Factors that Relate to Registered Nurses' Readiness for Interprofessional Learning in the Context of Continuing Professional Development

Collette Williams
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ABSTRACT

FACTORs THAT RELATE TO REGISTERED NURSES’ READINESS FOR INTERPROFESSIONAL LEARNING IN THE CONTEXT OF CONTINUING PROFESSIONAL DEVELOPMENT

by

Collette Williams

Chair: Sylvia Gonzalez
ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University
School of Education

Title: FACTORS THAT RELATE TO REGISTERED NURSES’ READINESS FOR INTERPROFESSIONAL LEARNING IN THE CONTEXT OF CONTINUING PROFESSIONAL DEVELOPMENT

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Date completed: April 2014

Today’s health-care professionals practice in a highly technological, multidisciplinary environment. In order to provide safe, effective, and high-quality patient care, collaboration is required among all professionals. Traditionally each profession has operated independently in regard to continued professional development. The purpose of this study was to assess practicing registered nurses’ readiness toward interprofessional learning in order to align learning with current practice.

Method

An ex post facto study design was used to gather data to examine if there is a relationship between variables of demographics and readiness for interprofessional learning. The Readiness for Interprofessional Learning Scale (RIPLS) assesses the readiness for shared learning activities within the context of teamwork and collaboration,
sense of professional identity, and patient-centeredness. Descriptive statistics, factor analysis, correlation and multiple regression were used to describe and examine the statistical relationship between variables.

Results

Data from 69 registered nurses from a local community hospital were used to calculate descriptive statistics, correlations, factor analysis, and multiple linear regressions. Descriptive data showed the participants had a mean age of 47.5 and were primarily female (94.0%). The average length of years employed in the work force was 11-20 years. Nursing was the primary degree (94.0%) and nurses with other degrees (18.0%). The participant’s levels of education ranged from a diploma in nursing (13%), associate degree (43%), bachelor’s degree (27%), master’s degree (11%), and a doctorate in Nursing Practice (1%).

Factor analytics were run on the 23-question instrument. The instrument factor analysis supported the measured constructs as identified by the authors that the RIPLS measures readiness for interprofessional learning. However, a fourth factor, which was called shared learning, did emerge as a factor to consider.

Significant correlational findings include a positive relationship of nurses with a master’s degree with the learning factor and professional identity and a negative relationship with nurses having an associate degree with professional identity and the learning factor. A bachelor’s-prepared nurse had a positive relationship with the professional identity factor.

In conducting a multiple regression to test if a selected set of demographic variables predicts teamwork and collaboration, patient centeredness, professional
identity, and RIPLS scores, nurses working on medical surgical units exhibited a pattern of significance in professional identity, patient-centeredness, and scores on the RIPLS instrument. No other select set and tested demographic variables predicted or accounted for unique variance.

Conclusions

The major finding of this study provides an understanding of which demographic variables in registered nurses may relate to and which demographic variables may predict a readiness for interprofessional learning in the context of continuing professional development. In addition, the estimates of reliability of the RIPLS demonstrated good psychometrics properties and indicated that this may be a good measure of readiness for interprofessional learning.
Factors that relate to registered nurses’ readiness for interprofessional learning in the context of continuing professional development

A Dissertation
Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
Collette Williams
April 2014
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ACKNOWLEDGMENTS

I would like to thank my advisor Dr. Sylvia Gonzalez for her support, understanding, and feedback in making not only this dissertation possible but also success in the Leadership Program. A thank-you also goes to my dissertation committee members, Dr. Marinho and Dr. Newman, for their feedback on making this a better document. Dr. Newman, thank you for pushing me to stretch in attempting statistical procedures. I want to give a special thanks to my learning group, Bill Colwell, Brenda Boyd, Dave Morgan, David Jeffrey, Elizabeth Armstrong, Barry Tryon, and Ralph Chatoor for their inspiration, dedication, support, and encouragement along the way. Lastly, a special thank-you to Sam Narayana; without his support, this would not have been possible.
CHAPTER 1

INTRODUCTION

Background of the Problem

With the ever-increasing pace of technological advances, it is important that nurses continue their education past the initial school of nursing experience. It is essential, especially so today, that nurses become lifelong learners. This is supported by the American Nurses Association (ANA), the representative body that supports the profession of nursing. The need for continuing professional development for health-care providers, including nurses, has recently come under study by the renowned Institute of Medicine (IOM). The most recent report indicates that to be most effective, health professionals at every stage of their careers must continue learning about advances in research and treatment in their fields in order to obtain and maintain up-to-date knowledge and skills to care for their patients (IOM, 2010). For nurses, the most direct-care providers, it is imperative that they continually update their knowledge base in order to provide safe and effective patient care.

A recent Institute of Medicine (IOM) report in 2010 addressed continuing education in the health professions. The report stated that in order to continue to be effective and to learn about advances in research and treatment in their fields, health-care professionals need a system of continuing professional development. For nursing, continuing education in nursing is defined as planned, organized learning experiences
designed to augment the knowledge, skills, and attitudes for the enhancement of nursing practice, to the goal of improving health care to the public (Executive Office of Human and Health Service [EOHHS], 2010). It is part of the professional responsibility of a nurse to keep abreast of technological changes and relevant medical knowledge in order to provide quality patient care.

**Statement of the Problem**

Today’s health-care professionals practice in a highly technological, multidisciplinary environment. In order to provide safe, effective, and high-quality patient care, collaboration is required among all professionals. Traditionally, each profession has operated independently in regard to continued professional development. Study is needed to assess practicing registered nurses’ readiness for interprofessional learning and continued professional development in order to align learning with current practice. Understanding readiness for interprofessional education can lead to greater collaborative and coordinated practice, enhanced safety and quality care, lowered costs through