012) conducted a case study to examine the perceptions of five APRNs in Denmark regarding professional identity in their role as APRNs in expanded nursing practice. NPs in their study verbalized a higher degree of

autonomy in decision-making when associated with consultations. Consultations are considered an autonomous skill and highly valued among this group of NPs. Likewise, NPs in other studies, discussed in the next sections, indicate high levels of autonomy. Therefore, it would be reasonable to consider that autonomous practice is a necessary characteristic of APRN team members that contributes to the functionality of an IPT.

Among APRNs, nurse practitioners are the largest and most publicly recognizable group. Consequently, studies of APRN autonomy tend to be focused on the NP group. Furthermore, NPs generally report high levels of autonomy. However, it is not clear whether the other three groups of APRNs i.e., CNMs, CNSs, and CRNAs perceive the same high levels of autonomy as their NP colleagues and few studies include all four groups of APRNs in sampling. To address this gap, this study examined perception of autonomy, professionalism, and IPT function in a sample of all APRNs.

Studies that used the Dempster Practice Behavior Scale (DPBS). The DPBS has been used in multiple studies involving advanced practice autonomy and is the instrument of choice for this study. One such study by Bahadori and Fitzpatrick (2009) reported high levels of autonomy using the DPBS in their descriptive study of 48 primary care nurse practitioners (PCNPs) who attended a clinical conference in Florida. Among the subscales of the DPBS (readiness, actualization, empowerment, and validation), PCNPs in the study reported high levels of autonomy (M = 127.19, SD = 10.25; range 105–146) overall. Additionally, NPs reported high levels of readiness (M = 46.42, SD = 4.85) and valuation (M = 14.08, SD = 1.41) related to autonomy, indicating they feel competent and knowledgeable in decision-making ability and value their worth. The low level of empowerment (M = 25.08, SD = 4.23) regarding autonomy could be a reflection

of the state level restrictions on practice authority, indicating a need to investigate the relationships between regulatory environments and IPT function. To address this gap, this study examined the proposed mediating relationship of autonomy with state practice authority and IPT function.

Another descriptive correlational study by Petersen et al., (2015) described APRNs in New Mexico ($N = 259$), including NPs, CNSs, and CRNAs, having high levels of autonomy using the DPBS. The researchers indicate that physician oversight significantly relates to autonomy (t (250) = 3.48, p = .001) and APRNs with no physician oversight report higher levels of autonomy. This is a significant finding; the study implies that APRN practice authority that is regulated by physicians in a state with full practice authority for APRNs is a limiting factor in APRN practice autonomy.

Other studies using the DPBS include an earlier descriptive study by Cajulis and Fitzpatrick (2007) of 55 acute care NPs in a U.S. East Coast metropolitan academic Magnet hospital. The study indicated 41 % of NPs with very high and 31 % with extremely high levels of autonomy with approximately 28% of NPs reporting empowerment subscale high or very high. The study suggests that environments such as Magnet designated institutions that promote collaboration and effective communication strategies, both components of highly functional teams, might be a contributing factor in high levels of autonomy for NPs.

Autonomy and IPT function. This study proposes a relationship between APRN perception of autonomy and IPT function. No studies were found that examined the relationship between autonomy and IPT function specifically. However, there is research that examines the relationship between autonomy and constructs that might be similar to

IPT function such as collaboration and teamwork. For example, a cross-sectional study by Maylone et al. (2011) examined the relationship between NPs' perceptions of level of NP practice autonomy and collaboration with physicians among a sample of 99 NPs attending a national conference. Their findings indicate that NPs perceive high levels of autonomy using the DPBS and high or moderately high levels of collaboration using the modified Collaborative Practice Scale (CPS-APN). However, they found no correlation between collaboration and autonomy ($r = -.12$).

In another cross-sectional study, Poghosyan and Liu (2016) examined NP autonomy and the relationship between primary care NPs and leadership [practice managers and medical directors] ($N = 314$) with teamwork in 163 Massachusetts primary care practices. NP autonomy was measured using the Autonomy and Independent Practice scale (AIP) and relationships to leadership were measured using the Nurse Practitioner Primary Care Organizational Climate Questionnaire (NP-PCCOCQ). As seen in other studies, NPs scored high on autonomy. Significant relationships were found between NP autonomy and teamwork; for every unit increase on AIP mean score, TW mean score increased by 0.271 units ($p < 0.0001$). In their study, the five-item Teamwork Scale measured collaboration and teamwork, between NPs and physicians. By comparison, this study will use the T-TPQ® for Office-Based Care version which measures more dimensions of teamwork and is appropriate for all IPT members.

In summary, no studies were found that examined relationships between APRN autonomy and IPT function specifically. However, related studies of collaboration and teamwork suggest that it could be a productive area for study because negative perceptions of autonomy might result in individual underperformance due to loss of

empowerment related to autonomy and potentially overall IPT dysfunction which could result in less optimal team and patient outcomes.

Professionalism

In this study, the relationship between APRN perceived professionalism and IPT function was examined. More studies were found regarding professionalism related to nursing students and nurses than studies that involve professionalism among the APRN population.

The literature describes professionalism as the manifestation of professional identity which includes the actions and behaviors that reflect the APRN's connection to the profession and expectations of professional membership in the collective (Caza & Creary, 2016; Tajfel & Turner, 1979). For example, nurses attend conferences not only to enhance knowledge and competency but also to engage with other members of the profession. Logically, a high level of professional identity would imply a high level of professionalism and vice versa. Identity theorists suggest group interactions, such as attending conferences, are characteristic of both social and professional identity among groups including nursing professionals (Tajfel & Turner, 1979). Adams and Miller (2001) point out that attending workshops, seminars, and conferences is indicative of nursing professionalism and more than 95% of NPs ($N = 502$) in their study participated in such activities.

Consensus on the meaning of professionalism does not exist in the literature even though professionalism is associated with behavioral expectations among professional groups including nursing. Furthermore, studies regarding professionalism among APRNs are limited. In Adams and Miller's (2001) study, the behavioral aspects of

professionalism among 502 NPs attending a national conference was examined. NPs specified autonomy as one of the leading categories of professionalism. Using the Professionalism in Nursing Behaviors Inventory, the mean composite score for professionalism was 16.7 out of a possible 27, which was the highest average score for NPs compared to other studies. Just as attending conferences and maintaining professional knowledge are characteristics of professionalism, certification is a professional behavior that implies a level of professionalism. In Adams' and Miller's study, 427 NPs (85%) earned certification as an advanced practitioner.

Professionalism and IPT function. No studies could be found that examined the relationship between APRN perception of professionalism and IPT function. Akhtar-Danesh et al. (2013) examined attitudes towards professionalism among faculty and nursing students (none were APRNs) using a mixed-method two-phase approach to develop an instrument to measure professionalism. The major aspect of professionalism among this group of 11 faculty and 20 students was communication, which according to the literature is a necessary component of highly functional IPTs. It stands to reason that if professionalism is associated with communication and collaboration, one would expect a relationship to exist between professionalism and IPT function. This study addresses the relationship between IPT function and professionalism in the APRN population at the professional stage versus the developmental stage of identity development.

Summary and Conclusion

This chapter described the conceptual framework for this study based on identity theories which were used to characterize IPTs. Professional identity theory is used to explain how APRNs develop professional identity including the concepts of autonomy

and professionalism and how these concepts relate to how APRNs perceive IPT function. Place identity is added to facilitate an understanding of how state practice authority environments might influence how APRNs perceive IPT function.

Highly functions teams are characterized by superior communication, collaboration, trust, and respect among team members. Additionally, the literature regarding IPT function is extensive and includes a broad range of disciplines. However, studies regarding the relationship between IPT function, state practice authority, APRN perception of autonomy, and professionalism could not be found.

A review and description of states' practice authority (see Table 1) relative to APRNs' role within the IPT were presented. Less than half of states provide legislative language for full scope of practice (including independent prescribing) for APRNs. Nevertheless, states' legislative language regarding scope of practice is not consistent and might contribute to how IPTs function. Secondly, organizations can institute more restrictive rules than a state's established practice authority, that could also contribute to how IPTs function. To my knowledge, these two environments have not been studied together, and no study could be found linking state practice authority to APRN perception of autonomy, professionalism, or IPT function.

APRNs in the studies described in this chapter have consistently high scores for autonomy and have reported a high degree of professionalism. Even so, some studies suggest that regulatory practice environments, including states and organizations, can either inhibit or promote IPT function through rules and behaviors that determine APRN scope of practice. At the highest level, state practice authority dictates the scope of practice for APRNs and might contribute to less effective IPT function if IPT members

are unclear of the APRN's scope of practice. Therefore, it is conceivable that the relationship between regulatory environments, such as state practice authority, and APRN perceptions of autonomy and professionalism have both direct and indirect effects on how IPTs function which has not been examined to date. This study addresses this gap by examining the potential mediating effects of autonomy between state practice authority and IPT function and the moderating effects of state practice authority between professionalism and IPT function among APRNs in the U.S.

CHAPTER 3

METHODS

This study examined the direct and indirect relationships between the environmental factor of state practice authority, with perceived autonomy, professionalism and IPT function in a national sample of advanced practice nurses (APRNs) in the U.S. Specifically, the purpose of this study is to: (1) determine if environmental factors (state practice authority) have a direct or indirect effect on APRN perception of IPT function; (2) examine the extent to which APRN perception of autonomy and professionalism directly and significantly associate with APRN perception of (IPT) function; (3) determine the extent to which APRN perception of autonomy mediates the relationship between state practice authority and IPT function, and (4) to determine the extent to which state practice authority moderates the relationship between APRN perception of professionalism and IPT function in a national sample of APRNs in the United States.

Study Design

This study used a quantitative cross-sectional self-administered web-based survey design. This design was intended to obtain a broad representation of APRNs from across the U.S. at various stages of their professional work-life at a single point in time. The focus of this study was on the relationships between state practice authority and perceptions of autonomy, professionalism, and IPT function of APRNs as a distinct group. Time constraints, accessibility to participants, and cost made this design a practical choice for this study.

Sample

Email addresses were obtained from a national email list purchased from Exact Data who acquires data for marketing lists from various sources based on Dun and Bradstreet records in the Business Database; all email addresses are direct contacts, not sales or generic information (Exact Data, 2017). Exact Data compiles a specific list based on the validity of the email address and the criteria given i.e., all nationally certified APRNs (CNMs, CNPs, CNSs, and CRNAs) from all 50 states and the District of Columbia. The list conforms to Federal Trade Commission rules regarding email solicitation. The email data for the State Licensed file is 3rd party opted-in and overlaid onto the state licensed records via several consumer-based sources. Sources for email and mailing lists include government records, licensing boards, municipal directories, telephone and office machine hookups, internet connections and searches, memberships, attendee registers, web site registrations, DBAs (doing business as), incorporations, yellow page and business white page directories, county courthouse records, Secretary of State data, business magazines and newspapers, subscriptions, annual reports, 10-Ks and other Security and Exchange Commission (SEC) filings, postal service information including National Change of Address, ZIP+4 carrier route and Delivery Sequence Files.

The convenience sample for this study consisted of APRNs from any clinical practice setting that requires APRN licensure/authority for their position and who, within the past year or currently, practice within a clinical IPT with members of two or more different professions for at least 6 months. Examples include but are not limited to: physician, nurse (LPN/RN), pharmacist, physical therapist, nutritionist, social worker,

and clergy who work in clinical settings. Recruitment was from a U.S. national email list sample (N = 6,000) as previously described.

Inclusion criteria. Participants (1) were licensed/authorized to practice as an APRN; (2) required an APRN license in their current position, and (3) within the past year or currently worked in an interprofessional clinical practice team environment (two or more different professions who were not APRNs) for at least six months. Additionally, the respondents must have identified the state in which they practice.

Exclusion criteria. Respondents were excluded from this study if they did not meet inclusion criteria, they declined consent to participate by not accessing and competing the survey, or they did not identify the state where they practice.

Statistical Power Analysis

Since the number of respondents and completed survey responses were unknown, statistical power was plotted against sample size for each of the statistical analyses used in this study under two differing assumed effect sizes (see Appendix A1 and A2). For example, at α = .05, 1-β = 0.80, β = 0.20 a multiple linear regression with five predictors would require a sample size of 200 to achieve sensitivity to medium effect sizes, 150 for a one-way ANOVA with three groups, and 125 for bivariate correlation.

G*Power 3.1 (Faul, Erdfelder, Lane, & Buchner, 2007) was used to calculate sensitivity to effect sizes for this sample of 222 APRNs at α = .05 and 1-β = 0.80. The calculated effect size was r = .19 for Pearson's correlations (small 0.1, medium 0.3, large 0.5) and f = 0.21 for ANOVA (small 0.1, medium, 0.25, large 0.4) (Cohen, 1988) which indicated that the sample was large enough to detect medium effects and some small effects. Refer to Appendix A3, A4. The calculated effect size for multiple linear

regression with five predictor variables (two indicator variables for the three-category variable of state practice authority, two interaction terms, and one continuous predictor) was $f^2 = 0.06$ which indicated sensitivity to small effects using the standard effect size thresholds of small 0.02, medium 0.15, and large 0.35 for Cohen's f^2. See Appendix A5.

Procedures

Data Collection

Upon University of New Mexico Institutional Review Board approval, six thousand email invitations (Appendix B) to participate were sent to APRNs across the U.S. using REDCap [Research Electronic Data Capture] (Harris et al., 2009). A second email invitation was sent one week after the first invitations were sent, a third email invitation was sent one week after the second invitation was sent, and a final invitation was sent one week after the third invitation was sent. The survey was open for a total of four weeks and was closed one week after the final email invitation was sent.

Participants were asked to respond to three statements that determined inclusion for this study: (1) During the past year I have been nationally certified and licensed or authorized to practice as one of the following, (CNM, CNP, CNS, CRNA), (2) Currently or within the past year I have worked for at least six months with an interprofessional clinical practice team with at least one other professional who is not an APRN (CNM, CNP, CNS, CRNA). Examples (not all inclusive): physician, nurse (LPN/RN), pharmacist, physical therapist, nutritionist, social worker, clergy, and (3) I was working as a CNM, CNP, CNS, or CNRA on that interprofessional clinical practice team. Additionally, it was necessary for respondents to provide the state in which they practice for analysis purposes. If inclusion criteria were not met, a thank-you statement for their

willingness to participate was presented and the survey was terminated. The participants who met the screening criteria (Appendix C) were taken to the consent page (Appendix D); if they consented, the survey automatically opened (Appendix E).

Study data were collected using REDCap tools hosted at the University of New Mexico. REDCap is a secure, web-based application designed to support data capture for research studies, providing (1) an intuitive interface for validated data entry, (2) audit trails for tracking data manipulation and export procedures, (3) automated export procedures for seamless data downloads to common statistical packages such as SPSS and AMOS, and (4) procedures for importing data from external sources (Harris et al., 2009).

Instruments and Measures

In addition to inclusion and demographic questions, three separate instruments represent the construct variables (IPT function, autonomy, and professionalism) that made up this survey. Rationale for selection of each instrument included ease of use, superior reliability and validity, and accessibility and permission to use the instrument.

IPT Function (DV). The T-TPQ® is a publicly available instrument that measures the individual's perceptions of group-level team-skills and behavior (American Institutes for Research, 2010). The TeamSTEPPS® for Office-Based Care Teamwork Perception Questionnaire (T-TPQ) is a 35-item self-report questionnaire using a 5-point Likert scale (strongly disagree = 1; strongly agree = 5) modified from the original T-TPQ for use in nonhospital settings (Appendix F1). The T-TPQ Office-Based version was chosen because the items' language is less specific regarding practice settings. The instrument measures a total of five constructs: team structure (7 items), leadership (7

items), situation monitoring (7 items), mutual support (7 items), and communication (7 items). An example of an item from the communication construct is "Staff relay relevant information in a timely manner" and mutual support construct is "Staff resolve conflicts, even when the conflicts have become personal." The total score from the T-TPQ represented APRNs' perception of IPT function for this study. Lower scores indicate higher perceived team functioning. The scale score was calculated by dividing each respondent's T-TPQ total score by the total number of nonmissing items.

The T-TPQ has been found to have high quality psychometric properties (see Figure 4). Initial development of the T-TPQ questionnaire demonstrated convergent validity by correlating the T-TPQ with the HSOPS (Hospital Survey on Patient Safety Culture) work unit subscale scores (American Institutes for Research, 2010). Even though the T-TPQ correlation coefficient with HSOPS for subscales range was less than optimal [i.e., 60 to 79] ($p < .01$, two-tailed), the overall correlation was 0.81. Factor analysis factor loading results was not reported by the developers. However, Keebler et al. (2013) conducted a confirmatory factor analysis and found better reliability than originally reported. The five-factor model Comparative Fit Index (CFI) was 0.947, root mean square error of approximation (RMSEA) was 0.057, and Tucker-Lewis Index (TLI) was 0.942 indicating the five dimensions of teamwork were consistent with individuals' perception of teamwork it in their study. Both the total reliability and each dimension had Cronbach's $\alpha > .90$ ($N = 1700$) in their study.

T-TPQ Cronbach's Alpha Coefficients		
Construct	**Number of Survey Items**	**Cronbach's Alpha**
Team Structure	7	.89
Leadership	7	.95
Situation Monitoring	7	.91
Mutual Support	7	.90
Communication	7	.88

T-TPQ Construct Inter-correlations

Construct	Team Structure	Leadership	Situation Monitoring	Mutual Support	Communication
Team Structure	1.00	.62*	.77*	.64*	.57*
Leadership		1.00	.68*	.70*	.62*
Situation Monitoring			1.00	.79*	.70*
Mutual Support				1.00	.77*
Communication					1.00
N	169	169	169	169	169
*p < .01, two-tailed					

Figure 4. T-TPQ Cronbach's α coefficients and intercorrelation. Source: American Institutes for Research. (2010). TeamSTEPPS® Teamwork Perceptions Questionnaire (T-TPQ) manual. Retrieved from Agency for Healthcare Research and Quality: https://www.ahrq.gov/teamstepps/instructor/reference/teamperceptionsmanual.html

State practice authority (IV). Each respondent was asked to identify their primary state of practice from a dropdown list in the demographic section of the questionnaire (see preparing data file section for coding details).

APRN practice authority is the state's scope of practice law or regulation under which the APRN is licensed and practices and is categorized in three levels. For this study, practice categories (coded as 1 = restricted, 2 = reduced, 3 = full) were adapted from the description provided by the NCSBN (2017) as follows:

1. Restricted practice authority: requires direct supervision in the presence of a licensed, physician (MD), osteopath (DO), dentist (DDS) or podiatrist with or without a written practice agreement. For this study, this category included APRNs described by NCSBN as either (a) independent practice but

supervised or not specified for prescribing or (b) supervised and not specified in both practice and prescribing.

2. Reduced practice authority: requires a collaborative agreement between the APRN and his or her medical colleague which is a written agreement that specifies scope of practice and medical acts allowable with or without a general supervision requirement by an MD, DO, DDS or podiatrist. For this study, this category included APRNs described by NCSBN as having either (a) independent practice but with collaborative agreement for prescribing or (b) collaborative agreement for both practice and prescribing.
3. Full practice authority: the ability for APRNs to practice with no requirement for a written collaborative agreement, no supervision, and no conditions for practice including the authority to prescribe medications and treatment within the APRN's licensure, certification, and scope of practice laws. For this study, this category included APRNs described by NCSBN as having both independent practice and independent prescribing.

Autonomy (IV). The DPBS (Cronbach's $\alpha = .95$) measures APRN professional role identity in the practice setting [Dempster, 1990] (see Appendix F2). The DPBS is a 30-item 5-point Likert scale (range from not at all true to extremely true) designed to measure hidden and obvious conduct in practice autonomy. Higher scores indicate higher perceived autonomy. Theoretical constructs include (1) readiness (11 items), (2) empowerment (7 items), (3) actualization (9 items), and (4) valuation (3 items). Readiness includes components such as competence, skill, and mastery are behaviors and actions that involve transitions from one level to another regarding autonomy in practice.

Empowerment is the legitimate status and right that enables action without others limiting performance in the practice setting. Actualization refers to decision-making, directing, accountability, and responsibility of taking action in the practice setting. Example items from the DPBS (2009) include "I function with authority to do what I know should be done" and "I have the power to influence decisions and actions of others." The total score from the Dempster Professional Behaviors Scale (DPBS) represented APRNs' perception of autonomy. Five negatively worded items were reverse scored. The scale score was calculated by dividing each respondent's DPBS total score by the total number of nonmissing items.

The DPBS was developed using a grounded theory with interviews from 28 participants to validate autonomy dimensions extracted from the literature. The subsequent analysis resulted in five dimensions and 40 items. Convergent and discriminant validity was tested using the 40-item DPBS and three existing autonomy scales ($N = 569$; 60 % NPs and 40% RNs). Content validity index was calculated at the maximum of 1.0 from content expert ratings ($N = 7$). The DPBS was reduced to 30 items after exploratory and confirmatory factor analysis including principal components factoring with orthogonal varimax rotation and alpha factoring [$N = 569$] (Figure 5). Construct and discriminant validity of the 30-item scale were tested and validated using a multitrait–multimethod matrix in conjunction with several other scales with different traits and measurement methods (Dempster, 1990). Convergent validity was moderate with correlations ranging from .44 to .48. and discriminant validity was validated by observing lower correlation values (range −.24 to −.52) than convergent correlation values. The author gave permission to use the DPBS for this study.

Subscale	# Items	Inter-Item Correlation Mean	Standardized Item Alpha	Corrected Item-Total Correlation Range
Factor 1	11	.47	.91	.45 - .73
Factor 2	9	.46	.89	.50 - .69
Factor 3	5	.44	.80	.55 - .62
Factor 4	3	.66	.86	.70 - .77
TOTAL	30	.39	.95	.45 - .73

Figure 5. Details for DPBS factor analysis. Source Dempster, J. S. (1990). Conceptualization, construction, and psychometric evaluation of an empirical instrument. Dissertations Abstracts International: Section A. Humanities and Social Sciences, 50(3320A).

Professionalism (IV). The Professionalism Scale is a 23-item 7-point Likert scale (range from strongly agree to strongly disagree) self-report instrument designed to measure attitudes of professionalism among a variety of professional groups. Lower scores indicate high level of professionalism. Dimensions for the Professionalism Scale include (1) Belief in Public Service Factor, (2) Sense of Calling to the Profession Factor, (3) Professional Association as Referent Factor, (4) Autonomy Factor, and (5) Belief in Self-Regulation Factor. An example item from the Sense of Calling to the Profession factor is "The dedication of people in my APRN profession is gratifying" and from the Belief in Self-regulation factor "We APRNs have a way to judge each other's competence." The total score from a modified version of Hampton and Hampton's Hall's Professionalism Scale for Midwives [2000] (Appendix F3) represented professionalism for this study. The scale score was calculated by dividing each respondent's Professionalism Scale total score by the total number of nonmissing items.

The Professionalism Scale is a modification of the original Hall's professionalism Scale [Hall 1968] (Appendix F4). Hall measured professionalism among eleven occupational groups: physicians, nurses, accountants, teachers, lawyers, social workers, stock brokers, librarians, engineers, personnel managers, and advertising executives (N = 328) using 10 items in each of the five dimensions of professionalism. Snizek (1972) compared his data gathered from aeronautical, nuclear and chemical engineers, physicists and chemists (N = 566) to Hall's original data. Snizek used principal axis factor analysis to reassess and compare the items' fit to each of the five theoretical dimensions, resulting in a modification of the original scale by reducing the number of items from 50 to 25 (Figure 6). The data show that in reducing the number of items, reliability overall was slightly less using Hall's original data with a greater reduction in total reliability using Snizek's data, but reliability scores remain within the acceptable range overall ($\alpha > .70$).

Dimen-sion	Hall Data		Snizek Data	
	10 items	5 items	10 items	5 items
1	0.674	0.686	0.620	0.621
2	0.676	0.742	0.656	0.640
3	0.694	0.731	0.596	0.699
4	0.711	0.703	0.455	0.583
5	0.776	0.760	0.730	0.738
All di-mensions	0.860	0.843	0.799	0.783

Figure 6. Comparison between Hall's Professionalism Scale and Snizek's modified Professionalism Scale. Source: Snizek, W. E., (1972). Hall's Professionalism Scale: An empirical reassessment. *American Sociological Review, 37,* 109–114.

The scale has since been adapted and used to measure professionalism in a variety of published studies including studies involving advanced practice nursing. Settersten (1991) used Snizek's revised scale to evaluate NP professionalism ($N = 41$) but did not report reliability of the scale for her sample. Most recently, Hampton and Hampton (2000) adapted and modified the Professionalism Scale to measure professionalism in nurse midwives. The modified version was reviewed by a group of midwives from a healthcare clinic and the resulting questionnaire was subsequently tested by a random sample of CNMs ($N = 150$) from the member directory from American College of Nurse Midwives (ACNM). The questionnaire was then reworded based on the responses from

the pretest (n = 52). Hampton and Hampton reduced the scale to 23 items based on their factor analysis. One item in the professional associations as referent dimension, "midwifery associations don't do much for me," and one item in the sense of calling dimension, "most people would stay in the profession even if their incomes were reduced" were removed because of low factor loading (< .50). The factor analysis results were consistent with Hall and Snizek's five dimensions of professionalism with slight improvements in alpha levels for using the professional organization as a major referent dimension (α = .69), greater improvement in the belief in public service (α = .74), belief in self-regulation (α = .80), and sense of calling to the field (α = .71) dimensions, and a lower alpha level for the autonomy dimension (α = .66). They did not report total scale reliability. Several unsuccessful attempts were made to contact the authors for permission to adapt and use the Hall's Professionalism Scale for Midwives for this stud. The modifications for use in this study are detailed in Appendix G.

Demographic variables. Demographic variables are listed in Table 2. Respondents were asked to self-identify their race and ethnicity using the two-question format as described by the Office of Management and Budget's [OMB] (1997) federal regulation on statistical reporting, Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity. The ethnicity question was: "Do you consider yourself to be Hispanic/Latino"? The race item was: "In addition, select one or more of the following racial categories to describe yourself" (Appendix E). The minimum designations were five in the race category and two in the ethnicity category as identified in Table 2. The collected information provided a description of the sample only.

Table 2.
Demographic Variables

Demographic variables	Variable type	Response
APRN type	Categorical	CNM, CNS, CNP, CRNA
Age	Categorical	Range of Years: 20–24; 25–35; 36–45; 46–55; 56–65; Over 65
Gender	Categorical	Male, Female, Other, Prefer Not to Answer
race/ethnicity*	Categorical	Ethnicity: Hispanic/Latino Yes, No Race: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White
State of practice	Categorical	U.S. State or DC
Work setting	Categorical	Veterans Health System, Public or private acute care, Long-term care (rehab hospital, psychiatric facility, nursing home, other), Clinic (primary, specialty, urgent care clinic), nonclinical setting
Number of IPT members	Categorical	Range: 2–3; 4–5; > 5
APRN practice tenure	Categorical	Years: Range of Years: 1–5; 6–10; 11–15; 16–20; 21–30; > 30
IPT member tenure	Categorical	Range of Years: < 1; ≥ 1 but < 5; 5–10; > 10
State & organization level of practice authority the same	Categorical	Yes, No, Not Sure

Note. APRN = advanced practice nurse, CNM = certified nurse midwife, CNP = certified nurse practitioner, CNS = clinical nurse specialist, CRNA = certified registered nurse anesthetist, IPT = interprofessional team. *Resource for race and ethnicity categories is from the Office of Management and Budget: Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting Federal Register § (1997). Accessed online at https://www.whitehouse.gov/omb/fedreg_1997standards

Data security. Raw data are stored on a secure server housed at the University of New Mexico for 3 years then deleted. The email list was deleted at the end of the data collection period, i.e., at the end of four weeks after the initial survey invitation was sent. The downloaded deidentified data are stored on the coinvestigator's password protected computer in a private office with limited access.

Preparing the data file. Data entry errors were minimized through the use of the REDCap survey tool. An APRN-state practice authority cross-reference table was created using Excel (Appendix H). Each state was assigned a number (1–51) in sequence starting with the first state in alphabetical order. State practice authority was coded by hand based on NCSBN (2017) data by assigning practice authority (1 = restricted, 2 = reduced, or 3 = full) for each APRN group in each state as described previously. APRNs in states with both practice and prescribing identified by NCSBN as NS "not specified" or "no data" available were assigned 0 value. The REDCap survey response data were downloaded

into Excel. The state name and practice authority were coded in Excel using a lookup formula and the APRN-state practice authority cross-reference table. The data from Excel were imported into SPSS and screened for missing values. First, frequencies of each variable were evaluated for values that fell outside of the possible range including each item of each scale. Except for missing values, none fell outside of the possible range and all were retained for analysis.

Scores for each scale were calculated by first reverse scoring any negatively worded items' responses using SPSS and second by summing the number of items for each scale, then dividing by the number of nonmissing items in each scale (Pallant, 2013). Items 8, 13, 17, 26, and 28 in the DPBS so that high scores indicated high levels of autonomy. Item 2 in the PS Sense of Calling to the Profession dimension, 3 in the Professional Association as Referent dimension, items 2, 3, 4, and 5 in the Autonomy dimension, and items 4 and 5 in the Belief in Self-Regulation dimension were reverse scored (high score indicates low levels of professionalism). Total scores were evaluated for mean, minimum, and maximum values and compared to values from previous studies. Residuals and outliers are a concern with multiple regression; residuals with a Cook's Distance > 1 and outliers found in the standardized residuals scatterplot, i.e., cases with values outside of the expected range (values ~ 3) were evaluated for errors. Only 1 case had Cook's Distance > 1. No values represented errors. All values were retained.

Statistical Analyses

Descriptive statistics. Using SPSS, frequencies and percentages were used to define the population characteristics and are presented in Chapter 4. ANOVA and

correlations were used to compare mean scores between groups. Also see Appendix I and J.

Preliminary analysis. Mean, standard deviation, range of scores, skewness, and kurtosis were evaluated for the normality of the distribution of scores using histograms, Q-Q, P–P, and box plots (Appendix J1 through J3). Comparison of mean and the trimmed mean were not significantly different, and all values were retained. However, it should be noted that the literature indicates that APRNs, NPs in particular, generally report high levels of autonomy and NPs represent the majority of respondents in this sample which could explain the distribution of scores for the DPBS. Finally, scatterplots were assessed to determine linearity of the relationships between the variables and show linear relationships with no significant clustering. Specific tests are described in analysis of each question.

An ANOVA was conducted to evaluate the difference in mean scores between each of the APRN groups. To test multicollinearity, the data were screened for variance inflation factor (VIF) which should be < 10 (Mansfield & Helms, 1982). (See Appendix J4).

Reliability assessment. The scales used in the study were selected based on their accessibility and sound reliability and validity. However, to ensure that the scales demonstrate sound internal consistency for this study, (1) the interitem correlation matrix was assessed for positive values indicating that the items measured characteristics appropriately, (2) the corrected item-total correlation values were assessed for the degree of correlation between the item and the whole scale [a value of < .3 indicates poor correlation] (Pallant, 2013), and (3) Cronbach's alphas were calculated. A Cronbach's

alpha between .70 and .79 is considered good, a Cronbach's alpha between .80 and .89 is considered very good, and a Cronbach's alpha .90 or higher is considered excellent (Drost, 2011).

The T-TPQ had excellent total reliability and interitem correlation for each dimension (Cronbach's $\alpha > .90$; $N = 1700$) in previous studies (Keebler et al., 2013). Dempster (1990) reported the Cronbach's alpha for the DPBS at .95. For the modified PS, Hampton and Hampton (2000) reported a Cronbach's alpha > .70 for each dimension but did not report on the total scale score.

Since this study was not measuring individual items or subsets within each scale, all items in each scale were retained in the total scale score mean calculation. See Tables J5.1 through J5.3 for reliability results.

Analysis of research questions. The analysis for each question is as follows.

Research Question 1. Is the level of state practice authority associated with perceived IPT function in a national sample of APRNs?

To test the direct relationship between state practice authority and IPT function, using SPSS the three levels of practice authority (IV) were entered into the equation with IPT function (DV) and an analysis of variance (ANOVA) with post hoc comparisons (Tukey's HSD) was employed.

Research Question 2. Is the relationship between state practice authority and perception of IPT function mediated by autonomy in a national sample of APRNs?

Baron and Kenny's (1986) criteria for mediation requires (a) the predictor variable (state practice authority) be related to the criterion variable (IPT function), (b) the predictor variable be related to the mediator variable (autonomy), (c) the mediator

variable is related to the criterion variable when controlling for the predictor, and (d) adding the mediator variable reduces the relationship between the predictor and the criterion variables. For example, this study hypothesized that state practice authority would be directly associated with APRN perception of autonomy which in turn affects the perception of IPT function (Figure 7). The model also depicts a direct relationship between state practice authority and IPT function and autonomy and IPT function. However, the analysis showed the direct relationship between IPT function and state practice authority is not significant and therefore, mediation using path analysis was not tested.

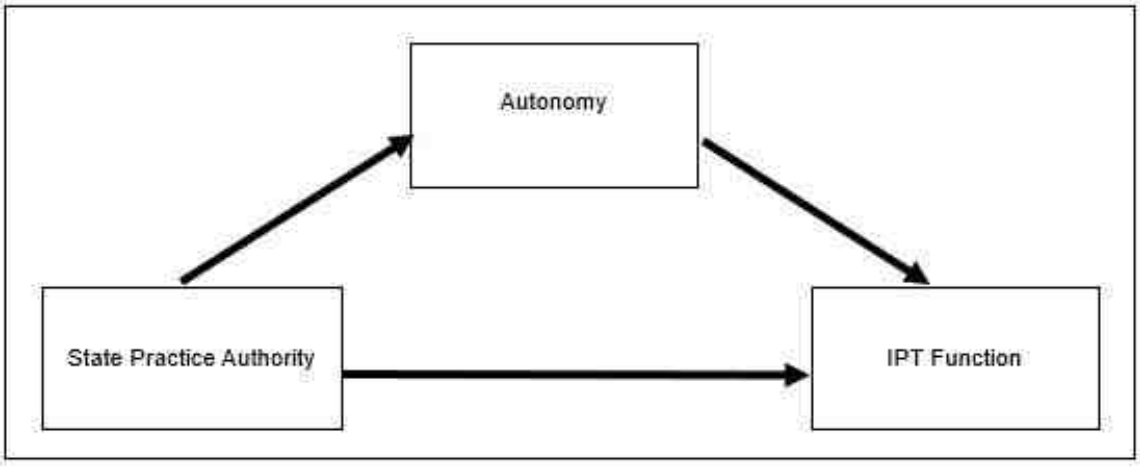


Figure 7. Conceptual model of proposed mediating relationships: The mediating role of perceived autonomy between state practice authority and APRN perceived IPT function.

Subquestion 2a. Is there a relationship between level of state practice authority and perceived autonomy in a national sample of APRNs?

An ANOVA with post hoc comparisons (Tukey's HSD) was conducted to test the direct relationship between state practice authority and mean scores from the DPBS. Levene's test for homogeneity of variances was evaluated for violation of the assumption of homogeneity.

Subquestion 2b. Is there a relationship between perceived autonomy and perceived IPT function in a national sample of APRNs?

Pearson's product–moment correlation was employed to test the strength and direction of the relationship between total scores on the DPBS and total scores on the T-TPQ. Scatter plots were used to test assumption of linearity and homoscedasticity; the distribution of the data points was inspected for unorganized clustering, evenness of shape of the cluster, and outliers. A general sense of the direction of the relationship was determined by assessing the direction of the regression line (negative or positive) which would indicate low or high scores. Data were checked for correct number and missing cases. The coefficients were evaluated for the direction of the relationship between autonomy and IPT function i.e., positive coefficient values would indicate a positive relationship and negative values indicate negative relationships. The *r* values were evaluated which determined the strength of relationship within a range from −1 to 1 [small $r = .10–.29$; medium $r = .30$ to .49, large $r = .50$ to 1] (Pallant, 2013). Next, the *r* value was squared and multiplied by 100 to obtain the percent of variance that is explained by autonomy on the T-TPQ scores. Finally, the significance level was assessed to determine how much confidence exists in the results ($p < .05$).

Research Question 3. Is professionalism associated with perception of IPT function in a national sample of APRNs?

Pearson's product–moment correlation tested the relationship between total scores on the PS and total scores on the T-TPQ using the same procedure for correlation as described in the analysis for question 2b.

Subquestion 3a. Does state practice authority moderate the relationship between perceived professionalism and perception of IPT function in a national sample of APRNs?

Baron and Kenny (1986) defined moderating effects as variables that affect the strength or direction of the relationship between an independent (predictor) and dependent (criterion) variable. A moderation effect could (a) enhance the effect of the predictor, where increasing the moderator would increase the effect of the predictor (IV) on the outcome (DV); (b) buffer the effect of the predictor, where increasing the moderator would decrease the effect of the predictor on the outcome; or (c) reverse the effect of the predictor, where increasing the moderator would reverse the effect of the predictor on the outcome. For example, given that a relationship exists between professionalism and IPT function, a specific level of state practice authority might reflect an increase or decrease in the strength of the relationship between professionalism and IPT function. The proposed model (Figure 8) hypothesized that a change in the relationship between the professionalism and IPT function would occur by interaction with some level of state practice authority. It was not known whether this change would occur or be positive or negative regarding the strength of the relationship.

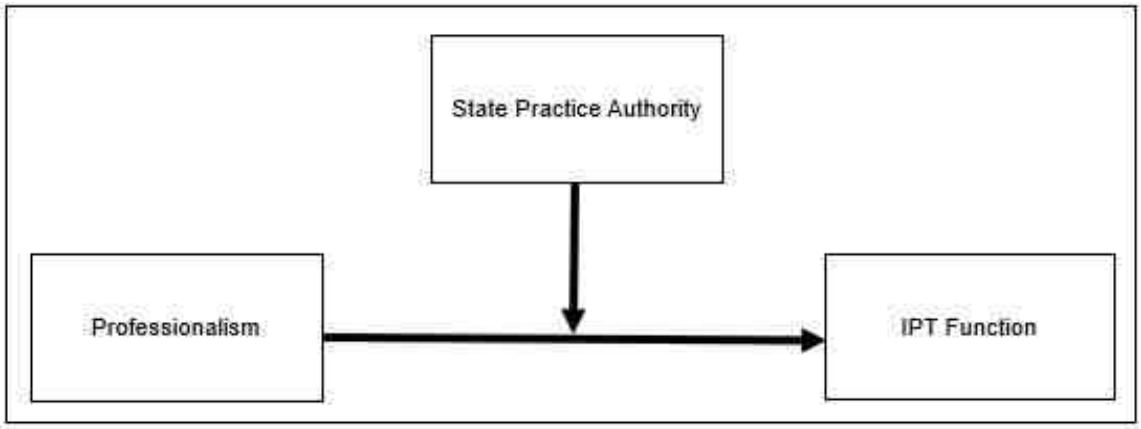


Figure 8. Conceptual model of proposed moderating relationships: The moderating role of state practice authority between perceived professionalism between perceived IPT function.

A three-step multiple regression procedure was employed to test the moderating effect of state practice authority between professionalism and IPT function using restricted practice authority as the referent (constant) group. The first model tested the main effect between the moderator variable state practice authority and IPT function (DV). The second model tested the main effect by entering professionalism (IV) without interaction terms into the regression equation. The third model tested for the moderating effects of state practice authority on the relationship between professionalism and IPT function by including interaction terms in the regression equation. Beta values and corresponding significance levels were compared to see how much each variable contributed to the prediction of IPT function. A significant moderation effect is present if one of the interaction terms is statistically significant.

Human Subjects

Potential Risks and Steps to Mitigate Risks

This is a minimal risk study because survey responses were anonymous with no link to personal identifying information, or employers. Potential risks were loss of confidentiality, anonymity, and participant burden.

Confidentiality. Study data were collected and managed using REDCap tools hosted at the University of New Mexico Health Sciences Center. Raw data are stored on a secure server located at the University of New Mexico and will be deleted after three years. Emails were not downloaded with response data from REDCap. Emails have been deleted from the REDCap tool. For analysis purposes, deidentified data are stored on the coinvestigator's pass-word protected computer in a private office with limited access.

Anonymity. The study responses were anonymous and deidentified upon download from REDCap. No information was collected regarding participants' personal information or specific employer.

Participant burden. Potential for participant burden included receiving excessive emails, test-taking anxiety, and time involved. All sample participants received one initial email invitation. Three reminder emails were sent to non-respondents at one-week intervals during the four-week data collection period. Participants were given contact information and emails were removed from the email list immediately by the coinvestigator upon request of a respondent. Participation was voluntary and email requests to participate included a link to an informed consent page for voluntary participation/resignation and included investigator and IRB contact information (see Appendix D). The survey took approximately 30 minutes to complete. However, the

survey could have been completed in shorter time segments since the option to return and complete until the survey close date was provided.

CHAPTER 4

RESULTS

The convenience sample for this study consisted of APRNs from a U.S. national email list (N = 6,000) as described in the previous chapter. There were 402 respondents (7 %) to the survey invitation from 44 different states. Nurse practitioners (n = 228, 57%) and clinical nurse specialists (n = 82, 20%) constituted the majority of respondents followed by nurse midwives (n = 51, 13%) and nurse anesthetists (n = 23, 6%). Four percent (n = 17) specified none of the above and one item (0.2%) was missing. Ninety-five percent worked with an interprofessional team (n = 383) and 93% (n = 373) worked as an advanced practice nurse on that team. Of the 402 respondents, 222 (55 %) met inclusion criteria, completed the survey, and were retained for data analysis (Table 3).

Table 3.
Inclusion and Exclusion Matrix for Study Participants N = 402

APRN type identified	Worked with an IPT	Worked as an APRN with an IPT	State of practice provided	Included	Excluded
YES	YES	YES	YES	222	0
YES	YES	YES	NO	0	139
YES	YES	NO	NO	0	9
YES	NO	NO	NO	0	10
NO	NO	NO	NO	0	4
NO	YES	NO	NO	0	5
NO	YES	YES	NO	0	8
YES	NO	YES	NO	0	4
					1[a]
			Totals	222	180

Note. Each screening question must be met to participate in the study and provide state of practice. Abbreviations: APRN = advanced practice nurse, IPT = interprofessional team. [a] = missing case.

Statistical Analyses

Descriptive statistics. Table 4 presents the frequencies and percentages used to define the sample characteristics for this study. The majority (90%) of APRN respondents were female, white (94%), and 38% were between 56 and 64 years of age. A

majority (60%) had worked in an IPT for more than ten years and very few (2%) worked in an IPT for less than one year. Approximately half (49%) worked in clinics and 41% worked in hospital settings. Regarding state practice authority levels, 52% reported practicing in states that specify reduced level, 31% worked in states that specify full practice level, 6% in restricted, and 11% reported working in states that did not identify or specify practice authority.

Table 4.
Characteristics of Study Participants (N = 222)

Characteristic	*n*	%
APRN type		
CNM	40	18.0
CNP	131	59.0
CNS	40	18.0
CRNA	11	5.0
Years as an IPT member		
Less than 1 year	4	1.8
1 year or more, but less than 5 years	32	14.5
5–10 years	53	24.1
More than 10 years	131	59.5
Number of IPT members		
2–3	40	18.0
4–5	89	40.1
More than 5	93	41.9
Age group		
25–35	20	9.0
36–45	46	20.7
46–55	56	25.2
56–65	84	37.8
Over 65	16	7.2
Gender		
Female	200	90.1
Male	22	9.9
Ethnicity		
Non-Latino	217	97.7
Latino	3	1.4
No response	2	0.9
Race		
American Indian or Alaska Native	0	0
Asian	2	0.9
Black or African American	10	4.5
Native Hawaiian or other Pacific Islander	0	0
White	208	93.7
No response	2	0.9
Years of APRN practice		
1–5	38	17.2
6–10	47	21.3
11–15	30	13.6
16–20	39	17.6

21–30	44	19.9
More than 30 years	23	10.4

(continues)

Table 4 (cont.)

Characteristic	*n*	%
Work setting		
Dept of Veterans Affairs facility	3	1.4
Public or private acute care hospital	91	41.4
Long-term care facility	7	3.2
Clinic	108	49.1
Other	11	5.0
State authority level		
State has not identified or not specified	24	10.8
Restricted	13	5.9
Reduced	115	51.8
Full	70	31.5

Note. Abbreviations: APRN = advanced practice nurse, CNM = certified nurse midwife, CNP = certified nurse practitioner, CNS = clinical nurse specialist, CRNA = certified registered nurse anesthetist, IPT = interprofessional team.

One additional background question was asked:

> Thinking about your work setting, is your organization's practice authority at the same level as your state practice authority? (An example of an organization that is not at the same level as the state: My state has full practice authority, but my organization requires a collaborative agreement, physician signatures, or supervision by physician, DO, dentist, or chiropractor).

Results show that about one quarter of APRNs practice in work settings where practice authority is not the same as their state's practice authority. Few APRNs are not sure if their organization and state practice authority are at the same level and are presented in a diagram (Figure 9).

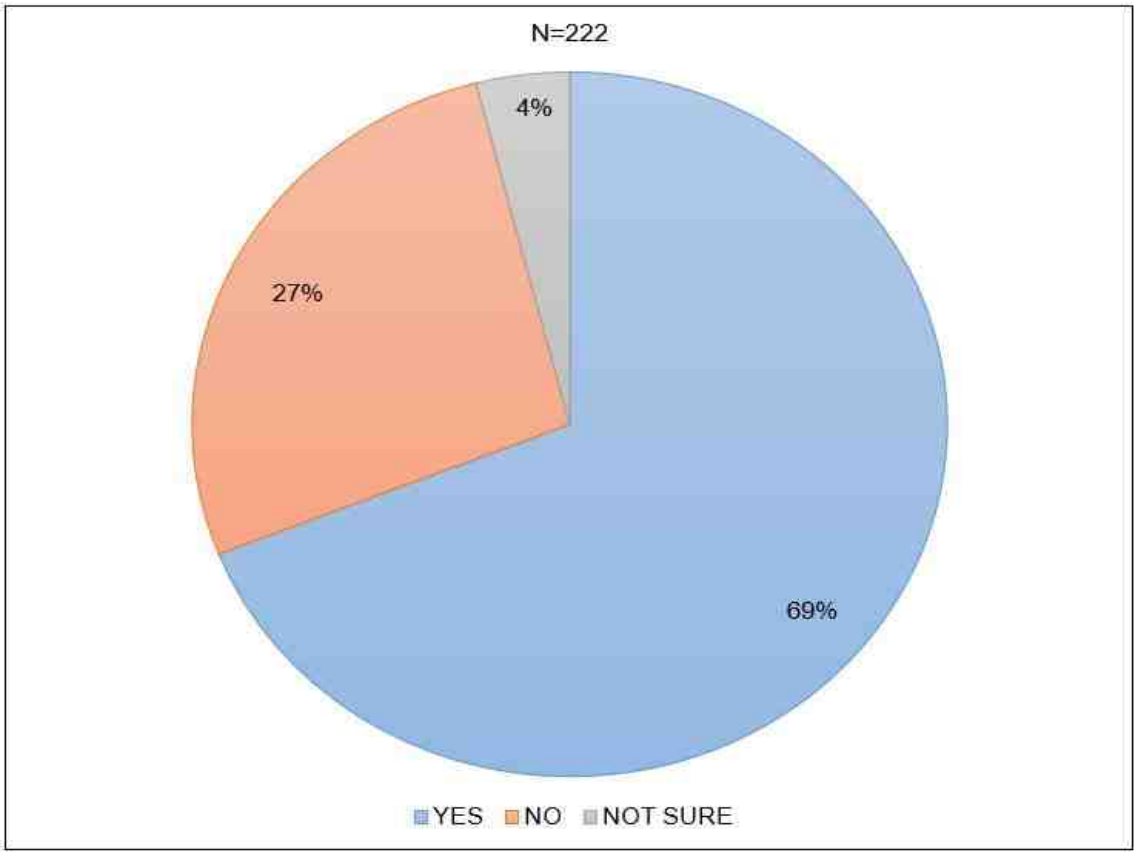


Figure 9. Advanced practice state and organization practice authority parity. Diagram indicates that the majority of APRNs practice in organizations at the same practice authority level as defined by state practice authority.

Results of the ANOVA showed no significant difference between scale scores. Mean scale scores were similar for each of the APRN groups as seen in Table 5. The T-TPQ total mean score of 2.1 on a scale of 1 to 5, where a 2 is "Agree" and lower scores indicate higher perceived team function, signifies a moderately high perception of team function for this sample of APRNs. The overall mean DBPS score of 4.17 on a 1 to 5 scale in which a 4 is "Very true" and higher scores indicate greater levels of autonomy shows that APRNs, as a group, perceive a high level of autonomy. Finally, the PS mean score of 2.7 on a scale of 1 to 7, where a 3 is "Somewhat Agree" and low scores reflect higher levels of professionalism, indicates this group of APRNs perceive a moderate level of professionalism.

Table 5.
Comparison of Mean Scores Between APRN Groups

Scale	APRN type	*n*	*M*	*SD*	Range Min	Range Max
TeamSTEPPS-Team Perception Questionnaire (T-TPQ®)[a]	CNM	40	2.05	.53	1	3
	CNP	131	2.17	.52	1	4
	CNS	40	2.19	.46	1	3
	CRNA	11	1.96	.47	1	3
	Total	222	2.14	.51	1	4
Dempster Practice Behavior Scale (DPBS)	CNM	40	4.17	.54	2	5
	CNP	130	4.19	.44	3	5
	CNS	40	4.11	.52	3	5
	CRNA	11	4.16	.39	4	5
	Total	221	4.17	.47	2	5
Professionalism Scale (PS)[a]	CNM	40	2.51	.46	2	4
	CNP	130	2.67	.53	1	4
	CNS	40	2.75	.60	2	4
	CRNA	11	2.69	.49	2	3
	Total	221	2.65	.52	1	4

Note. Abbreviations: APRN = advanced practice nurse, CNM = certified nurse midwife, CNP = certified nurse practitioner, CNS = clinical nurse specialist, CRNA = certified registered nurse anesthetist, IPT = interprofessional team. [a] = for T-TPQ and PS scales, low scores indicate higher levels of IPT function and professionalism.

Preliminary analysis. Skewness, and kurtosis were evaluated for the normality of the distribution of scores. Histograms show reasonably normal distribution with slightly positive skewness for T-TPQ scale (.30, kurtosis .31) and PS scale (.18; kurtosis −.26). The distribution of scale scores for DPBS showed slight negative skewness (−.65,) and kurtosis of .69. Visual inspection of Q-Q, P–P, and box plots show relatively normal distribution of mean scores (Tables J1.1–J1.4, J2.1–J2.4, J3.1–J3.4) with few outliers. Finally, scatterplots show linear relationships. Specific tests are described in analysis of each question.

Reliability assessment. The T-TPQ shows all but item one had a corrected item-total correlation > .3. Cronbach's alpha is. 95 for this sample of APRNs. For the DPBS all but one item had corrected item-total correlation > .3 and Cronbach's alpha of .93 indicating excellent internal consistency. The PS shows 11 of the 23 items with corrected item-total correlation of > .3 with Cronbach's alpha of .76.

Analysis of research questions. The analysis for each question is as follows:

Research Question 1. Is the level of state practice authority associated with perceived IPT function in a national sample of APRNs?

Levene's test checked for homogeneity of variance for the ANOVA and is not statistically significant. The results of the ANOVA (Table 6) indicate no significant relationship between state practice authority and IPT function (F (2, 221) = 0.43), p = .65) and a small effect (η^2 = .004). Also see Appendix K1 through K4. Since no relationship between state practice authority and IPT function was established, path analysis to determine mediation between state practice authority and IPT function was not completed.

Table 6.
Means, Standard Deviation, and One-Way Analysis of Variance Effects of State Practice Authority (SPA) and Interprofessional Team Function (T-TPQ)

	Restricted SPA		Reduced SPA		Full SPA	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
T-TPQ	2.07	.44	2.16	.51	2.16	.54

Research Question 2. Is the relationship between state practice authority and perception of IPT function mediated by autonomy in a national sample of APRNs?

The previous analysis indicates that the direct relationship between IPT function and state practice authority was not significant and the hypothesized relationship was not supported. Therefore, mediation using path analysis was not tested.

Subquestion 2a. Is there a relationship between level of state practice authority and perceived autonomy in a national sample of APRNs?

An ANOVA was conducted to test the direct relationship between state practice authority and mean scores from the DPBS. Levene's test for homogeneity of variances was not significant (p = .38) indicating that the assumption had not been violated. The

results of the ANOVA (Table 7) revealed a significant relationship between state practice authority and autonomy (F (2, 220) = 4.3, 2, p = .01). Effect size calculated using eta squared was .04 (medium). Post hoc comparisons using the Tukey HSD test indicated that the mean score for autonomy at the restricted level of state practice authority was not statistically different from the reduced level at p = .79, but full practice authority differed from both restricted (p = .26) and reduced indicating the strongest relationship is between full practice authority and autonomy (p = .01). Also see Appendix K3.1 through K3.4.

Table 7.
Means, Standard Deviation, and One-Way Analysis of Variance Effects of State Practice Authority (SPA) and Autonomy (DPBS)

	Restricted SPA		Reduced SPA		Full SPA	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*
DPBS	4.15	.50	4.10	.48	4.30	4.11

Subquestion 2b. Is there a relationship between perceived autonomy and perceived IPT function in a national sample of APRNs?

Pearson's product–moment correlation (Table 8) showed a moderately negative relationship between total scores on the DPBS and total scores on the T-TPQ (r = - .43, p = .00).

Table 8.
Pearson Product–Moment Correlations Between Measures of Interprofessional Team Function (T-TPQ), Autonomy (DPBS), and Professionalism (PS)

Scale	T-TPQ	DPBS	PS
T-TPQ	–	−.43	.33
DPBS	–	–	−.47

Note. Correlations are significant at .01.

In general, the scatter plot (Appendix Figure K4) displays a negative downward sloping regression line between T-TPQ and DPBS indicating that lower scores on the T-

TPQ (higher team function) are associated with higher scores on the DPBS (higher autonomy) (Appendix Table K4.1).

Research Question 3. Is professionalism associated with perception of IPT function in a national sample of APRNs?

Results from the Pearson's correlation (Table 8) indicate that low professionalism scores (high perceived professionalism) correlate moderately with low team function scores [high perceived team function] ($r = .33$, $p = .00$) and that 11 % of the variation is attributed to professionalism.

Evaluation of the scatter plot (Figure 10) shows a positive upward relationship between mean scores on the PS and mean scores on the T-TPQ.

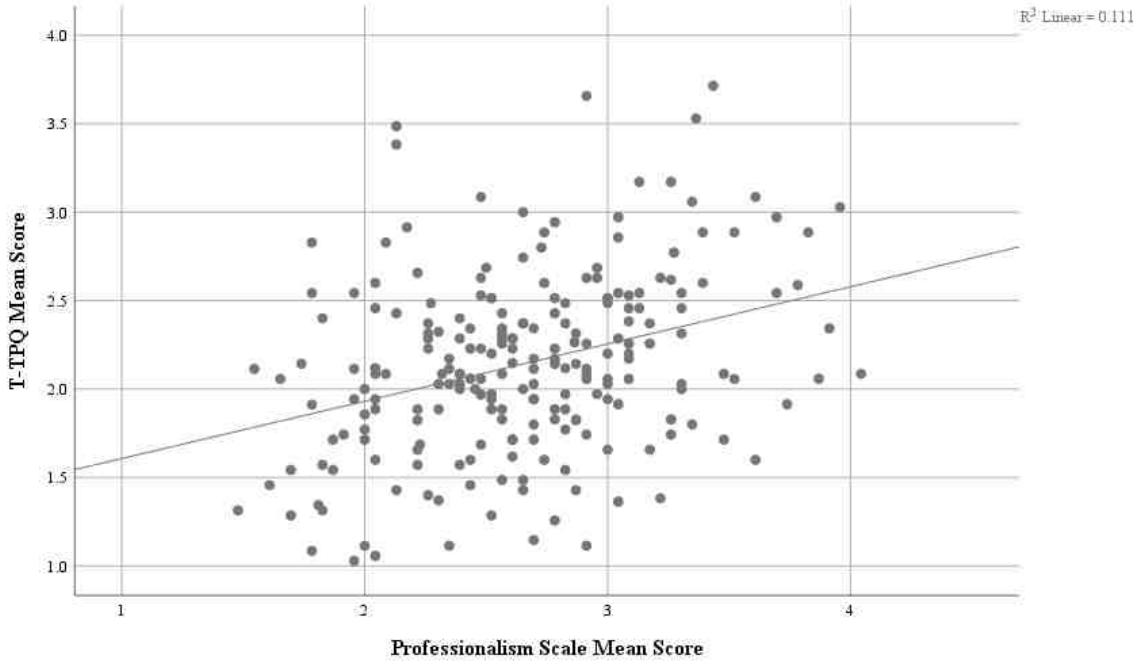


Figure 10. Scatterplot depicting the relationship between interprofessional team function and professionalism $N = 222$. Lower T-TPQ scores = higher IPT function. Lower PS scores = higher perceived professionalism.

Subquestion 3a. Does state practice authority moderate the relationship between perceived professionalism and perception of IPT function in a national sample of APRNs?

A three-step multiple regression procedure was employed to test the moderating effect of state practice authority between professionalism and IPT function using restricted practice authority as the referent (constant) group. The first model tested the main effect between the moderator variable state practice authority and IPT function (DV). The second model tested the main effect by entering professionalism (IV) without interaction terms into the regression equation. The third model tested for the moderating effects of state practice authority on the relationship between professionalism and IPT function by including interaction terms in the regression equation.

Collinearity assessment. The results of the variance inflation factor (VIF) for DPBS was 1.29, 1.27 for the PS, and 1.03 for state practice authority indicating no multicollinearity (Appendix Table J4).

The results the regression analysis (Table 9) indicated no significance F (2, 218) = .41, p = .67. Also see Appendix K6. No significant interaction of professionalism with team function was found in either the reduced practice authority group or the full practice authority group. Introducing interaction terms into the model shows no significant interaction of reduced or full practice authority levels between perceived professionalism and IPT function (p = .79).

Table 9.
Multiple Linear Regression Model Summary for Testing Moderating Effects of State Practice Authority (SPA) Between Professionalism (PS) and Interprofessional Team Function (T-TPQ) Using Restricted Practice Authority as the Referent Category

Model	Predictor variable	R^2	ΔR^2	ΔF	p
1	SPA	.00	.00	.41	.67
2	Professionalism	.12	.12	28.22	.00
3	SPA reduced/professionalism and SPA full/professionalism	.12	.00	.23	.79

Note. IPT = dependent variable.

The final model was not found to be significant (p = .79) when interaction terms were introduced. Model 1 results were congruent with the analyses for Research Question 1 showing no relationship between SPA and IPT. Table 10 indicates that none of the variables were significantly contributing to the model nor were any of the interaction terms significant contributors. Although the main effect between professionalism and IPT function was significant in the second model (p = .00), significance was reduced in the final model when interaction terms were introduced. The effect is most likely due to multicollinearity. Secondly, although not significant (p = .06), the model indicates that for every one unit of increase in professionalism there is a .26 increase in IPT function.

Table 10.
Multiple Linear Regression Model for Predictors of Interprofessional Team (IPT) Function (N = 222)

Predictor	B	95% CI		t	p
Main effects					
SPA reduced vs. SPA restricted	−0.11	−1.00	−0.78	−0.25	.80
SPA full vs. SPA restricted	−0.18	−1.11	−0.76	−0.38	.71
Professionalism	0.26	−0.01	−0.52	1.93	.06
Interaction terms SPA with professionalism					
SPA reduced vs. SPA restricted	0.08	−0.25	−0.40	0.47	.64
SPA full vs. SPA restricted	0.12	−0.23	−0.46	0.68	.50
Constant	1.37	0.63	−2.11	3.65	.00

Note. Abbreviation: SPA = state practice authority, IPT = interprofessional team, IPT function is the dependent variable.

Evaluation of the scatter plot (Figure 11) shows very little change in regression line signifying no moderating effect of state practice authority between professionalism and IPT function.

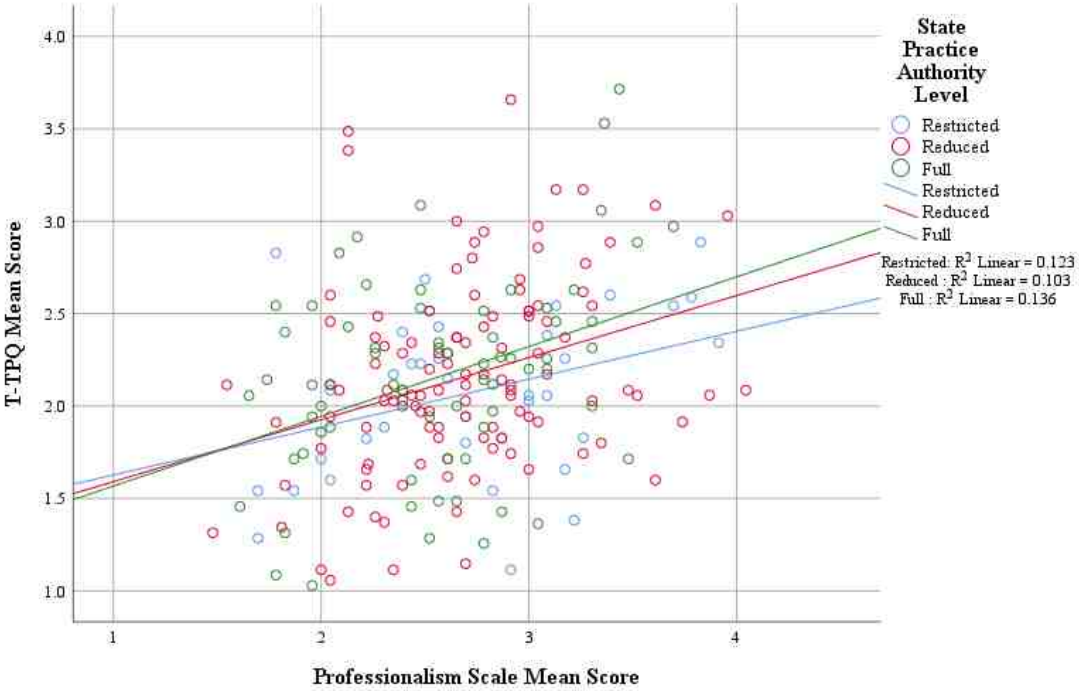


Figure 11. Scatter plot representing the interaction of state practice authority between professionalism and IPT function in a national sample of APRNs ($N = 222$).

CHAPTER 5

DISCUSSION

This study was designed to (1) determine if environmental factors (state practice authority) have a direct or indirect effect on APRN perception of IPT function; (2) examine the extent to which APRN perception of autonomy and professionalism directly and significantly associate with APRN perception of (IPT) function; (3) determine the extent to which APRN perception of autonomy mediates the relationship between state practice authority and IPT function, and (4) to determine the extent to which state practice authority moderates the relationship between APRN perception of professionalism and IPT function in a national sample of APRNs in the United States. A considerable amount of literature exists about autonomy, professionalism, and IPT function, separately in healthcare settings. However, no studies were found that examine state practice authority, perceived autonomy and professionalism together or their influence on perceived IPT function. As described in Chapter 2, this study was guided by the underlying theories of identity, specifically professional identity, which implies that high levels of autonomy and professionalism (professional identity components) associate with higher-levels of interaction with others (Tajfel & Turner, 1979), as is necessary when working with an IPT.

Since nurse practitioners (NPs) represent the most significant number of APRNs nation-wide, it is not surprising that this study had more NP respondents than any other group. Although in general, a broad representation of the four groups of APRNs from across the country who work in a variety of settings with interprofessional teams made up the sample. Furthermore, most of the respondents reported working with teams of more

than four members. More than half of the respondents reported working with an IPT for more than ten years which would imply that this group of APRNs might work in environments with higher levels of professionalism, autonomy, and team function.

State Practice Authority

All levels of state practice authority were reported with reduced practice authority being the most represented among this group of APRNs. Surprisingly, about one-quarter of the APRNs reported working in environments with different practice authority than state practice authority. Although the survey question did not ask the specific direction of difference, this finding implies more restriction on practice because organizations cannot allow a greater degree of practice authority than the state regulation for APRN scope of practice. For example, organizations cannot allow APRNs to practice without some oversight in a state with restricted practice authority which requires supervision by a physician.

As discussed in previous chapters, significant variation exists between states' APRN scope of practice regulation. The inconsistency of regulatory language and acknowledgement of the APRN title across states makes comparisons challenging and difficult to determine the quality of results. This study included all APRNs as a single group. However, a more in-depth analysis of the different APRN groups and their respective state practice authority levels would be needed to determine the full effect of state practice authority on specific groups.

Autonomy, State Practice Authority, and IPT Function

This study sought to determine if perceived autonomy has a direct effect or mediates the relationship between state practice authority and IPT function. As discussed in Chapter 1, individual team members contribute to a team's function overall, and since autonomy is a necessary component of optimal APRN function, it is logical to assume that autonomy is a significant contributor to IPT function.

APRNs value autonomy and view autonomy as a necessary component of APRN practice (Almost and Laschinger, 2002, Dempster, 1990, 2009, & Piil, Kolbaek, Ottmann, and Rasmussen, 2012). In this study, APRNs in states with full and reduced practice authority reported higher perceived autonomy than APRNs in states with restricted practice authority. These findings are similar to those in a study by Peterson et al. (2015), which found high levels of autonomy among APRNs in New Mexico, a full practice authority state. Also, the analyses show a significant moderate association of the relationship between autonomy and state practice authority. Other studies have similar findings in that restrictive practice environments, such as state laws and regulations, reduce levels of APRN autonomy (Pan, Straub, & Geller, 1997).

A variety of factors that this study did not address might contribute to the high level of autonomy in APRNs. For example, specific APRN education programs might instill a higher level of autonomy among graduates than others. Secondly, the sample was similar to other studies in that this study used a convenience sample and the majority of respondents in this study were NPs. Also, the majority of respondents were white, female, and middle-aged which could explain higher autonomy scores related to more life experience. The length of APRN practice tenure and practice experience might also

contribute to higher levels of autonomy as APRNs become more confident in their knowledge and skills. A more in-depth analysis would be necessary to determine this relationship since the length of APRN practice tenure for APRNs in this study was fairly evenly distributed and no significant difference between the groups' DPBS scale scores was found.

Furthermore, the results of the analysis show that higher levels of autonomy and higher levels of team function are moderately related which was similar to results found in earlier studies by Poghosyan and Liu (2016). Although this study used a correlational, rather than a causal study design, these findings suggest IPTs with autonomous APRN members may function at higher levels. Since higher team function is associated with better patient outcomes (IOM, 2001, 2010), providing supportive environments such as less restrictive rules and by-laws in work settings in which APRNs can function at their optimal scope of practice may be beneficial to both IPTs and patients.

However, one limitation of this study is that the relatively high perceived IPT function scores found in this sample resulted in lack of variation in T-TPQ scores and possible difficulty detecting differences or effects of variations between the three levels of state practice authority. Secondly, this sample consisted of more experienced APRNs; the environmental effects, such as work setting and IPT structure, on the perception of IPT function might be different for less experienced APRNs working with IPTs. Finally, the majority of APRNs in this study worked in teams with four or more members, and many worked in teams of more than five members. This study did not consider whether the APRNs were working in the same IPTs with the same members or different IPTs with different members which might have produced a different survey response. More

research is needed to examine IPT structure, professional mix, and size compared to experience levels of APRNs to help understand how these structural environmental factors and autonomy contribute to IPT function.

Professionalism and IPT Function

Studies that examined the relationship between professionalism and APRN perception of IPT function could not be found. This study addressed the gap and explored the possible moderating effect of state practice authority between perceived professionalism and IPT function. Additionally, comparative studies could not be found that measured professionalism of APRNs at the professional stage. This study measured professionalism of APRNs who had worked in IPTs for at least six months. APRNs in this study perceive a moderate level of professionalism and a moderately high level of IPT function as evidenced by the mean scores on the PS and T-TPQ. Consistent with the assumption that professionalism is a necessary component of highly functional teams, the results of this study found a significant relationship between professionalism and IPT function. This is an important finding because if professionalism is related to IPT function and IPT function is associated with patient outcomes, then fostering higher professionalism in APRNs becomes a high priority to achieve better IPT function and improved patient outcomes.

Even though a relationship exists between professionalism and IPT function, the analysis shows that state practice authority did not moderate the relationship in this group of APRNs. This is an interesting finding. One would assume that the APRN's perception of professionalism as it relates to IPT function would change or be different depending on their scope of practice which is regulated by the state's practice authority. A comparison

study to determine if APRNs perceive higher professionalism and IPT function in states with full versus reduced or restricted practice authority at both the state and organization levels would be helpful in understanding these relationships. Additionally, more than half of APRNs in this study had worked as an APRN for more than ten years and with IPTs more than ten years. Comparatively, the study by Adam's and Miller's (2001) found high professionalism scores among NPs who worked less than five years which would imply professionalism is established early and continues throughout APRN practice tenure. Comparison studies to determine if length of APRN tenure affects perception of professionalism and if length of tenure working with an IPT (or the same IPT) influences perception of professionalism or IPT function would be useful in determining the significance of these relationships.

Implications

Nursing Science and Research

This study supports existing knowledge in nursing science regarding autonomy and professionalism among APRNs. Consistently autonomy is found to be a major influence among APRNs. This study found a significant relationship between autonomy and IPT function. The analyses also show an association between professionalism and IPT function. However, this study examined only one disciplinary group of the IPT which might not be an accurate representation of how IPTs function overall. A study using mixed-methods design to gain a broader perspective of the significance of autonomy and professionalism with IPT function using an interdisciplinary sample of team members would provide richer data and better inform interdisciplinary program development strategies.

The results of the analyses provide new knowledge regarding relationships between IPT function, APRN practice authority, perceived autonomy, and professionalism. No other study has examined the effects of state practice authority on IPT function. This study found no direct effects between these two variables. However, possible indirect effects might exist. More rigorous methods using more sophisticated analysis such as structural equation modeling would be useful in determining the possible indirect effects, including identifying confounding variables and causal effects that could influence IPT function. Since this study used a convenience sample causal effects could not be established.

Health Policy

The need to examine how IPTs function and regulatory components such as states' APRN scope of practice are consistently acknowledged among agencies concerned about healthcare outcomes and healthcare policy (IOM, 2001, 2011). Our understanding of the implications of care delivery using IPTs is limited. This study contributes to the body of knowledge that currently exists and provides new insight regarding states' APRN practice authority and the relationship to IPT function. More research would necessary to substantiate this study's findings. However, since no significant relationship was found between state practice authority and IPT function in this sample; efforts to further examine these relationships might not be practical. Instead, researchers might focus efforts on examining influencing factors at the local IPT level such as management structures and practices, hierarchical factors, and organizational or institutional rules and regulations that regulate scope of practice within specific health delivery systems and the effects of these structures on IPT function. The results of such studies might be beneficial

to inform the lobbying efforts of agencies such as NCSBN, American Nurses Association, and APRN professional organizations and coalitions who are dedicated to improving the consistency of APRN scope of practice regulation across local, state, and national levels.

This study found links between state practice authority and APRNs' perception of autonomy which is also associated with IPT function. Although no direct link between state practice authority and professionalism or IPT function was found in this group of APRNs, it is a logical conclusion that as APRN autonomy and professionalism improve IPT function would also improve when restrictive regulation is reduced or eliminated. Therefore, stakeholders should consider strategies to reduce restrictive regulation not only at the national and state level but also at the local level where IPTs are responsible for providing optimal quality care to individuals. Secondly, comparative studies on the differences in APRN practice within IPTs in different settings with different IPT structures and members would provide more information on the implications of the levels of practice authority within health delivery systems related to patient outcomes.

Additionally, influential stakeholders such as Medicare could be instrumental in leading the way in allowing for more creative billing for APRNs who work in IPTs which could improve accessibility to care for individuals. Advocacy by employers and health systems to lobby at the state level for less restrictive APRN scope of practice regulation could also improve accessibility to care, especially in rural or underserved areas where APRNs provide services.

A major limitation in the collection of data for this researcher and future research is not only the inconsistency between regulatory language among the states but also the variation of regulatory agencies that regulate APRN scope of practice. In some states, a

board of nursing regulates APRN practice, in other states, the Department of Health or the Board of Medicine regulates APRN practice. Some states require an additional oversight from a Board of Pharmacy. Some states limit APRN practice authority to specific APRN groups and exclude others or specify different levels of practice authority for different APRN groups. Furthermore, several certifying agencies exist for national certification and not all certifications are accepted by state regulatory agencies for licensing. These inconsistencies and variations make accurate data collection and analysis challenging which in turn limits the ability to provide stakeholders and policymakers with precise data for decision-making.

Conclusion

The literature establishes autonomy and professionalism as essential components of APRN professional practice. This study corroborates previous nursing research regarding the importance of autonomous practice among APRNs and suggests that the autonomous practice of individual team members contributes to the overall function of IPTs. Additionally, the literature suggests that restrictive regulatory rules reduce APRN autonomy which was, in part, the rationale for exploring the relationship that state practice authority would have on IPTs. Even though no direct relationship exists between state practice authority and IPT function among this group of APRNs, significant relationships exist between state practice authority and autonomy and between autonomy, professionalism and IPT function. Many unknown factors could influence these relationships including sociocultural, individual, educational, environmental, and economic factors; more research is needed to examine their contribution to IPT function if any.

APPENDICES

APPENDIX A

POWER ANALYSIS

A1. A priori Power Against Sample Size Calculation

	Power (1-β)		
	Bivariate correlation	ANOVA (3 groups)	Multiple linear regression (5 predictors)
N	**r = .20**	**f = .20**	**R^2 = .04**
H_0	ρ = 0	$\eta^2 = 0$	$R^2 = 0$
100	0.52	0.40	0.28
125	0.61	0.49	0.35
150	0.69	0.57	0.42
175	0.76	0.65	0.49
200	0.81	0.71	0.55
225	0.86	0.76	0.61
250	0.89	0.81	0.67
275	0.92	0.85	0.72
300	0.94	0.88	0.76
325	0.95	0.91	0.80
350	0.97	0.93	0.83
375	0.97	0.94	0.86
400	0.98	0.96	0.89
425	0.99	0.97	0.91
450	0.99	0.97	0.92
475	0.99	0.98	0.94
500	0.99	0.98	0.95
525	1.00	0.99	0.96
550	1.00	0.99	0.97
575	1.00	0.99	0.97

Figure A1. A priori calculations for power against a range of sample sizes using $r = .20$ effect size for correlation, $f = 0.20$ for ANOVA, and $R^2 = .04$ for multiple regression using G*Power©.

Faul, F., Erdfelder, E., Lane, A., & Buchner, A. (2007). G*Power (3.1) [Measurement instrument]. Retrieved from http://www.gpower.hhu.de/en.html

A2. A priori Power Against Sample Size Calculation

	Power (1-β)		
	Bivariate correlation	ANOVA (3 groups)	Multiple linear regression (5 predictors)
N	**r = .25**	**f = .258**	**R^2 = .0625**
H_0	ρ = 0	$\eta^2 = 0$	$R^2 = 0$
100	0.72	0.62	0.45
125	0.81	0.72	0.56
150	0.87	0.81	0.66
175	0.92	0.87	0.74
200	0.95	0.91	0.80
225	0.97	0.94	0.86
250	0.98	0.96	0.90
275	0.99	0.98	0.93
300	0.99	0.98	0.95
325	1.00	0.99	0.96
350	1.00	0.99	0.98
375	1.00	1.00	0.98
400	1.00	1.00	0.99
425	1.00	1.00	0.99
450	1.00	1.00	1.00
475	1.00	1.00	1.00
500	1.00	1.00	1.00

Figure A2. A priori calculations for power against a range of sample sizes using $r = .25$ effect size for correlation, $f = .258$ for ANOVA, and $R^2 = .0625$ for multiple regression using G*Power©.

Faul, F., Erdfelder, E., Lane, A., & Buchner, A. (2007). G*Power (3.1) [Measurement instrument]. Retrieved from http://www.gpower.hhu.de/en.html

A3. Effect Size Calculation for Correlation $N = 222$

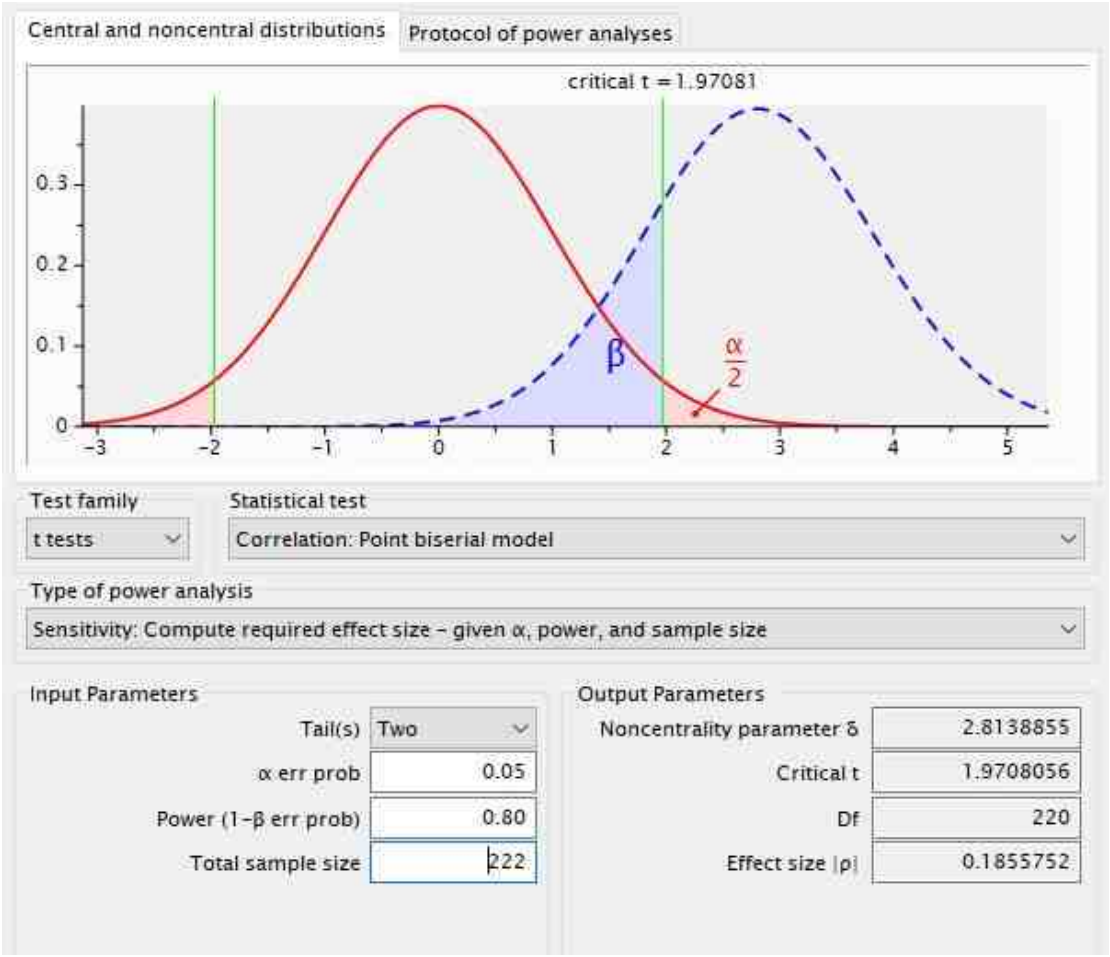


Figure A3. Effect size calculation for Correlation using G*Power©.
Faul, F., Erdfelder, E., Lane, A., & Buchner, A. (2007). G*Power (3.1) [Measurement instrument]. Retrieved from http://www.gpower.hhu.de/en.html

A4. Effect Size Calculation for ANOVA $N = 222$

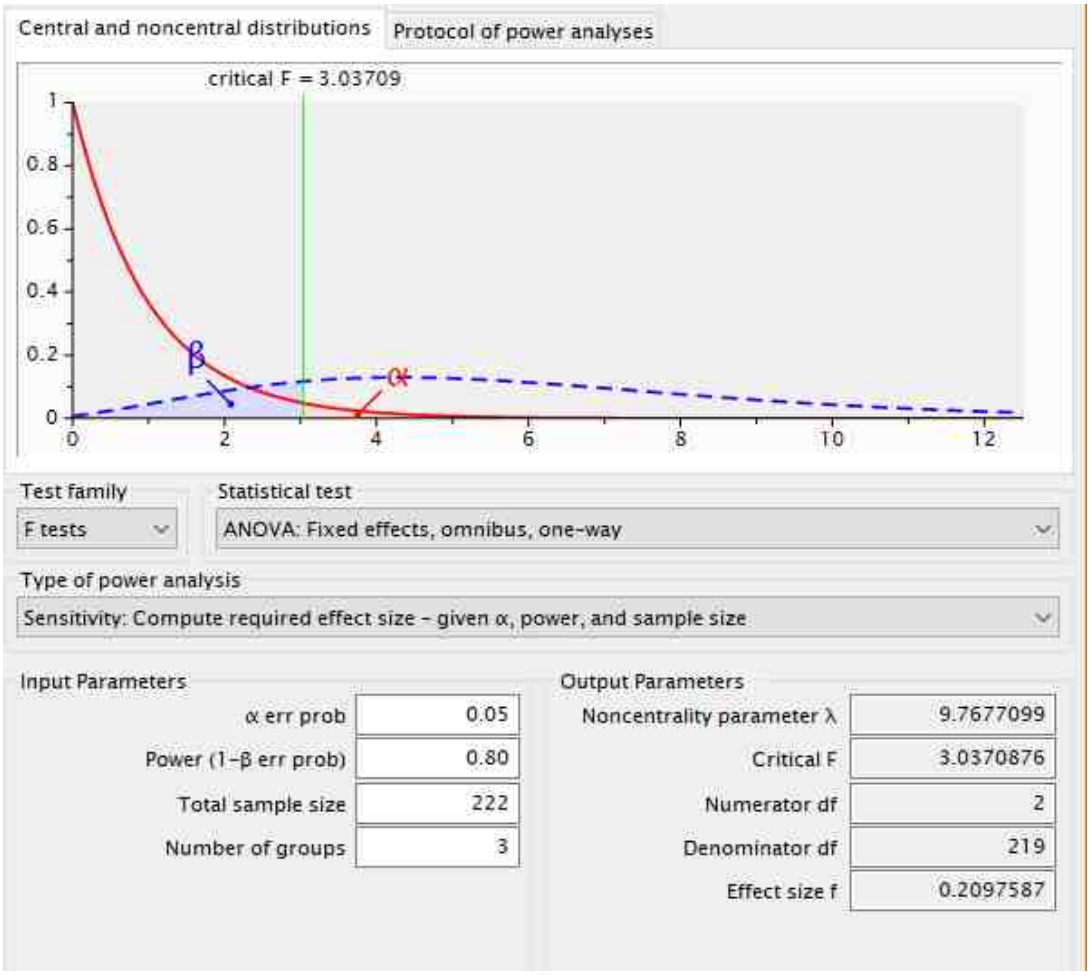


Figure A4. Effect size calculation for ANOVA using G*Power©.
Faul, F., Erdfelder, E., Lane, A., & Buchner, A. (2007). *G*Power* (3.1) [Measurement instrument]. Retrieved from http://www.gpower.hhu.de/en.html

A5. Effect Size Calculation for Multiple Linear Regression *N* = 222

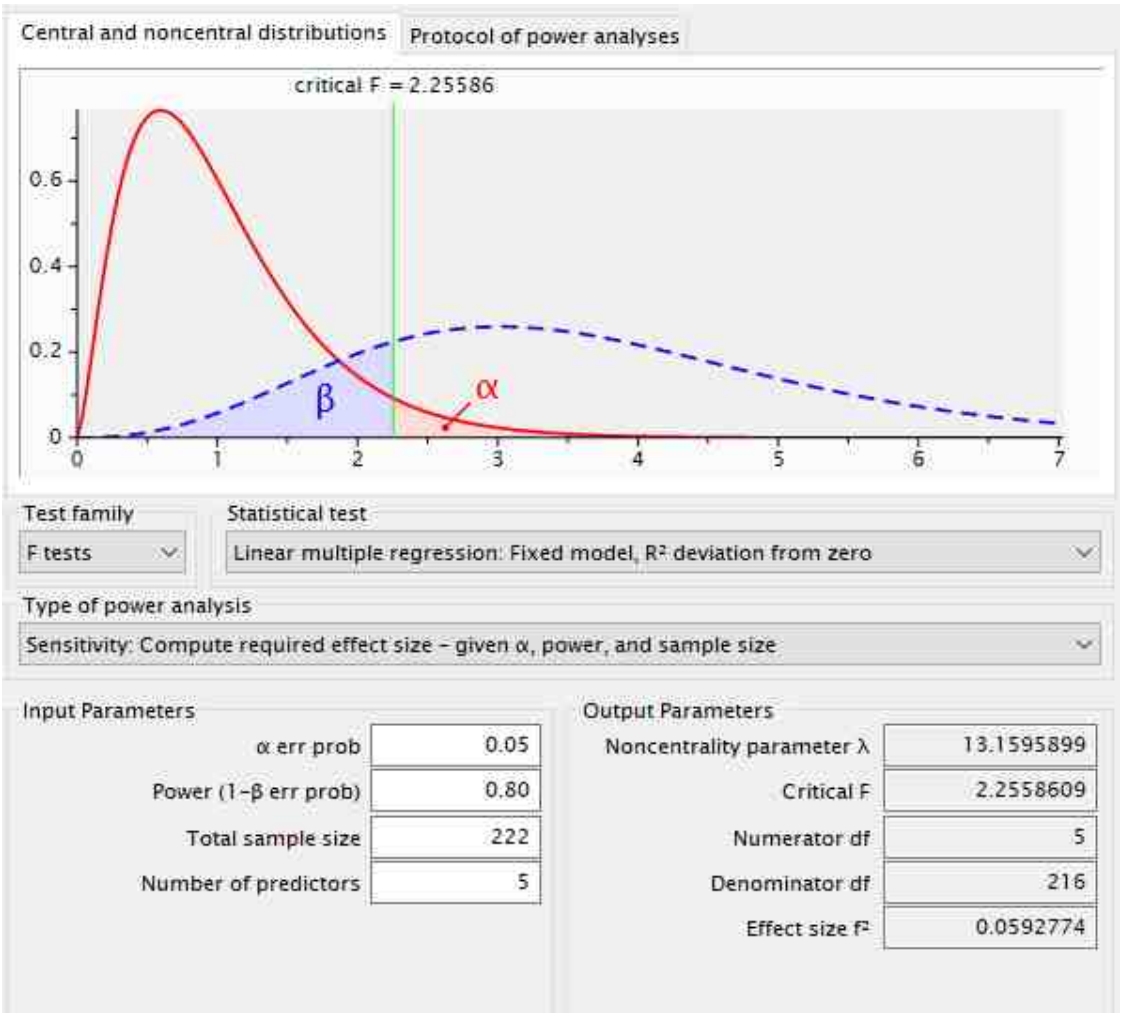


Figure A5. Effect size calculation for multiple linear regression with 5 predictors using G*Power©.

Faul, F., Erdfelder, E., Lane, A., & Buchner, A. (2007). G*Power (3.1) [Measurement instrument]. Retrieved from http://www.gpower.hhu.de/en.html

APPENDIX B

EMAIL INVITATION

Email Subject Line: APRN State Practice Authority Survey Invitation

Dear Advanced Practice Nurse (CNM, CNP, CNS, CRNA),

I invite you to participate in an anonymous national web-based survey of Advanced Practice Registered Nurses (APRN) regarding the relationship of state practice authority with your perception of interprofessional teams, autonomy, and professionalism. This study is part of the requirements for my PhD dissertation.

If you are a nationally certified APRN (CNM, CNP, CNS, or CRNA), who currently or in the past year worked as an APRN with an interprofessional team for at least six months that included least one other professional (not another APRN), please consider participating in this electronic REDCap survey.

For questions regarding this study contact:

Patricia R. Gilman, MSN, APRN, ACNS-BC

Robert Wood Johnson Foundation Nursing & Health Policy Collaborative Fellow

University of New Mexico College of Nursing PhD Candidate

Email: pgilman@unm.edu

Cell: 307-333-3963

You may open the survey by clicking the link below:

[Survey Link Here]

If the survey does not work, try copying the link below into your web browser:

[Survey Link Here]

This link is unique to you and should not be forwarded to others.

APPENDIX C

SCREENING ITEMS

Instructions: For this study advanced practice nurse (APRN) refers to a nationally certified CNM, CNP, CNS, or CRNA. Some states do not recognize these titles. However, if you are nationally certified as one of these professionals who within the past year practiced within a interprofessional clinical team please continue with the following three questions to determine your eligibility for participation in the study.

1. During the past year I have been nationally certified and licensed or authorized to practice as one of the following, (If you have more than one chose your primary designation):

   Certified Nurse Midwife (CNM)

   Certified Nurse Practitioner (CNP)

   Clinical Nurse Specialist (CNS)

   Certified Registered Nurse Anesthetist (CRNA)

   None of the above

2. Currently or within the past year I have worked for at least six months with an interprofessional clinical practice team with at least one other professional who is not an APRN (CNM, CNP, CNS, CRNA). Examples (not all inclusive): physician, nurse (LPN/RN), pharmacist, physical therapist, nutritionist, social worker, clergy.

   YES

   NO

3. I was working as a CNM, CNP, CNS, or CNRA on that interprofessional clinical practice team.

   YES

   NO

APPENDIX D

UNIVERSITY OF NEW MEXICO HEALTH SCIENCES CENTER INFORMED CONSENT

Relationships Between APRN State Practice Authority, Perceived Autonomy, Professionalism, and Interprofessional Team Function Among a National Sample of APRNs in the U.S.

Dr. Beth Tigges, PhD, RN, PNP, BC and Patricia Gilman, MSN, APRN, ACNS-BC from the University of New Mexico College of Nursing are conducting a research study. The purpose of the study is to examine the relationships between Advanced Practice Registered Nurse (APRN) state practice authority, perceived autonomy, professionalism, and interprofessional team function among a national sample of APRNs. You are being asked to participate in this study because you are a nationally certified CNM, CNP, CNS, or CRNA who has in the past year or is currently practicing as such and who within the past year has worked in an interprofessional team setting for at least six months.

Your participation will involve completing an anonymous, internet-based, self-administered survey. The survey should take about 30 minutes to complete. Your involvement in the study is voluntary, and you may choose not to participate. There are no names or identifying information associated with this survey. The survey includes questions such as "Staff relay relevant information in a timely manner," "I have the power to influence decisions and actions of others," and "The dedication of people in my APRN profession is gratifying." You can refuse to answer any of the questions at any time. There are no known risks in this study, but some individuals may experience discomfort when answering questions. Emails will be deleted at the end of the survey period. All response data will be kept for three years on a secure server housed at the University of New Mexico and then destroyed (deleted).

The findings from this project will provide information on the effect that state practice authority has on how APRNs perceive their autonomy, professionalism, and interprofessional team's function. If published, results will be presented in summary form only.

If you have any questions about this research project, please feel free to call Patricia Gilman at (307) 333-3963 or email at pgilman@unm.edu. If you have questions regarding your legal rights as a research subject, you may call the UNMHSC Office of Human Research Protections at (505) 272-1129.

By completing this internet-based survey, you will be agreeing to participate in the above described research study.

Thank you for your consideration.

Sincerely,

Patricia Gilman, MSN, APRN, ACNS-BC

PhD Candidate

APPENDIX E

STUDY QUESTIONNAIRE

APRN State Practice Authority, Perceived Autonomy, Professionalism, and IPT Function Survey

Instructions: For the purposes of this study APRN refers to CNM, CNP, CNS, or CRNA even if your state does not designate your group as "APRN."

The following statements are about your interprofessional team function, autonomy, and professionalism. Think about *your own APRN professional group (CNM, CNP, CNS, or CRNA) when you answer the statements*. For each item consider the way you yourself feel, believe, and act as a member of your particular APRN profession. Choose the one response that best describes your feelings about the statement. The survey will take about 30 to 45 minutes. You can save your responses and return to complete the survey at any time until the closing date.

The first set of statements are about your interprofessional team. There are no right or wrong responses. Possible responses range from (1) strongly agree to (5) strongly disagree.

In *my* work setting…

1. The skills of staff overlap sufficiently so that work can be shared when necessary.

2. Staff are held accountable for their actions.

3. Staff within my office share information that enables timely decision-making by the direct patient care team.

4. My team makes efficient use of resources (e.g., staff supplies, equipment, information).

5. Staff understand their roles and responsibilities.

6. My team has clearly articulated goals.

7. My team operates at a high level of efficiency.

In *my* work setting…

8. My supervisor/manager considers staff input when making decisions about patient care.

9. My supervisor/manager provides opportunities to discuss the team's performance after an event.

10. My supervisor/manager takes time to meet with staff to develop a plan for patient care.

11. My supervisor/manager ensures that adequate resources (e.g., staff, supplies, equipment, information) are available.

12. My supervisor/manager resolves conflicts successfully.

13. My supervisor/manager models appropriate team behavior.

14. My supervisor/manager ensures that staff are aware of any situations or changes that may affect patient care.

In *my* work setting…

15. Staff effectively anticipate each other's needs.

16. Staff monitor each other's performance.

17. Staff exchange relevant information as it becomes available.

18. Staff continuously scan the environment for important information.

19. Staff share information regarding potential complications (e.g., patient changes, bed availability).

20. Staff meet to reevaluate patient care goals when the situation has changed.

21. Staff correct each other's mistakes to ensure that procedures are followed properly.

In *my* work setting…

22. Staff assist fellow staff during high workload.

23. Staff request assistance from fellow staff when they feel overwhelmed.

24. Staff caution each other about potentially dangerous situations.

25. Feedback between staff is delivered in a way that promotes positive interactions and future change.

26. Staff advocate for patients even when their opinion conflicts with that of senior member of the office.

27. When staff have a concern about patient safety, they challenge others until they are sure the concern has been heard.

28. Staff resolve their conflicts, even when the conflicts have become personal.

In *my* work setting…

29. Information regarding patient care is explained to patients and their families in lay terms.

30. Staff relay relevant information in a timely manner.

31. When communicating with patients, staff allow enough time for questions.

32. Staff use common terminology when communicating with each other.

33. Staff verbally verify information that they receive from one another.

34. Staff follow a standardized method of sharing information when handling off patients.

35. Staff seek information from all available sources.

The next set of statements have to do with how you see your autonomy. The answer choices range from (1) not at all true to (5) extremely true. Think about ***your own APRN professional group (CNM, CNP, CNS, or CRNA) when you answer the statements.*** For each item consider the way you yourself feel, believe, and act as a member of your particular APRN profession. Choose the one response that best describes your feelings about the statement. Remember there is no right or wrong response.

When thinking about ***my*** practice I…

36. take responsibility and am accountable for my actions

37. have developed the image of myself as an independent professional.

38. base my actions on the full scope of my knowledge and ability.

39. self-determine my role and activities.

40. derive satisfaction from what I do.

41. take control over my environment and situations I confront.

42. am valued for my independent actions.

43. am constrained by bureaucratic limitations.

44. provide quality services through my actions.

45. am confident in my abilities to perform my role independently.

46. have been professionally socialized to take independent action.

47. function with the authority to do what I know should be done.

48. have too many routine tasks to exercise independent action.

49. have a sense of professionalism.

50. have the rights and privileges I deserve.

51. have the professional experience needed for independent action.

52. am restrained in what I can do because I am powerless.

53. collaborate with others outside my field when I feel there is a need.

54. derive feelings of self-respect and esteem from what I do.

55. make my own decisions related to what I do.

56. possess ownership of my practice; that is, my role belongs to me.

57. have the power to influence decisions and actions of others.

58. have a sense of self-achievement.

59. am provided with legal basis for independent functioning.

60. demonstrate mastery of skills essential for freedom of action.

61. have my activities and actions programmed by others.

62. have the respect of those in other disciplines.

63. cannot optimally function because I do not have legal status.

64. establish the parameters and limits of my practice activities.

65. accept the consequences for the choices I make.

The next set of statements have to do with how you feel about your professionalism. The seven answer choices range from (1) strongly agree to (7) strongly disagree. Think about ***your own APRN professional group (CNM, CNP, CNS, or CRNA) when you answer the questions***. For each item consider the way you yourself feel, believe, and act as a member of your particular APRN profession. Choose the one response that best describes your feelings about the statement. Remember there is no right or wrong response.

When thinking about ***my*** advanced practice profession…

66. I feel my APRN profession is essential to society.

67. I feel a real calling to my APRN profession.

68. The benefits my APRN professionals give to society are understated.

69. My APRN profession is an indispensable occupation.

70. If ever an occupation is indispensable, it is mine.

71. It encourages me to see the high level of idealism maintained by people in my APRN profession.

72. My APRN association does not do a great deal for me.

73. The dedication of people in my APRN profession is gratifying.

74. I believe professional APRN associations should be supported.

75. In my APRN profession, people believe in their work.

76. I systematically read my APRN professional publications.

77. I try to attend my APRN conferences at least annually.

78. Although I try, I do not read APRN journals often.

79. I make my own decisions regarding my work.

80. I do not have opportunities to exercise my own judgment.

81. My decisions are subject to review.

82. My enthusiasm for my APRN profession is not easy to maintain since there is not much autonomy.

83. Most of my decisions are reviewed.

84. I have ample opportunity to judge how other APRNs in my profession do their jobs.

85. I have a good idea how well others do their job.

86. We APRNs have a good idea about each other's competence.

87. We APRNs do not have ways to judge each other's competence.

88. APRNs do not know what APRN colleagues are doing.

Background Items

1. Please indicate how many different professions are represented in your interprofessional team. Include yourself and anyone different from your own

profession (not an APRN). Examples (not all inclusive): physician, nurse (LPN/RN), pharmacist, physical therapist, nutritionist, social worker, clergy

2–3

4–5

More than 5

2. How long have you worked in an interprofessional team with members other than APRNs?

   Less than 1 year

   More than 1 year but less than 5 years

   5–10 years

   More than 10 years

3. What age group are you in?

   20–24

   25–35

   36–45

   46–55

   56–65

   Over 65

4. What gender do you most identify with?

   Female

   Male

   Other Gender

   Prefer not to answer (unspecified)

5. Do you consider yourself to be Hispanic/Latino?

   YES

   NO

6. In addition, select one or more of the following racial categories to describe yourself.

   American Indian or Alaska Native

   Asian

   Black or African American

   Hispanic or Latino

   Native Hawaiian or Other Pacific Islander

   White

7. How many years have you worked as an APRN ?

   1–5 years

   6–10 years

   11–15 years

   16–20 years

   21–30 years

   More than 30 years

8. What state do you primarily practice in as an APRN? (Pick one from drop down list)

9. Thinking about your work setting: Identify the type of setting where you primarily practice.

   Department of Veterans Affairs (VA) healthcare facility/clinic

   public or private acute care hospital (inpatient unit, ED)

   long-term care facility (rehab hospital, psychiatric facility, nursing home, other)

   clinic (primary, specialty, or urgent care)

   other (e.g., birthing center, surgery center)

10. Thinking about your work setting, is your organization's practice authority at the same level as your state practice authority? (An example of an organization that is not at the same level as the state: My state has full practice authority, but my organization requires a collaborative agreement, physician signatures, or supervision by physician, DO, dentist, or chiropractor.)

    YES, my organization's practice authority is at the same level as state practice authority.

    NO, my organization's practice authority is not at the same level as my state practice authority.

    NOT SURE

Thank You for Your Participation

APPENDIX F

ORIGINAL INSTRUMENTS FOR MEASURES

F1. TeamSTEPPS T-TPQ® for Office-Based Care Version (AHRQ, 2015)

TeamSTEPPS® for Office-Based Care

TeamSTEPPS Teamwork Perceptions Questionnaire (T-TPQ)

Instructions: Please complete the following questionnaire by placing a checkmark [√] in the box that corresponds to your level of agreement from *Strongly Agree* to *Strongly Disagree*. Please answer every question, and select only one response for each question.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Team Structure						
1.	The skills of staff overlap sufficiently so that work can be shared when necessary.					
2.	Staff are held accountable for their actions.					
3.	Staff within my office share information that enables timely decisionmaking by the direct patient care team.					
4.	My team makes efficient use of resources (e.g., staff supplies, equipment, information).					
5.	Staff understand their roles and responsibilities.					
6.	My team has clearly articulated goals.					
7.	My team operates at a high level of efficiency.					
Leadership						
8.	My supervisor/manager considers staff input when making decisions about patient care.					
9.	My supervisor/manager provides opportunities to discuss the team's performance after an event.					
10.	My supervisor/manager takes time to meet with staff to develop a plan for patient care.					
11.	My supervisor/manager ensures that adequate resources (e.g., staff, supplies, equipment, information) are available.					
12.	My supervisor/manager resolves conflicts successfully.					
13.	My supervisor/manager models appropriate team behavior.					
14.	My supervisor/manager ensures that staff are aware of any situations or changes that may affect patient care.					

PLEASE CONTINUE TO THE NEXT PAGE

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Situation Monitoring						
15.	Staff effectively anticipate each other's needs.					
16.	Staff monitor each other's performance.					
17.	Staff exchange relevant information as it becomes available.					
18.	Staff continuously scan the environment for important information.					
19.	Staff share information regarding potential complications (e.g., patient changes, bed availability).					
20.	Staff meet to reevaluate patient care goals when aspects of the situation have changed.					
21.	Staff correct each other's mistakes to ensure that procedures are followed properly.					
Mutual Support						
22.	Staff assist fellow staff during high workload.					
23.	Staff request assistance from fellow staff when they feel overwhelmed.					
24.	Staff caution each other about potentially dangerous situations.					
25.	Feedback between staff is delivered in a way that promotes positive interactions and future change.					
26.	Staff advocate for patients even when their opinion conflicts with that of a senior member of the office.					
27.	When staff have a concern about patient safety, they challenge others until they are sure the concern has been heard.					
28.	Staff resolve their conflicts, even when the conflicts have become personal.					

PLEASE CONTINUE TO THE NEXT PAGE

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Communication						
29.	Information regarding patient care is explained to patients and their families in lay terms.					
30.	Staff relay relevant information in a timely manner.					
31.	When communicating with patients, staff allow enough time for questions.					
32.	Staff use common terminology when communicating with each other.					
33.	Staff verbally verify information that they receive from one another.					
34.	Staff follow a standardized method of sharing information when handing off patients.					
35.	Staff seek information from all available sources.					

Thank you for your participation!

Figure F1. TeamSTEPPS® Teamwork Perceptions Questionnaire.

American Institutes for Research (2010). TeamSTEPPS® Teamwork Perceptions Questionnaire (T-TPQ®) [Measurement instrument]. Published instrument. Retrieved from http://teamstepps.ahrq.gov/teamwork_perception_questionnaire.pdf

F2. Dempster Practice Behavior Scale

Please CAREFULLY read and think about EACH statement below.

For each statement, mark the response that BEST indicates how TRUE that statement is for you.

IN MY PRACTICE I . . .	NOT AT ALL TRUE 1	SLIGHTLY TRUE 2	MODERATELY TRUE 3	VERY TRUE 4	EXTREMELY TRUE 5
1 . . . take responsibility and am accountable for my actions.					
2 . . . have developed the image of myself as an independent professional.					
3 . . . base my actions on the full scope of my knowledge and ability.					
4 . . . self-determine my role and activities.					
5 . . . derive satisfaction from what I do.					
6 . . . take control over my environment and situations I confront.					
7 . . . am valued for my independent actions.					
8 . . . am constrained by bureaucratic limitations.					
9 . . . provide quality services through my actions.					
10 . . . am confident in my abilities to perform my role independently.					
11 . . . have been professionally socialized to take independent action.					
12 . . . function with the authority to do what I know should be done.					
13 . . . have too many routine tasks to exercise independent action.					
14 . . . have a sense of professionalism.					
15 . . . have the rights and privileges I deserve.					
16 . . . have the professional experience needed for independent action.					
17 . . . am restrained in what I can do because I am powerless.					
18 . . . collaborate with others outside my field when I feel there is a need.					
19 . . . derive feelings of self-respect and esteem from what I do.					
20 . . . make my own decisions related to what I do.					
21 . . . possess ownership of my practice; that is, my role belongs to me.					
22 . . . have the power to influence decisions and actions of others.					
23 . . . have a sense of self-achievement.					
24 . . . am provided with a legal basis for independent functioning.					
25 . . . demonstrate mastery of skills essential for freedom of action.					
26 . . . have my activities and actions programmed by others.					
27 . . . have the respect of those in other disciplines.					
28 . . . cannot optimally function because I do not have legal status.					
29 . . . establish the parameters and limits of my practice activities.					
30 . . . accept the consequences for the choices I make.					

Figure F2. Dempster Practice Behaviors Scale.

Dempster, J. S. (2009). Dempster Practice Behaviors Scale [Measurement instrument]. Unpublished instrument. Phoenix, AZ. Used with permission from the author.

F3. Hall's Professional Scale (Hampton & Hampton, 2000)

Table 3
PROFESSIONALISM

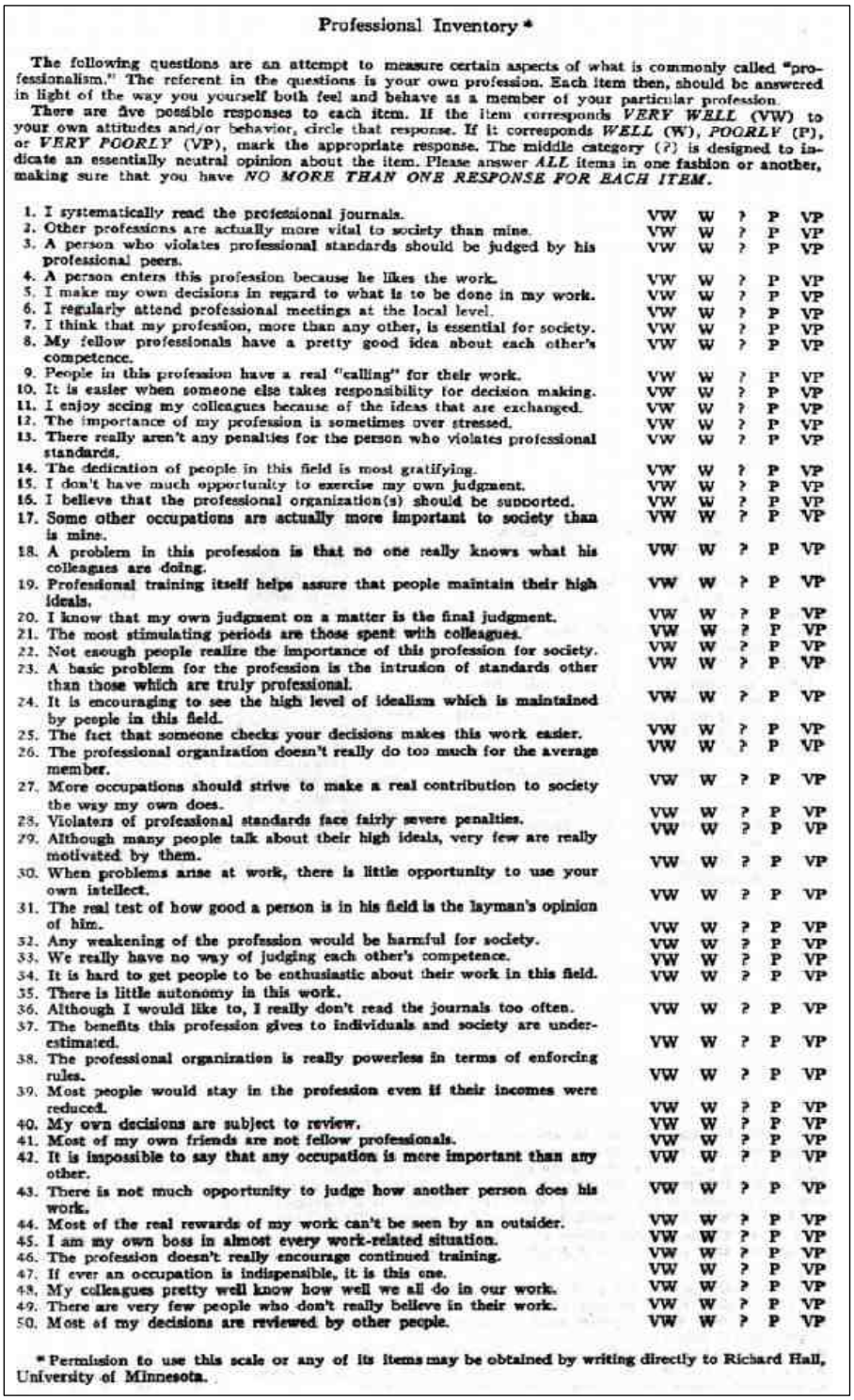
Statement or Item for Professionalism*	Mean	Standard Deviation	Coefficient Alpha
Belief In Public Service Factor	**2.01**	**.92**	**.74**
1. I feel midwifery is essential to society.	1.51	.96	
2. I feel a real calling to our profession.	1.84	1.16	
3. The benefits we midwives give to society are understated.	1.76	1.13	
4. Midwifery is an indispensable occupation.	1.97	1.39	
5. If ever an occupation is indispensable, it is midwifery.	2.97	1.91	
Sense of Calling To Midwifery Factor	**2.36**	**.84**	**.71**
1. It encourages me to see the high level of idealism maintained by people in midwifery.	2.58	1.40	
2. Midwifery associations do a great deal for me.**	3.13	1.83	
3. The dedication of people in midwifery is gratifying.	2.26	1.09	
4. I believe professional midwifery associations should be supported.	1.83	1.02	
5. In midwifery, people believe in their work.	1.95	.82	
Professional Association As Referent Factor	**2.99**	**1.34**	**.69**
1. I systematically read the midwifery professional publications.	2.91	1.55	
2. I try to attend midwifery conferences at least annually.	2.92	1.84	
3. I try to read midwifery journals often.**	3.18	1.76	
Autonomy Factor	**3.19**	**.94**	**.66**
1. I make my own decisions regarding my work.	2.30	1.19	
2. I have opportunities to exercise my own judgement.**	2.12	1.31	
3. My decisions are not subject to review.**	5.19	1.49	
4. My enthusiasm for midwifery is easy to maintain since there is much autonomy.**	2.57	1.54	
5. Most of my decisions are not reviewed.**	3.71	1.72	
Belief In Self-Regulation Factor	**3.35**	**1.12**	**.80**
1. I have ample opportunity to judge how other midwives do their jobs.	3.90	1.73	
2. I have a good idea how well others do their job.	3.40	1.46	
3. We midwives have a good idea about each other's competence.	3.47	1.46	
4. We midwives have ways to judge each other's competence.**	2.81	1.39	
5. Midwives know what colleagues are doing.**	3.16	1.45	

* Items were measured on a 7-point Likert scale where 1 = strongly agree and 7 = strongly disagree.
** Items were worded negatively in the questionnaire, but were reworded and re-coded for presentation and analysis.

222 JOURNAL OF THE AMERICAN ACADEMY OF NURSE PRACTITIONERS

Figure F3. Professionalism Scale.
Hampton, D. L., & Hampton, G. M. (2000, June). Professionalism and the nurse-midwife practitioner: An exploratory study. *Journal of the American Academy of Nurse Practitioners, 12*(6), 218–225. Permission for use of figure is granted by John Wiley and Sons.

F4. Hall's Professional Scale (Snizek, 1972)



Professional Inventory *

The following questions are an attempt to measure certain aspects of what is commonly called "professionalism." The referent in the questions is your own profession. Each item then, should be answered in light of the way you yourself both feel and behave as a member of your particular profession.

There are five possible responses to each item. If the item corresponds *VERY WELL* (VW) to your own attitudes and/or behavior, circle that response. If it corresponds *WELL* (W), *POORLY* (P), or *VERY POORLY* (VP), mark the appropriate response. The middle category (?) is designed to indicate an essentially neutral opinion about the item. Please answer *ALL* items in one fashion or another, making sure that you have *NO MORE THAN ONE RESPONSE FOR EACH ITEM.*

1. I systematically read the professional journals.	VW	W	?	P	VP
2. Other professions are actually more vital to society than mine.	VW	W	?	P	VP
3. A person who violates professional standards should be judged by his professional peers.	VW	W	?	P	VP
4. A person enters this profession because he likes the work.	VW	W	?	P	VP
5. I make my own decisions in regard to what is to be done in my work.	VW	W	?	P	VP
6. I regularly attend professional meetings at the local level.	VW	W	?	P	VP
7. I think that my profession, more than any other, is essential for society.	VW	W	?	P	VP
8. My fellow professionals have a pretty good idea about each other's competence.	VW	W	?	P	VP
9. People in this profession have a real "calling" for their work.	VW	W	?	P	VP
10. It is easier when someone else takes responsibility for decision making.	VW	W	?	P	VP
11. I enjoy seeing my colleagues because of the ideas that are exchanged.	VW	W	?	P	VP
12. The importance of my profession is sometimes over stressed.	VW	W	?	P	VP
13. There really aren't any penalties for the person who violates professional standards.	VW	W	?	P	VP
14. The dedication of people in this field is most gratifying.	VW	W	?	P	VP
15. I don't have much opportunity to exercise my own judgment.	VW	W	?	P	VP
16. I believe that the professional organization(s) should be supported.	VW	W	?	P	VP
17. Some other occupations are actually more important to society than is mine.	VW	W	?	P	VP
18. A problem in this profession is that no one really knows what his colleagues are doing.	VW	W	?	P	VP
19. Professional training itself helps assure that people maintain their high ideals.	VW	W	?	P	VP
20. I know that my own judgment on a matter is the final judgment.	VW	W	?	P	VP
21. The most stimulating periods are those spent with colleagues.	VW	W	?	P	VP
22. Not enough people realize the importance of this profession for society.	VW	W	?	P	VP
23. A basic problem for the profession is the intrusion of standards other than those which are truly professional.	VW	W	?	P	VP
24. It is encouraging to see the high level of idealism which is maintained by people in this field.	VW	W	?	P	VP
25. The fact that someone checks your decisions makes this work easier.	VW	W	?	P	VP
26. The professional organization doesn't really do too much for the average member.	VW	W	?	P	VP
27. More occupations should strive to make a real contribution to society the way my own does.	VW	W	?	P	VP
28. Violaters of professional standards face fairly severe penalties.	VW	W	?	P	VP
29. Although many people talk about their high ideals, very few are really motivated by them.	VW	W	?	P	VP
30. When problems arise at work, there is little opportunity to use your own intellect.	VW	W	?	P	VP
31. The real test of how good a person is in his field is the layman's opinion of him.	VW	W	?	P	VP
32. Any weakening of the profession would be harmful for society.	VW	W	?	P	VP
33. We really have no way of judging each other's competence.	VW	W	?	P	VP
34. It is hard to get people to be enthusiastic about their work in this field.	VW	W	?	P	VP
35. There is little autonomy in this work.	VW	W	?	P	VP
36. Although I would like to, I really don't read the journals too often.	VW	W	?	P	VP
37. The benefits this profession gives to individuals and society are underestimated.	VW	W	?	P	VP
38. The professional organization is really powerless in terms of enforcing rules.	VW	W	?	P	VP
39. Most people would stay in the profession even if their incomes were reduced.	VW	W	?	P	VP
40. My own decisions are subject to review.	VW	W	?	P	VP
41. Most of my own friends are not fellow professionals.	VW	W	?	P	VP
42. It is impossible to say that any occupation is more important than any other.	VW	W	?	P	VP
43. There is not much opportunity to judge how another person does his work.	VW	W	?	P	VP
44. Most of the real rewards of my work can't be seen by an outsider.	VW	W	?	P	VP
45. I am my own boss in almost every work-related situation.	VW	W	?	P	VP
46. The profession doesn't really encourage continued training.	VW	W	?	P	VP
47. If ever an occupation is indispensible, it is this one.	VW	W	?	P	VP
48. My colleagues pretty well know how well we all do in our work.	VW	W	?	P	VP
49. There are very few people who don't really believe in their work.	VW	W	?	P	VP
50. Most of my decisions are reviewed by other people.	VW	W	?	P	VP

* Permission to use this scale or any of its items may be obtained by writing directly to Richard Hall, University of Minnesota.

Figure F4. The Professionalism Scale.

Snizek, W. E. (1972, February). Hall's professionalism Scale: An empirical reassessment. *American Psychological Review*, *37*, 109–114. Permission to use figure has been granted by Sage Publications.

APPENDIX G

MODIFICATION DETAILS FOR HALL'S PROFESSIONALISM SCALE

Hall's Professionalism Scale Modification Details for use with APRNs

Belief in Public Service Factor

1. I feel my APRN profession is essential to society. (Replaced the word *midwifery* with the word *APRN.*)

2. I feel a real calling to my APRN profession. (Replaced *our* with *my APRN.*)

3. The benefits my APRN professionals give to society are understated. (Replaced the phrase *we midwives* with *my APRN professionals.*)

4. My APRN profession is an indispensable occupation. (Replaced the word *midwifery* with the phrase *my APRN profession.*)

5. If ever an occupation is indispensable, it is mine. (Replaced the word *midwifery* with the word *mine.*)

Sense of Calling to the Profession Factor (replaced the word *midwifery* with the phrase *the profession.*)

1. It encourages me to see the high level of idealism maintained by people in my APRN profession. (Replaced the word *midwifery* with the phrase *my profession.*)

2. *My APRN association does not do a great deal for me.* (Restated negatively, replaced the word *does* with the phrase *does not do,* replaced the phrase *midwifery associations* with the phrase *my APRN association.*)

3. The dedication of people in my APRN profession is gratifying. (Replaced word *midwifery* with the phrase *my APRN profession.*)

4. I believe professional APRN associations should be supported. (Replaced word *midwifery* with the word *APRN.*)

5. In my APRN profession, people believe in their work. (Replaced word *midwifery* with the phrase *my APRN profession.*)

Professional Association as Referent Factor

1. I systematically read my APRN professional publications. (Replaced word *midwifery* with the phrase *my APRN.*)

2. I try to attend my APRN conferences at least annually. (Replaced word *midwifery* with the phrase *my APRN professional.*)

3. *Although I try, I do not read APRN journals often* (Restated negatively, added the word *although* and replaced word *midwifery* with the word *APRN.*)

Autonomy Factor

1. I make my own decisions regarding my work.

2. *I do not have opportunities to exercise my own judgment.* (Restated negatively, added the word *not.*)

3. *My decisions are subject to review.* (Restated negatively, removed the word *not.*)

4. *My enthusiasm for my APRN profession is not easy to maintain since there is not much autonomy.* (Restated negatively, added the word *not,* replaced word *midwifery* with the phrase *my APRN profession.*)

5. *Most of my decisions are reviewed.* (Restated negatively, removed the word *not.*)

Belief in Self-Regulation Factor

1. I have ample opportunity to judge how other APRNs in my profession do their jobs. (Replaced the word *midwives* with the phrase *APRNs in my profession.*)

2. I have a good idea how well others do their job.

3. We APRNs have a good idea about each other's competence. (Replaced the word *midwives* with the word *APRNs.*)

4. *We APRNs do not have ways to judge each other's competence.* (Restated negatively, added the word *not,* replaced the word *midwives* with the word *APRNs.*)

5. *APRNs do not know what APRN colleagues are doing*. (Restated negatively, added the word *not,* replaced the word *midwives* with the word *APRNs,* and added the word *APRN.*)

Italicized items have been negatively worded (Hampton & Hampton, 2000; Snizek, 1972).

Hampton, D. L., & Hampton, G. M. (2000, June). Professionalism and the nurse-midwife practitioner: An exploratory study. *Journal of the American Academy of Nurse Practitioners, 12*(6), 218–225.

Snizek, W. E. (1972, February). Hall's professionalism Scale: An empirical reassessment. *American Psychological Review, 37*, 109–114.

APPENDIX H

STATE APRN PRACTICE AUTHORITY CROSS-REFERENCE TABLE

Table H1.
Cross-Reference Table of State Practice Authority Levels by State and APRN Type

State name	State#	APRN	APRN#	Key	Authority
Alabama	1	CNM	1	11	2
Alabama	1	CNP	2	12	2
Alabama	1	CNS	3	13	1
Alabama	1	CRNA	4	14	1
Alaska	2	CNM	1	21	3
Alaska	2	CNP	2	22	3
Alaska	2	CNS	3	23	3
Alaska	2	CRNA	4	24	3
Arizona	3	CNM	1	31	3
Arizona	3	CNP	2	32	3
Arizona	3	CNS	3	33	2
Arizona	3	CRNA	4	34	1
Arkansas	4	CNM	1	41	2
Arkansas	4	CNP	2	42	2
Arkansas	4	CNS	3	43	2
Arkansas	4	CRNA	4	44	2
California	5	CNM	1	51	2
California	5	CNP	2	52	2
California	5	CNS	3	53	0
California	5	CRNA	4	54	1
Colorado	6	CNM	1	61	3
Colorado	6	CNP	2	62	3
Colorado	6	CNS	3	63	3
Colorado	6	CRNA	4	64	3
Connecticut	7	CNM	1	71	3
Connecticut	7	CNP	2	72	3
Connecticut	7	CNS	3	73	3
Connecticut	7	CRNA	4	74	3
Delaware	8	CNM	1	81	3
Delaware	8	CNP	2	82	3
Delaware	8	CNS	3	83	3
Delaware	8	CRNA	4	84	3
District of Columbia	9	CNM	1	91	3
District of Columbia	9	CNP	2	92	3
District of Columbia	9	CNS	3	93	3
District of Columbia	9	CRNA	4	94	3
Florida	10	CNM	1	101	2
Florida	10	CNP	2	102	2
Florida	10	CNS	3	103	0
Florida	10	CRNA	4	104	2
Georgia	11	CNM	1	111	2
Georgia	11	CNP	2	112	2
Georgia	11	CNS	3	113	2
Georgia	11	CRNA	4	114	1
Hawaii	12	CNM	1	121	3
Hawaii	12	CNP	2	122	3
Hawaii	12	CNS	3	123	3
Hawaii	12	CRNA	4	124	3
Idaho	13	CNM	1	131	3

(continues)

APRN_ID	APRN name
1	CNM
2	CNP
3	CNS
4	CRNA

Table H1 (cont.)

State name	State#	APRN	APRN#	Key	Authority
Idaho	13	CNP	2	132	3
Idaho	13	CNS	3	133	3
Idaho	13	CRNA	4	134	3
Illinois	14	CNM	1	141	2
Illinois	14	CNP	2	142	2
Illinois	14	CNS	3	143	2
Illinois	14	CRNA	4	144	2
Indiana	15	CNM	1	151	2
Indiana	15	CNP	2	152	2
Indiana	15	CNS	3	153	2
Indiana	15	CRNA	4	154	1
Iowa	16	CNM	1	161	3
Iowa	16	CNP	2	162	3
Iowa	16	CNS	3	163	3
Iowa	16	CRNA	4	164	3
Kansas	17	CNM	1	171	2
Kansas	17	CNP	2	172	2
Kansas	17	CNS	3	173	2
Kansas	17	CRNA	4	174	1
Kentucky	18	CNM	1	181	2
Kentucky	18	CNP	2	182	2
Kentucky	18	CNS	3	183	2
Kentucky	18	CRNA	4	184	2
Louisiana	19	CNM	1	191	2
Louisiana	19	CNP	2	192	2
Louisiana	19	CNS	3	193	2
Louisiana	19	CRNA	4	194	1
Maine	20	CNM	1	201	3
Maine	20	CNP	2	202	3
Maine	20	CNS	3	203	3
Maine	20	CRNA	4	204	1
Maryland	21	CNM	1	211	3
Maryland	21	CNP	2	212	3
Maryland	21	CNS	3	213	1
Maryland	21	CRNA	4	214	1
Massachusetts	22	CNM	1	221	3
Massachusetts	22	CNP	2	222	2
Massachusetts	22	CNS	3	223	2
Massachusetts	22	CRNA	4	224	1
Michigan	23	CNM	1	231	0
Michigan	23	CNP	2	232	0
Michigan	23	CNS	3	233	0
Michigan	23	CRNA	4	234	0
Minnesota	24	CNM	1	241	3
Minnesota	24	CNP	2	242	3
Minnesota	24	CNS	3	243	3
Minnesota	24	CRNA	4	244	3
Mississippi	25	CNM	1	251	2
Mississippi	25	CNP	2	252	2
Mississippi	25	CNS	3	253	0
Mississippi	25	CRNA	4	254	1
Missouri	26	CNM	1	261	2
Missouri	26	CNP	2	262	2
Missouri	26	CNS	3	263	2
Missouri	26	CRNA	4	264	2
Montana	27	CNM	1	271	3
Montana	27	CNP	2	272	3
Montana	27	CNS	3	273	3
Montana	27	CRNA	4	274	3

(continues)

Table H1 (cont.)

State name	State#	APRN	APRN#	Key	Authority
Nebraska	28	CNM	1	281	2
Nebraska	28	CNP	2	282	3
Nebraska	28	CNS	3	283	1
Nebraska	28	CRNA	4	284	3
Nevada	29	CNM	1	291	3
Nevada	29	CNP	2	292	3
Nevada	29	CNS	3	293	3
Nevada	29	CRNA	4	294	3
New Hampshire	30	CNM	1	301	3
New Hampshire	30	CNP	2	302	3
New Hampshire	30	CNS	3	303	0
New Hampshire	30	CRNA	4	304	3
New Jersey	31	CNM	1	311	2
New Jersey	31	CNP	2	312	2
New Jersey	31	CNS	3	313	2
New Jersey	31	CRNA	4	314	1
New Mexico	32	CNM	1	321	3
New Mexico	32	CNP	2	322	3
New Mexico	32	CNS	3	323	3
New Mexico	32	CRNA	4	324	3
New York	33	CNM	1	331	2
New York	33	CNP	2	332	0
New York	33	CNS	3	333	0
New York	33	CRNA	4	334	0
North Carolina	34	CNM	1	341	2
North Carolina	34	CNP	2	342	2
North Carolina	34	CNS	3	343	1
North Carolina	34	CRNA	4	344	1
North Dakota	35	CNM	1	351	3
North Dakota	35	CNP	2	352	3
North Dakota	35	CNS	3	353	3
North Dakota	35	CRNA	4	354	3
Ohio	36	CNM	1	361	2
Ohio	36	CNP	2	362	2
Ohio	36	CNS	3	363	2
Ohio	36	CRNA	4	364	1
Oklahoma	37	CNM	1	371	1
Oklahoma	37	CNP	2	372	1
Oklahoma	37	CNS	3	373	1
Oklahoma	37	CRNA	4	374	1
Oregon	38	CNM	1	381	3
Oregon	38	CNP	2	382	3
Oregon	38	CNS	3	383	3
Oregon	38	CRNA	4	384	3
Pennsylvania	39	CNM	1	391	0
Pennsylvania	39	CNP	2	392	2
Pennsylvania	39	CNS	3	393	0
Pennsylvania	39	CRNA	4	394	0
Rhode Island	40	CNM	1	401	3
Rhode Island	40	CNP	2	402	3
Rhode Island	40	CNS	3	403	3
Rhode Island	40	CRNA	4	404	3
South Carolina	41	CNM	1	411	2
South Carolina	41	CNP	2	412	2
South Carolina	41	CNS	3	413	2
South Carolina	41	CRNA	4	414	2
South Dakota	42	CNM	1	421	3
South Dakota	42	CNP	2	422	3
South Dakota	42	CNS	3	423	1

(continues)

Table H1 (cont.)

State name	State#	APRN	APRN#	Key	Authority
South Dakota	42	CRNA	4	424	1
Tennessee	43	CNM	1	431	2
Tennessee	43	CNP	2	432	2
Tennessee	43	CNS	3	433	2
Tennessee	43	CRNA	4	434	2
Texas	44	CNM	1	441	2
Texas	44	CNP	2	442	2
Texas	44	CNS	3	443	2
Texas	44	CRNA	4	444	2
Utah	45	CNM	1	451	3
Utah	45	CNP	2	452	3
Utah	45	CNS	3	453	3
Utah	45	CRNA	4	454	3
Vermont	46	CNM	1	461	3
Vermont	46	CNP	2	462	3
Vermont	46	CNS	3	463	3
Vermont	46	CRNA	4	464	3
Virginia	47	CNM	1	471	1
Virginia	47	CNP	2	472	1
Virginia	47	CNS	3	473	0
Virginia	47	CRNA	4	474	3
Washington	48	CNM	1	481	3
Washington	48	CNP	2	482	3
Washington	48	CNS	3	483	3
Washington	48	CRNA	4	484	3
West Virginia	49	CNM	1	491	3
West Virginia	49	CNP	2	492	3
West Virginia	49	CNS	3	493	3
West Virginia	49	CRNA	4	494	3
Wisconsin	50	CNM	1	501	2
Wisconsin	50	CNP	2	502	2
Wisconsin	50	CNS	3	503	2
Wisconsin	50	CRNA	4	504	2
Wyoming	51	CNM	1	511	3
Wyoming	51	CNP	2	512	3
Wyoming	51	CNS	3	513	3
Wyoming	51	CRNA	4	514	3

APPENDIX I

DESCRIPTIVES

Table I1.
Inclusion/Exclusion Frequencies for Study Participants

	APRN type	Worked with IPT	Worked as APRN	State identified
N valid	401	401	401	222
N missing	1	1	1	180

Table I2.
Frequencies

Descriptor	Valid	Missing
APRN type	222	0
IPT member tenure	220	2
IPT member count	222	0
Age group	222	0
Gender	222	0
Ethnicity	220	2
American Indian or Alaska Native	222	0
Asian	222	0
Black or African American	222	0
Native Hawaiian or Other Pacific Islander	222	0
White	222	0
APRN practice tenure	221	1
Work setting	220	2
State authority level	222	0
State authority collapsed	222	0
StateAuth_Collapsed_3	222	0

Table I3.
Descriptives Frequency Table

	Frequency	Percent	Valid percent	Cumulative percent
APRN type				
1 CNM	40	18.0	18.0	18.0
2 CNP	131	59.0	59.0	77.0
3 CNS	40	18.0	18.0	95.0
4 CRNA	11	5.0	5.0	100.0
Total	222	100.0	100.0	
IPT member tenure				
1 Less than 1 year	4	1.8	1.8	1.8
2 1 year or more, but less than 5 years	32	14.4	14.5	16.4
3 5–10 years	53	23.9	24.1	40.5
4 More than 10 years	131	59.0	59.5	100.0
Total	220	99.1	100.0	
Missing System	2	0.9		
Total	222	100.0		
IPT member count				
1 2–3	40	18.0	18.0	18.0
2 4–5	89	40.1	40.1	58.1
3 More than 5	93	41.9	41.9	100.0
Total	222	100.0	100.0	
Age group				
2 25–35	20	9.0	9.0	9.0
3 36–45	46	20.7	20.7	29.7
4 46–55	56	25.2	25.2	55.0
5 56–65	84	37.8	37.8	92.8
6 Over 65	16	7.2	7.2	100.0
Total	222	100.0	100.0	
Gender				
1 Female	200	90.1	90.1	90.1
2 Male	22	9.9	9.9	100.0
Total	222	100.0	100.0	
Ethnicity				
0 No (not Latino)	217	97.7	98.6	98.6
1 Yes (Latino)	3	1.4	1.4	100.0
Total	220	99.1	100.0	
Missing System	2	0.9		
Total	222	100.0		
American Indian or Alaska Native				
0	222	100.0	100.0	100.0
Asian				
0	220	99.1	99.1	99.1
1	2	0.9	0.9	100.0
Total	222	100.0	100.0	
Black or African American				
0	212	95.5	95.5	95.5
1	10	4.5	4.5	100.0
Total	222	100.0	100.0	
Native Hawaiian or other Pacific Islander				
0	222	100.0	100.0	100.0
White				
0	14	6.3	6.3	6.3
1	208	93.7	93.7	100.0
Total	222	100.0	100.0	

(continues)

Table I3 (cont.)

	Frequency	Percent	Valid percent	Cumulative percent
APRN practice tenure				
1 1–5	38	17.1	17.2	17.2
2 6–10	47	21.2	21.3	38.5
3 11–15	30	13.5	13.6	52.0
4 16–20	39	17.6	17.6	69.7
5 21–30	44	19.8	19.9	89.6
6 More than 30 years	23	10.4	10.4	100.0
Total	221	99.5	100.0	
Missing System	1	0.5		
Total	222	100.0		
Work setting				
1 Dept of VA	3	1.4	1.4	1.4
2 public or private acute care hospital	91	41.0	41.4	42.7
3 LTC facility	7	3.2	3.2	45.9
4 clinic	108	48.6	49.1	95.0
5 other	11	5.0	5.0	100.0
Total	220	99.1	100.0	
Missing System	2	0.9		
Total	222	100.0		
State authority level				
0 not identified or not specified	24	10.8	10.8	10.8
1 Restricted	13	5.9	5.9	16.7
2 Reduced	115	51.8	51.8	68.5
3 Full	70	31.5	31.5	100.0
Total	222	100.0	100.0	
StateAuth_Collapsed_3				
1 Restricted	37	16.7	16.7	16.7
2 Reduced	115	51.8	51.8	68.5
3 Full	70	31.5	31.5	100.0
Total	222	100.0	100.0	

Table I4.
Comparison of Means

				Std.	Std.	95% confidence interval for mean			
		N	Mean	deviation	error	Lower bound	Upper bound	Minimum	Maximum
T-TPQ mean score	1 CNM	40	2.05	.533	.084	1.88	2.23	1	3
	2 CNP	131	2.17	.517	.045	2.08	2.26	1	4
	3 CNS	40	2.19	.456	.072	2.05	2.34	1	3
	4 CRNA	11	1.96	.465	.140	1.65	2.27	1	3
	Total	222	2.14	.508	.034	2.08	2.21	1	4
DPBS mean score	1 CNM	40	4.17	.544	.086	4.00	4.35	2	5
	2 CNP	130	4.19	.437	.038	4.11	4.26	3	5
	3 CNS	40	4.11	.515	.081	3.94	4.27	3	5
	4 CRNA	11	4.16	.391	.118	3.90	4.43	4	5
	Total	221	4.17	.468	.032	4.11	4.23	2	5
Professionalism scale mean score	1 CNM	40	2.51	.459	.072	2.37	2.66	2	4
	2 CNP	130	2.67	.515	.045	2.58	2.75	1	4
	3 CNS	40	2.75	.597	.094	2.56	2.94	2	4
	4 CRNA	11	2.69	.488	.147	2.36	3.02	2	3
	Total	221	2.65	.522	.035	2.59	2.72	1	4

Table I5.
Test of Homogeneity of Variances

		Levene's statistic	df1	df2	Sig.
T-TPQ mean score	Based on mean	0.135	3	218	.939
	Based on median	0.137	3	218	.938
	Based on median and with adjusted *df*	0.137	3	212.241	.938
	Based on trimmed mean	0.132	3	218	.941
DPBS mean score	Based on mean	0.966	3	217	.410
	Based on median	0.971	3	217	.407
	Based on median and with adjusted *df*	0.971	3	199.835	.407
	Based on trimmed mean	0.972	3	217	.407
Professionalism scale mean score	Based on mean	1.401	3	217	.243
	Based on median	1.437	3	217	.233
	Based on median and with adjusted *df*	1.437	3	214.492	.233
	Based on trimmed mean	1.475	3	217	.222

Table I6.
ANOVA

		Sum of squares	*df*	Mean square	*F*	Sig.
T-TPQ mean score	Between groups	0.895	3	.298	1.161	.326
	Within groups	56.040	218	.257		
	Total	56.936	221			
DPBS mean score	Between groups	0.186	3	.062	0.280	.840
	Within groups	48.080	217	.222		
	Total	48.267	220			
Professionalism scale mean score	Between groups	1.224	3	.408	1.508	.213
	Within groups	58.694	217	.270		
	Total	59.918	220			

Table I7.
Multiple Comparisons of Mean Scores

Dependent variable		(I) APRN type	(J) APRN type	Mean difference (I − J)	Std. error	Sig.	95% confidence interval Lower bound	95% confidence interval Upper bound
T-TPQ mean score	Tukey HSD	1 CNM	2 CNP	−.119	.092	.565	−.36	.12
			3 CNS	−.138	.113	.618	−.43	.16
			4 CRNA	.094	.173	.949	−.35	.54
		2 CNP	1 CNM	.119	.092	.565	−.12	.36
			3 CNS	−.019	.092	.997	−.26	.22
			4 CRNA	.212	.159	.542	−.20	.62
		3 CNS	1 CNM	.138	.113	.618	−.16	.43
			2 CNP	.019	.092	.997	−.22	.26
			4 CRNA	.231	.173	.539	−.22	.68
		4 CRNA	1 CNM	−.094	.173	.949	−.54	.35
			2 CNP	−.212	.159	.542	−.62	.20
			3 CNS	−.231	.173	.539	−.68	.22
DPBS mean score	Tukey HSD	1 CNM	2 CNP	−.015	.085	.998	−.24	.21
			3 CNS	.063	.105	.934	−.21	.34
			4 CRNA	.009	.160	1.000	−.41	.42
		2 CNP	1 CNM	.015	.085	.998	−.21	.24
			3 CNS	.078	.085	.797	−.14	.30
			4 CRNA	.024	.148	.998	−.36	.41
		3 CNS	1 CNM	−.063	.105	.934	−.34	.21
			2 CNP	−.078	.085	.797	−.30	.14
			4 CRNA	−.054	.160	.987	−.47	.36
		4 CRNA	1 CNM	−.009	.160	1.000	−.42	.41
			2 CNP	−.024	.148	.998	−.41	.36
			3 CNS	.054	.160	.987	−.36	.47
Professionalism scale mean score	Tukey HSD	1 CNM	2 CNP	−.154	.094	.361	−.40	.09
			3 CNS	−.240	.116	.169	−.54	.06
			4 CRNA	−.180	.177	.740	−.64	.28
		2 CNP	1 CNM	.154	.094	.361	−.09	.40
			3 CNS	−.086	.094	.797	−.33	.16
			4 CRNA	−.026	.163	.999	−.45	.40
		3 CNS	1 CNM	.240	.116	.169	−.06	.54
			2 CNP	.086	.094	.797	−.16	.33
			4 CRNA	.060	.177	.987	−.40	.52
		4 CRNA	1 CNM	.180	.177	.740	−.28	.64
			2 CNP	.026	.163	.999	−.40	.45
			3 CNS	−.060	.177	.987	−.52	.40

Table I8.
Collinearity Regression

Model	Unstandardized coefficients *B*	Unstandardized coefficients Std. error	Standardized coefficients *Beta*	*t*	Sig.	95.0% confidence interval for *B* Lower bound	95.0% confidence interval for *B* Upper bound	Correlations Zero-order	Correlations Partial	Correlations Part	Collinearity statistics Tolerance	Collinearity statistics VIF
(Constant)	3.058	.431		7.088	.000	2.208	3.908					
Autonomy	−0.398	.074	−.367	−5.373	.000	−0.544	−0.252	−.427	−.343	−.323	.773	1.293
Professionalism	0.174	.066	.178	2.638	.009	0.044	0.303	.332	.177	.159	.791	1.264
State practice authority	0.124	.067	.113	1.850	.066	−0.008	0.255	.022	.125	.111	.963	1.039

a. Dependent Variable: T-TPQ Mean Score

APPENDIX J

PRELIMINARY DATA ANALYSIS

J1. TeamSTEPPS T-TPQ® Plots and Histogram

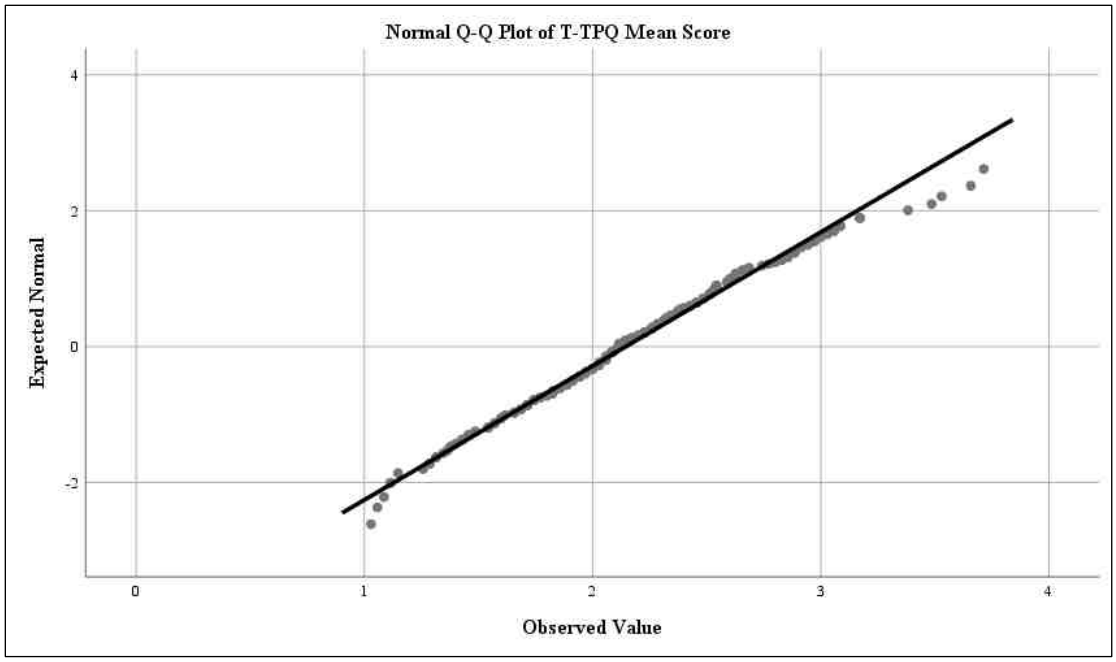


Figure J1.1. Q-Q plot of distribution of T-TPQ mean scores. Score range 1-5. Lower T-TPQ scores = higher IPT function.

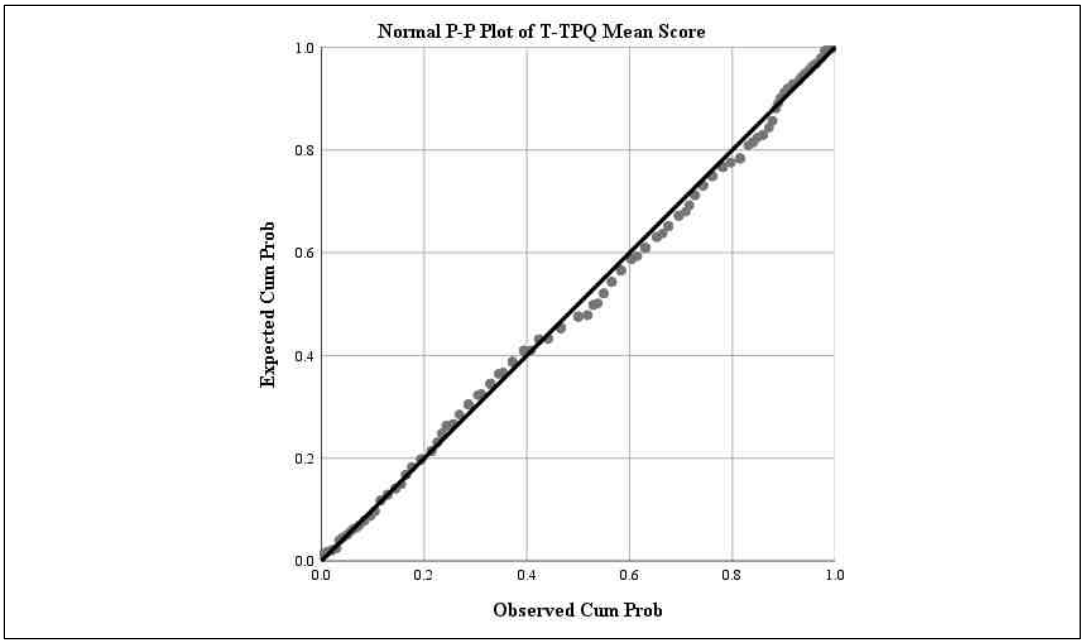


Figure J1.2. P–P plot of distribution of T-TPQ mean scores.

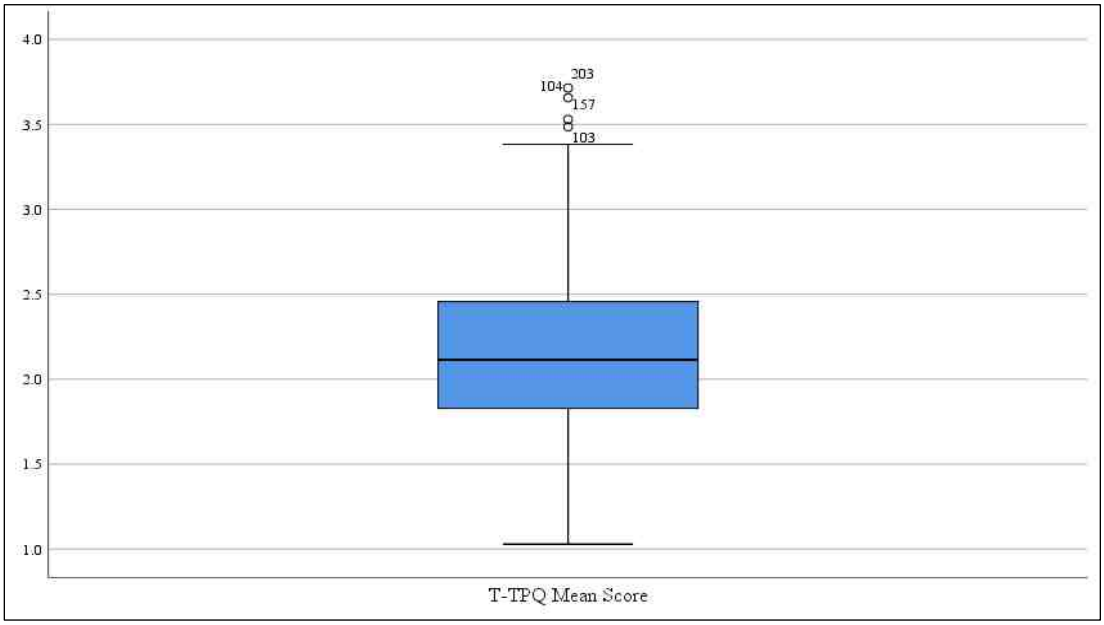


Figure J1.3. Box plot for distribution of T-TPQ mean scores.

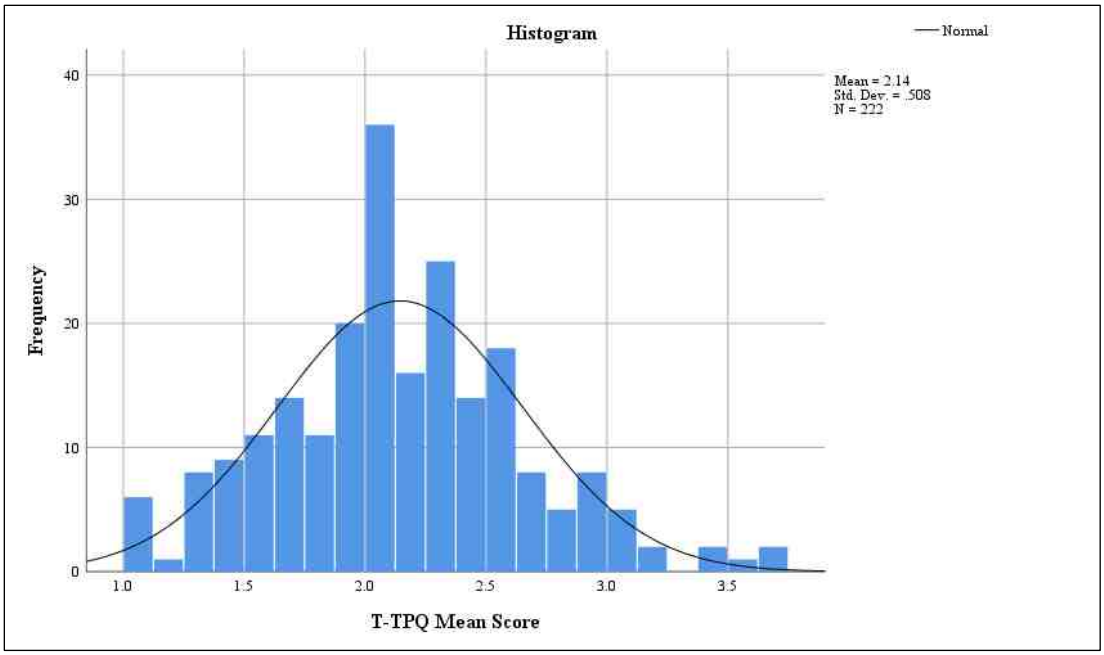


Figure J1.4. Histogram for distribution of T-TPQ mean scores.

J2. Dempster Practice Behavior Scale (DPBS) Plots and Histogram

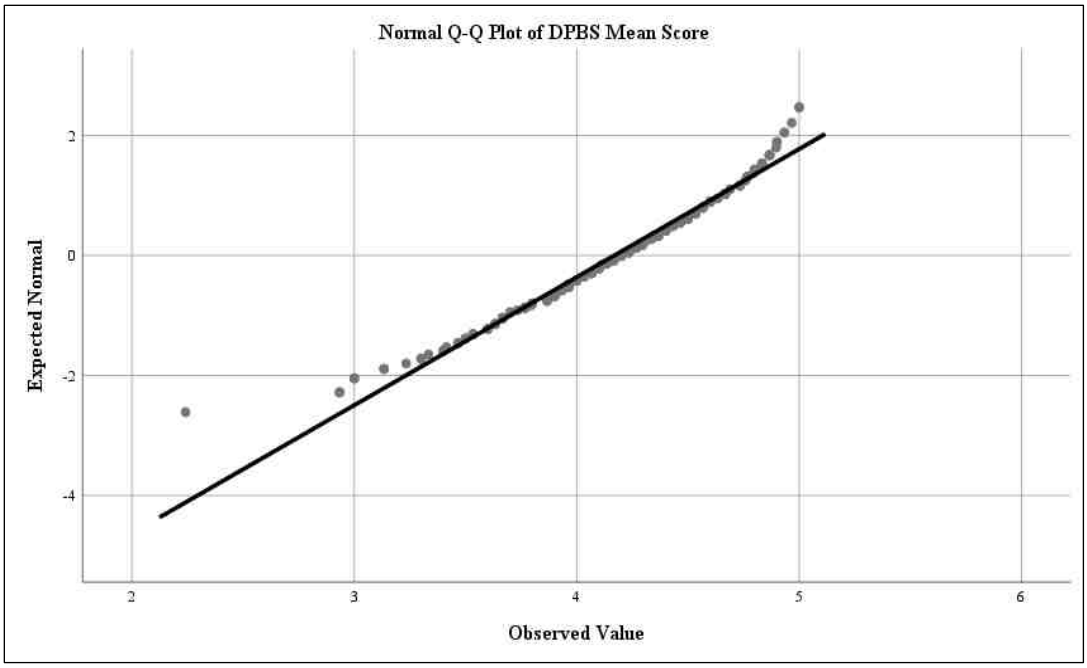


Figure J2.1. Q-Q plot for distribution of DPBS mean scores. Score range 1-5. Higher DPBS scores = higher perceived autonomy.

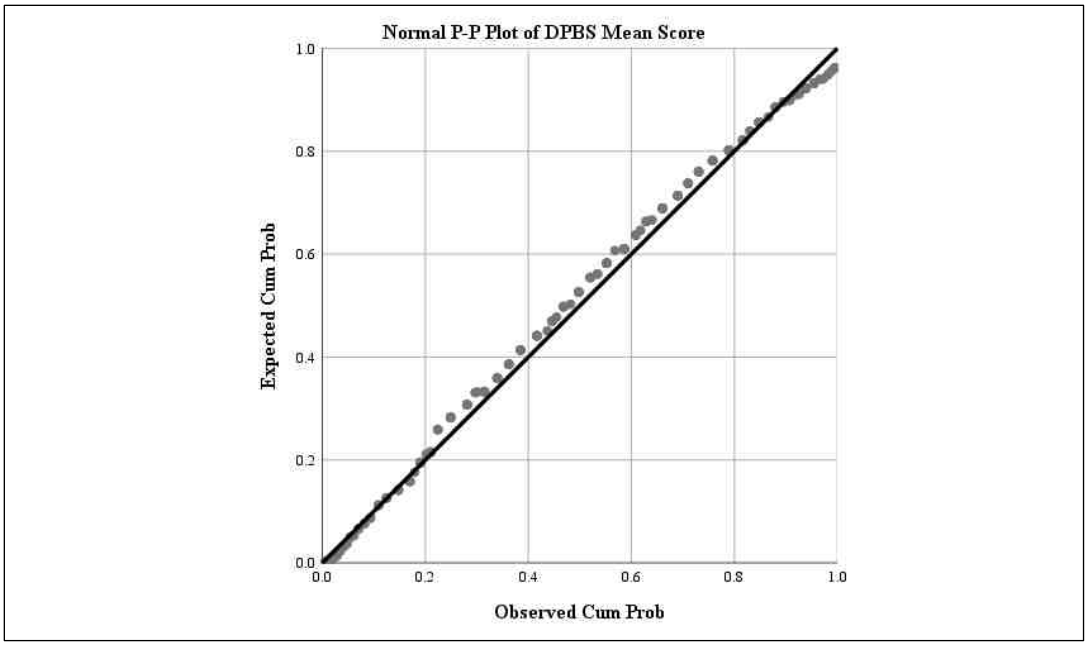


Figure J2.2. P–P plot for distribution of DPBS mean scores.

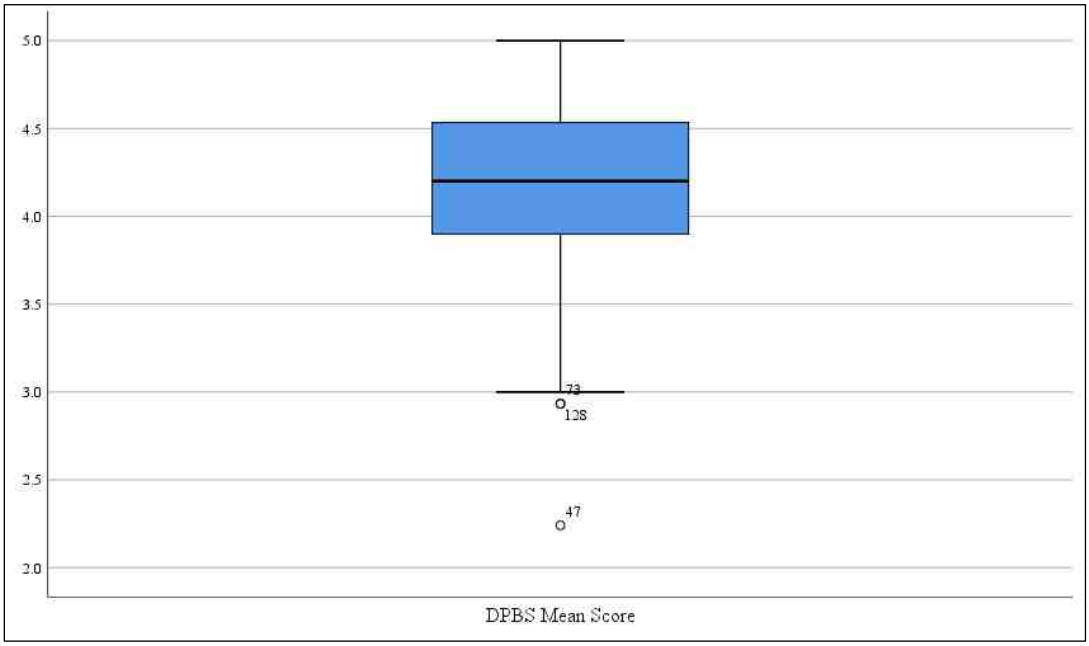


Figure J2.3. Box plot for distribution of DPBS mean scores.

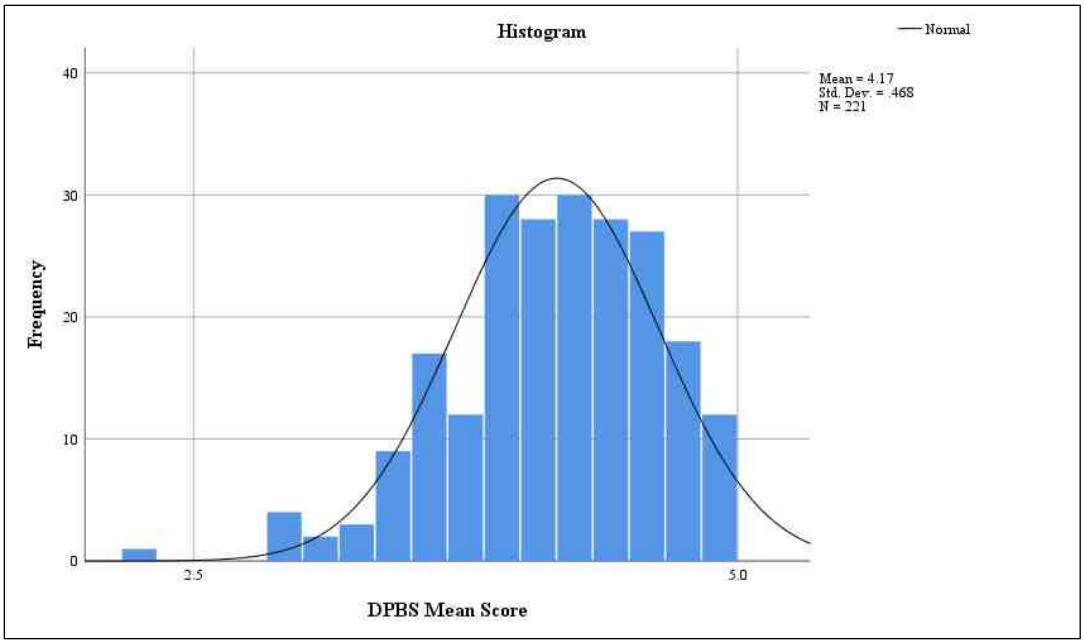


Figure J2.4. Histogram for distribution of DPBS mean scores.

J3. Professionalism Scale (PS) Plots and Histogram

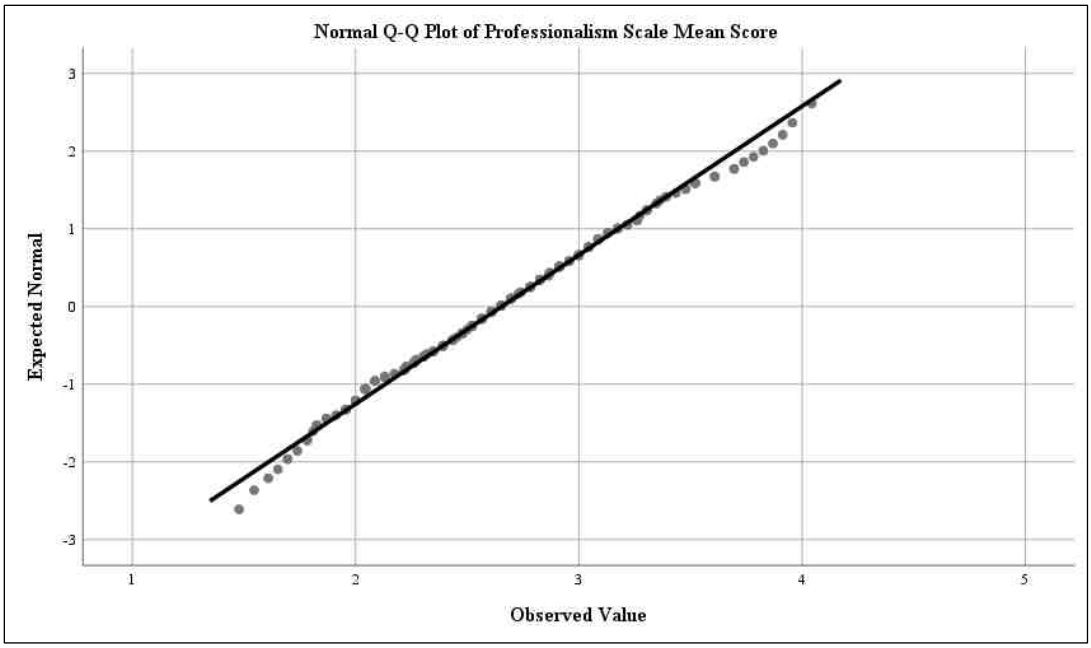


Figure J3.1. Distribution of PS mean scores. Score range 1-7. Lower PS scores = higher perceived professionalism.

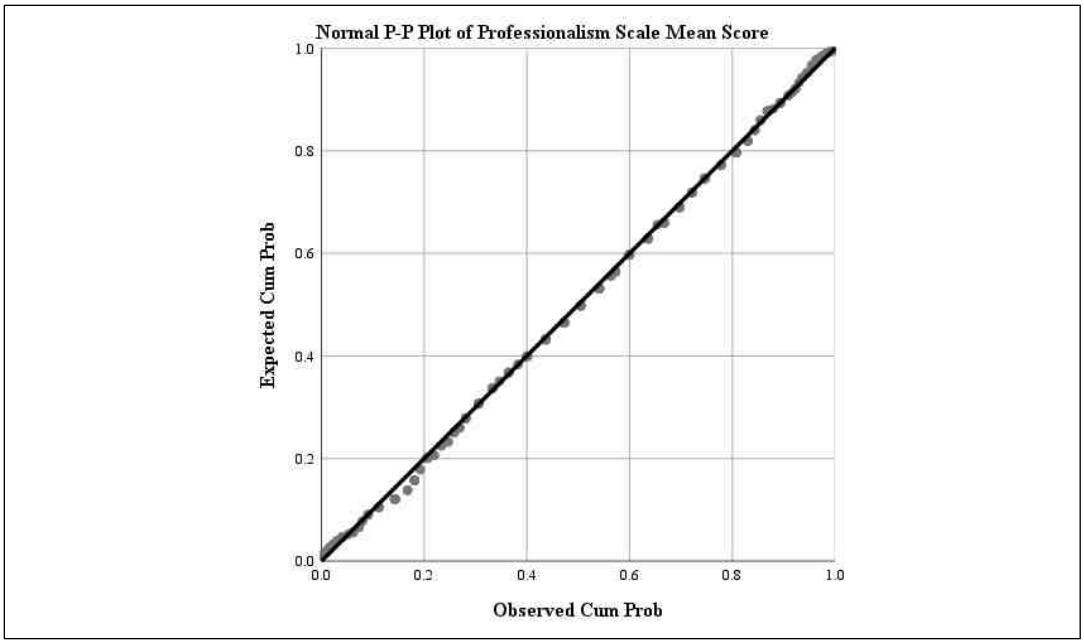


Figure J3.2. P–P plot for distribution of PS mean scores.

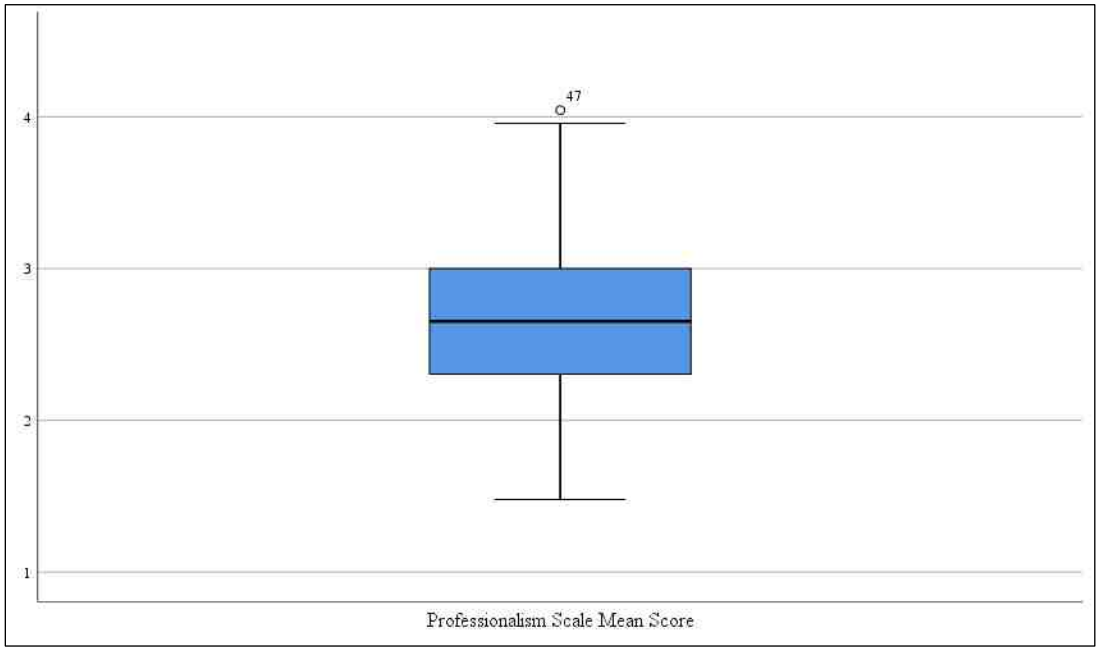


Figure J3.3. Box plot for distribution of PS mean scores.

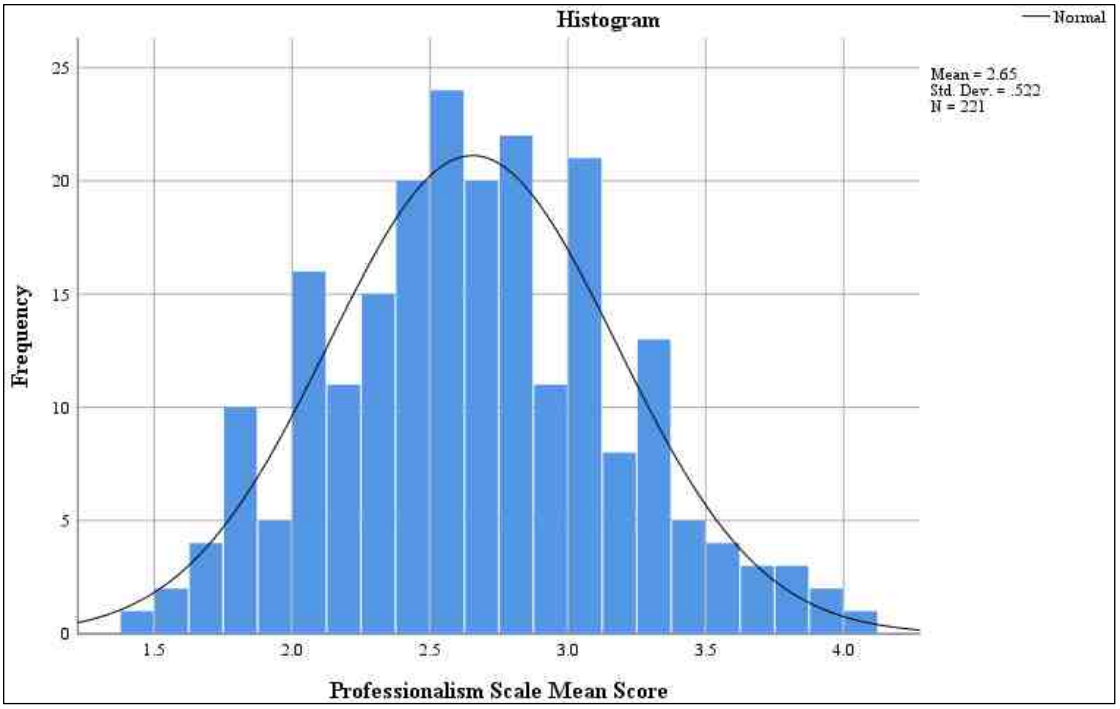


Figure J3.4. Histogram for distribution of PS mean scores.

J4. Test for Collinearity

Table J4.
Test for Collinearity for Independent Variables Dempster Practice Behavior Scale (DPBS), Professionalism Scale (PS), and State Practice Authority.

	Unstandardized coefficients		Standardized coefficients			95.0% confidence interval for *B*		Correlations			Collinearity statistics	
Model	*B*	Std. error	*Beta*	*t*	Sig.	Lower bound	Upper bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	3.058	.431		7.088	.000	2.208	3.908					
DPBS mean score	−0.398	.074	−.367	−5.373	.000	−0.544	−0.252	−.427	−.343	−.323	.773	1.293
Professionalism scale mean score	0.174	.066	.178	2.638	.009	0.044	0.303	.332	.177	.159	.791	1.264
State authority collapsed	0.124	.067	.113	1.850	.066	−0.008	0.255	.022	.125	.111	.963	1.039

a. Dependent Variable: T-TPQ Mean Score

J5. Reliability Assessment

Table J5.1.
TeamSTEPPS T-TPQ® Reliability Tests and Statistics

T-TPQ reliability statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	*N* of items
.950	.952	35

T-TPQ item statistics

	Mean	Std. deviation	*N*
tpq_1	2.27	.931	195
tpq_2	1.98	.843	195
tpq_3	1.78	.640	195
tpq_4	1.98	.790	195
tpq_5	1.91	.754	195
tpq_6	2.11	.901	195
tpq_7	2.22	.888	195
tpq_8	2.08	.873	195
tpq_9	2.31	.968	195
tpq_10	2.50	.992	195
tpq_11	2.24	.902	195
tpq_12	2.52	.904	195
tpq_13	2.23	.960	195
tpq_14	2.09	.851	195
tpq_15	2.29	.746	195
tpq_16	2.54	.909	195
tpq_17	2.00	.732	195
tpq_18	2.28	.744	195
tpq_19	2.01	.673	195
tpq_20	2.21	.813	195
tpq_21	2.29	.773	195
tpq_22	1.95	.801	195
tpq_23	2.12	.783	195
tpq_24	1.93	.654	195
tpq_25	2.29	.818	195
tpq_26	2.03	.802	195
tpq_27	2.12	.781	195
tpq_28	2.68	.893	195
tpq_29	1.75	.575	195
tpq_30	2.02	.638	195
tpq_31	1.97	.692	195
tpq_32	1.81	.556	195
tpq_33	2.19	.762	195
tpq_34	2.39	.943	195
tpq_35	2.12	.790	195

T-TPQ summary item statistics

	Mean	Minimum	Maximum	Range	Maximum/minimum	Variance	*N* of items
Interitem correlations	.360	.080	.729	.649	9.110	.012	35

Table J5.1 (cont.)

Item-total statistics

	Item deleted		Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
	Scale mean	Scale variance			
tpq_1	72.94	287.497	.294	.	.951
tpq_2	73.23	281.467	.547	.	.949
tpq_3	73.43	284.989	.567	.	.949
tpq_4	73.23	279.557	.662	.	.948
tpq_5	73.30	280.057	.674	.	.948
tpq_6	73.10	276.006	.696	.	.948
tpq_7	72.99	276.675	.683	.	.948
tpq_8	73.13	278.817	.620	.	.948
tpq_9	72.90	277.051	.610	.	.948
tpq_10	72.71	277.793	.571	.	.949
tpq_11	72.97	279.051	.591	.	.949
tpq_12	72.69	280.606	.536	.	.949
tpq_13	72.98	278.618	.565	.	.949
tpq_14	73.12	279.867	.600	.	.948
tpq_15	72.92	281.597	.619	.	.948
tpq_16	72.67	280.304	.542	.	.949
tpq_17	73.21	281.146	.650	.	.948
tpq_18	72.93	280.015	.686	.	.948
tpq_19	73.20	282.357	.656	.	.948
tpq_20	73.00	280.031	.623	.	.948
tpq_21	72.92	281.638	.594	.	.949
tpq_22	73.26	281.625	.572	.	.949
tpq_23	73.09	280.585	.627	.	.948
tpq_24	73.28	282.884	.652	.	.948
tpq_25	72.92	278.504	.676	.	.948
tpq_26	73.18	283.502	.500	.	.949
tpq_27	73.09	281.641	.588	.	.949
tpq_28	72.53	280.827	.536	.	.949
tpq_29	73.46	288.270	.463	.	.949
tpq_30	73.19	283.240	.652	.	.948
tpq_31	73.24	287.326	.420	.	.950
tpq_32	73.40	287.736	.509	.	.949
tpq_33	73.02	283.943	.511	.	.949
tpq_34	72.82	279.749	.539	.	.949
tpq_35	73.09	280.472	.626	.	.948

T-TPQ scale statistics

Mean	Variance	Std. deviation	*N* of items
75.21	297.651	17.253	35

Table J5.2.

Dempster Professional Behavior Scale (DPBS) Reliability Tests and Statistics

DPBS Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	*N* of items
.918	.925	30

DPBS Item Statistics

	Mean	*SD*	*N*
dpbs_1	4.70	0.529	202
dpbs_2	4.27	0.833	202
dpbs_3	4.51	0.640	202
dpbs_4	3.99	0.887	202
dpbs_5	4.47	0.741	202
dpbs_6	4.10	0.756	202
dpbs_7	4.06	0.904	202
dpbs_8_r	3.00	1.142	202
dpbs_9	4.57	0.571	202
dpbs_10	4.36	0.715	202
dpbs_11	4.12	0.875	202
dpbs_12	4.25	0.833	202
dpbs_13_r	4.07	1.022	202
dpbs_14	4.66	0.524	202
dpbs_15	3.65	1.079	202
dpbs_16	4.44	0.704	202
dpbs_17_r	4.52	0.812	202
dpbs_18	4.53	0.608	202
dpbs_19	4.42	0.666	202
dpbs_20	3.98	0.843	202
dpbs_21	4.13	0.879	202
dpbs_22	3.87	0.905	202
dpbs_23	4.40	0.670	202
dpbs_24	3.69	1.104	202
dpbs_25	4.20	0.740	202
dpbs_26_r	3.79	0.950	202
dpbs_27	4.15	0.754	202
dpbs_28_r	4.21	1.220	202
dpbs_29	3.33	1.071	202
dpbs_30	4.62	0.553	202

DPBS Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum/minimum	Variance	*N* of items
Interitem correlations	.292	−.072	.676	.747	−9.428	.020	30

DPBS Item-Total Statistics

	Item deleted		Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
	Scale mean	Scale variance			
dpbs_1	120.37	179.369	.512	.	.916
dpbs_2	120.81	173.928	.558	.	.914
dpbs_3	120.56	177.511	.526	.	.915
dpbs_4	121.08	172.525	.583	.	.914
dpbs_5	120.61	174.607	.600	.	.914
dpbs_6	120.97	173.203	.660	.	.913
dpbs_7	121.01	171.711	.607	.	.913
dpbs_8_r	122.07	176.776	.290	.	.920
dpbs_9	120.50	179.177	.484	.	.916

dpbs_10	120.71	176.843	.502	.	.915
dpbs_11	120.95	173.490	.548	.	.914
dpbs_12	120.83	170.980	.698	.	.912
dpbs_13_r	121.00	177.274	.315	.	.919
dpbs_14	120.41	178.781	.560	.	.915
dpbs_15	121.43	170.246	.550	.	.915
dpbs_16	120.64	177.446	.477	.	.916
dpbs_17_r	120.55	177.353	.411	.	.916
dpbs_18	120.54	182.030	.274	.	.918
dpbs_19	120.65	176.228	.578	.	.914
dpbs_20	121.10	171.473	.666	.	.913
dpbs_21	120.94	169.977	.704	.	.912
dpbs_22	121.20	173.287	.537	.	.915
dpbs_23	120.68	174.597	.669	.	.913
dpbs_24	121.38	170.347	.532	.	.915
dpbs_25	120.88	175.373	.560	.	.914
dpbs_26_r	121.28	178.034	.314	.	.918
dpbs_27	120.92	175.078	.564	.	.914
dpbs_28_r	120.87	172.863	.391	.	.918
dpbs_29	121.75	171.951	.491	.	.916
dpbs_30	120.45	181.692	.329	.	.917

DPBS Scale Statistics

Mean	Variance	*SD*	*N* of items
125.07	186.895	13.671	30

Table J5.3.
Professionalism Scale (PS) Reliability Tests and Statistics

PS Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardized items	*N* of items
.729	.761	23

PS Item Statistics

	Mean	Std. deviation	N
ps_1	1.38	0.910	208
ps_2	1.41	0.912	208
ps_3	1.94	1.228	208
ps_4	1.46	0.916	208
ps_5	2.32	1.635	208
ps_6	2.12	1.086	208
ps_7_r	3.36	1.747	208
ps_8	1.84	0.767	208
ps_9	1.75	0.821	208
ps_10	1.57	0.602	208
ps_11	2.98	1.502	208
ps_12	3.04	1.727	208
ps_13_r	3.88	1.833	208
ps_14	2.36	1.179	208
ps_15_r	2.37	1.462	208
ps_16_r	4.96	1.581	208
ps_17_r	2.41	1.468	208
ps_18_r	3.14	1.724	208
ps_19	3.70	1.624	208
ps_20	3.15	1.363	208
ps_21	2.98	1.360	208
ps_22_r	3.61	1.600	208
ps_23_r	3.48	1.551	208

PS Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum/minimum	Variance	*N* of items
Interitem correlations	.121	−.190	.719	.908	−3.789	.029	23

Table J5.3 (cont.)

PS Item-Total Statistics

	Item deleted		Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
	Scale mean	Scale variance			
ps_1	59.80	138.104	.230	.597	.723
ps_2	59.77	137.519	.257	.537	.722
ps_3	59.25	140.882	.050	.223	.735
ps_4	59.72	137.139	.274	.465	.721
ps_5	58.86	134.662	.172	.322	.729
ps_6	59.06	132.919	.390	.390	.713
ps_7_r	57.83	122.994	.460	.375	.702
ps_8	59.34	135.057	.460	.460	.714
ps_9	59.44	136.846	.330	.377	.719
ps_10	59.62	137.668	.412	.370	.719
ps_11	58.21	134.744	.196	.535	.726
ps_12	58.14	135.100	.144	.313	.733
ps_13_r	57.30	136.442	.095	.471	.739
ps_14	58.83	134.221	.302	.353	.718
ps_15_r	58.81	132.820	.264	.354	.721
ps_16_r	56.22	136.038	.144	.321	.731
ps_17_r	58.77	129.403	.368	.449	.712
ps_18_r	58.04	132.911	.201	.400	.727
ps_19	57.49	128.995	.331	.487	.715
ps_20	58.03	129.984	.386	.613	.711
ps_21	58.21	129.479	.405	.597	.710
ps_22_r	57.58	125.211	.449	.552	.704
ps_23_r	57.71	125.319	.464	.567	.703

PS Scale Statistics

Mean	Variance	Std. deviation	*N* of items
61.18	143.851	11.994	23

APPENDIX K

STATISTICAL TESTS FOR RESEARCH QUESTIONS

K1. Research Question 1

Is the level of state practice authority associated with perceived IPT function in a national sample of APRNs?

Table K1.1.
Test of Homogeneity of Variances

		Levene's statistic	df1	df2	Sig.
T-TPQ mean score	Based on mean	0.285	2	219	.752
	Based on median	0.287	2	219	.751
	Based on median and with adjusted df	0.287	2	211.098	.751
	Based on trimmed mean	0.286	2	219	.751

Table K1.2.
ANOVA: T-TPQ Mean Score

	Sum of squares	*df*	Mean square	*F*	Sig.
Between groups	0.223	2	.111	.430	.651
Within groups	56.713	219	.259		
Total	56.936	221			

Table K1.3.
Multiple Comparisons: Tukey HSD

					95% confidence interval	
(I) StateAuth_Collapsed_3	(J) StateAuth_Collapsed_3	Mean difference (I − J)	Std. error	Sig.	Lower bound	Upper bound
1 Restricted	2 Reduced	−.083	.096	.662	−.31	.14
	3 Full	−.087	.103	.676	−.33	.16
2 Reduced	1 Restricted	.083	.096	.662	−.14	.31
	3 Full	−.004	.077	.998	−.19	.18
3 Full	1 Restricted	.087	.103	.676	−.16	.33
	2 Reduced	.004	.077	.998	−.18	.19

Note: Dependent variable: T-TPQ Mean Score.

Table K1.4.
T-TPQ Mean Score Tukey HSD[a,b]

StateAuth_Collapsed_3	*N*	Subset for alpha = 0.05, 1
1 Restricted	37	2.07
2 Reduced	115	2.16
3 Full	70	2.16
Sig.		.615

Note: Means for groups in homogeneous subsets are displayed. a. Uses Harmonic Mean Sample Size = 59.990. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

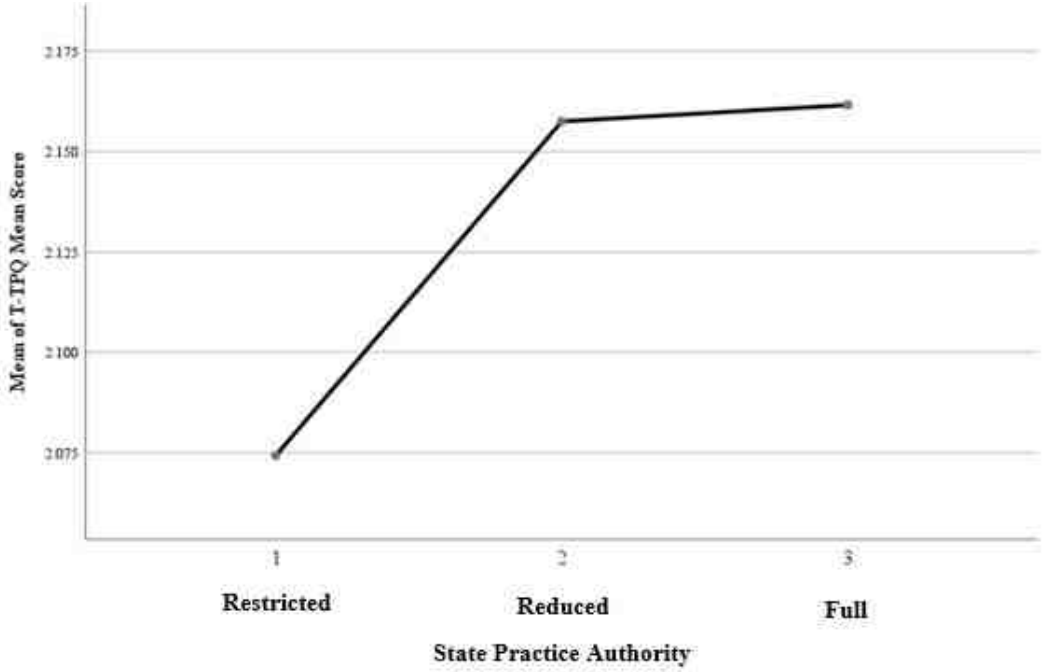


Figure K1. Line graph for T-TPQ mean scores by state practice authority level.

K2. Research Question 2

Is the relationship between state practice authority and perception of IPT function mediated by autonomy in a national sample of APRNs? Mediation was not tested.

K3. Research Question 2a

Is there a relationship between level of state practice authority and perceived autonomy in a national sample of APRNs?

Table K3.1.
Test of Homogeneity of Variances

		Levene's Statistic	df1	df2	Sig.
DPBS Mean Score	Based on Mean	0.962	2	218	.384
	Based on Median	0.718	2	218	.489
	Based on Median and with adjusted df	0.718	2	206.086	.489
	Based on trimmed mean	0.892	2	218	.411

Table K3.2.
ANOVA: DPBS Mean Score

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between Groups	1.833	2	.916	4.303	.015
Within Groups	46.434	218	.213		
Total	48.267	220			

Table K3.3.
Multiple Comparisons: Tukey HSD

		Mean difference	Std.		95% Confidence Interval	
(I) StateAuth_Collapsed_3	(J) StateAuth_Collapsed_3	(I − J)	Error	Sig.	Lower Bound	Upper Bound
1 Restricted	2 Reduced	.058	.087	.784	−.15	.26
	3 Full	−.147	.094	.262	−.37	.07
2 Reduced	1 Restricted	−.058	.087	.784	−.26	.15
	3 Full	−.206*	.070	.011	−.37	−.04
3 Full	1 Restricted	.147	.094	.262	−.07	.37
	2 Reduced	.206*	.070	.011	.04	.37

Note: Dependent Variable: DPBS Mean Score. *The mean difference is significant at the 0.05 level.

Table K3.4.
DPBS Mean Score: Tukey HSD[a,b]

		Subset for alpha = 0.05	
StateAuth_Collapsed_3	*N*	1	2
2 Reduced	115	4.10	
1 Restricted	37	4.15	4.15
3 Full	69		4.30
Sig.		.771	.191

Note: Means for groups in homogeneous subsets are displayed. a. Uses Harmonic Mean Sample Size = 59.743. b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

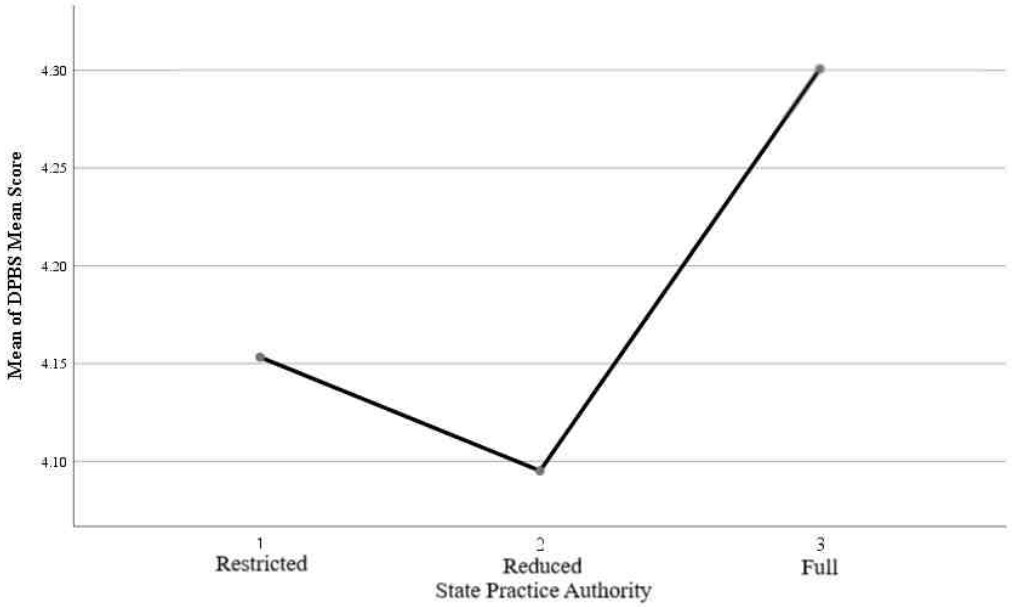


Figure K3. Line graph for DPBS mean scores by state practice authority level.

K4. Research Question 2b

Is there a relationship between perceived autonomy and perceived IPT function in a national sample of APRNs?

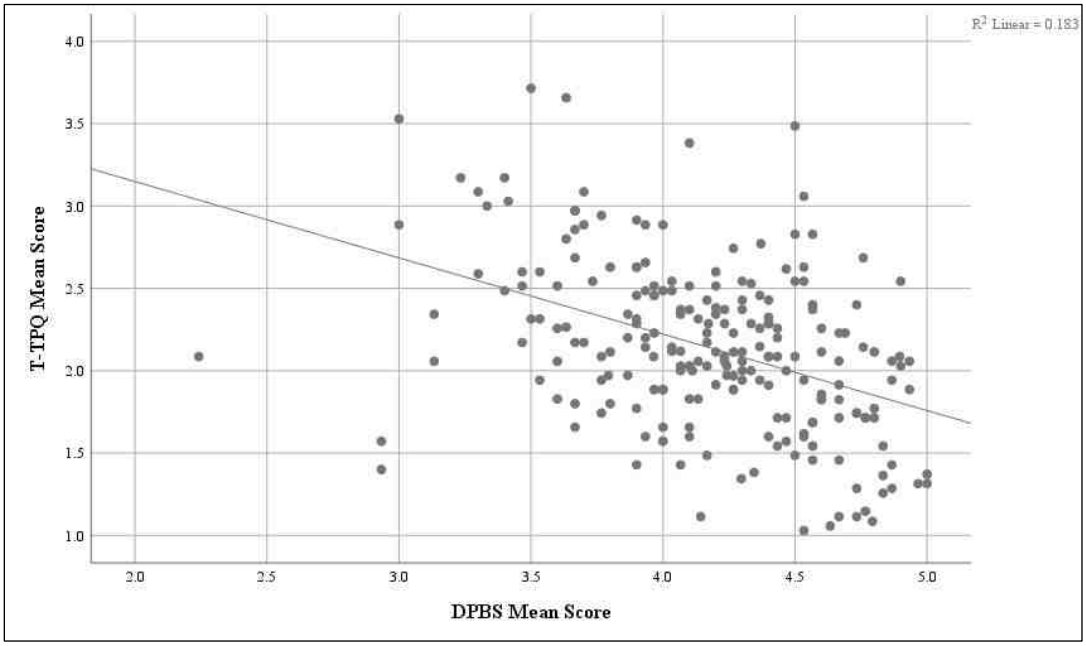


Figure K4. Scatter plot for the relationship between IPT function and autonomy. Lower T-TPQ score = higher IPT function; higher DPBS scores = higher autonomy.

Table K4.1.
Correlations

		T-TPQ Mean Score	DPBS Mean Score
T-TPQ mean score	Pearson correlation	1	−.427**
	Sig. (2-tailed)		.000
	N	222	221
DPBS mean score	Pearson correlation	−.427**	1
	Sig. (2-tailed)	.000	
	N	221	221

Note: **Correlation is significant at the 0.01 level (2-tailed).

K5. Research Question 3

Is professionalism associated with perception of IPT function in a national sample of APRNs?

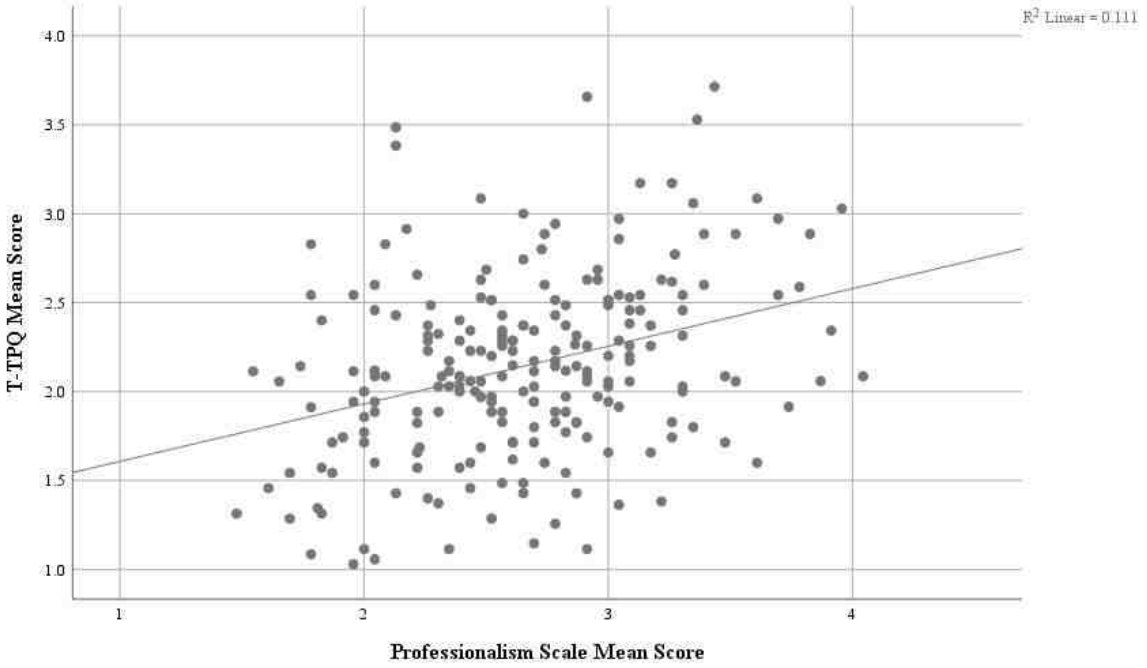


Figure K5. Scatter plot for the relationship between IPT function and professionalism. Lower PS scores = higher professionalism; higher T-TPQ scores = higher IPT function.

Table K5.1.
Statistical Tests for Relationships between IPT Function and Professionalism: Correlations

		T-TPQ Mean Score	Professionalism Scale Mean Score
T-TPQ mean score	Pearson correlation	1	.332**
	Sig. (2-tailed)		.000
	N	222	221
Professionalism scale mean score	Pearson correlation	.332**	1
	Sig. (2-tailed)	.000	
	N	221	221

Note: **Correlation is significant at the 0.01 level (2-tailed).

K6. Research Question 3a

Does state practice authority moderate the relationship between perceived professionalism and perception of IPT function in a national sample of APRNs?

Table K6.1.
Sequence of Analyses and Output for Three-Step Regression Analysis Using Interaction Terms to Test for Moderation of State Practice Authority Between Professionalism and IPT Function

Creation of interaction term variables

	Label
State_1	StateAuth_Collapsed_3 = 1.0
State_2	StateAuth_Collapsed_3 = 2.0
State_3	StateAuth_Collapsed_3 = 3.0
Prof_4	psm
Interaction_4_1	StateAuth_Collapsed_3 = 1.0 × psm
Interaction_4_2	StateAuth_Collapsed_3 = 2.0 × psm
Interaction_4_3	StateAuth_Collapsed_3 = 3.0 × psm

Variables Entered/Removed[a]

Model	Variables entered	Variables removed	Method
1	StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0[b]	.	Enter
2	Professionalism scale mean score[b]	.	Enter
3	StateAuth_Collapsed_3 = 3.0 × psm, StateAuth_Collapsed_3 = 2.0 × psm[b]	.	Enter

Note: a. Dependent Variable: T-TPQ mean score. b. All requested variables entered.

Model Summary

					Change Statistics				
Model	*R*	R^2	Adjusted R^2	Std. error of the estimate	ΔR^2	ΔF	df1	df2	Sig. ΔF
1	.061[a]	.004	−.005	.510	.004	0.409	2	218	.665
2	.344[b]	.118	.106	.480	.115	28.219	1	217	.000
3	.347[c]	.120	.100	.482	.002	0.232	2	215	.793

Note: a. Predictors: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0. b. Predictors: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0, Professionalism Scale Mean Score. c. Predictors: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0, professionalism scale mean score, StateAuth_Collapsed_3 = 3.0 × psm, StateAuth_Collapsed_3 = 2.0 × psm.

Table K6.1 (cont.)

ANOVA[a]

Model		Sum of Squares	*df*	Mean Square	*F*	Sig.
1	Regression	0.213	2	0.106	0.409	.665[b]
	Residual	56.606	218	0.260		
	Total	56.819	220			
2	Regression	6.727	3	2.242	9.713	.000[c]
	Residual	50.092	217	0.231		
	Total	56.819	220			
3	Regression	6.834	5	1.367	5.879	.000[d]
	Residual	49.985	215	0.232		
	Total	56.819	220			

Note: a. Dependent Variable: T-TPQ mean score. b. Predictors: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0. c. Predictors: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0, Professionalism Scale Mean Score. d. Predictors: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0, professionalism scale mean score, StateAuth_Collapsed_3 = 3.0 × psm, StateAuth_Collapsed_3 = 2.0 × psm.

Coefficients[a]

		Unstandardized coefficients		Standardized coefficients			95.0% confidence interval for *B*	
Model		*B*	Std. error	Beta	*t*	Sig.	Lower bound	Upper bound
1	(Constant)	2.074	.084		24.760	.000	1.909	2.239
	StateAuth_Collapsed_3 = 2.0	.083	.096	.082	0.865	.388	−0.107	0.273
	StateAuth_Collapsed_3 = 3.0	.083	.104	.076	0.796	.427	−0.122	0.287
2	(Constant)	1.169	.188		6.226	.000	0.799	1.539
	StateAuth_Collapsed_3 = 2.0	.096	.091	.094	1.052	.294	−0.083	0.275
	StateAuth_Collapsed_3 = 3.0	.137	.098	.125	1.387	.167	−0.057	0.331
	Professionalism Scale Mean Score	.332	.063	.341	5.312	.000	0.209	0.455
3	(Constant)	1.369	.374		3.655	.000	0.631	2.106
	StateAuth_Collapsed_3 = 2.0	−.113	.452	−.111	−0.250	.803	−1.003	0.777
	StateAuth_Collapsed_3 = 3.0	−.178	.473	−.163	−0.377	.707	−1.112	0.755
	Professionalism Scale Mean Score	.259	.134	.266	1.929	.055	−0.006	0.524
	StateAuth_Collapsed_3 = 2.0 × psm	.076	.163	.209	0.469	.639	−0.245	0.398
	StateAuth_Collapsed_3 = 3.0 × psm	.118	.174	.285	0.679	.498	−0.225	0.461

Note: a. Dependent Variable: T-TPQ mean score.

Excluded Variables[a]

					Partial	Collinearity statistics
Model		Beta in	*t*	Sig.	correlation	Tolerance
1	Professionalism Scale Mean Score	.341[b]	5.312	.000	.339	.985
	StateAuth_Collapsed_3 = 2.0 × psm	.918[b]	3.524	.001	.233	.064
	StateAuth_Collapsed_3 = 3.0 × psm	.910[b]	3.292	.001	.218	.057
2	StateAuth_Collapsed_3 = 2.0 × psm	.017[c]	.049	.961	.003	.034
	StateAuth_Collapsed_3 = 3.0 × psm	.160[c]	.494	.622	.034	.039

Note: a. Dependent Variable: T-TPQ mean score. b. Predictors in the Model: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0. c. Predictors in the Model: (Constant), StateAuth_Collapsed_3 = 3.0, StateAuth_Collapsed_3 = 2.0, professionalism scale mean score.

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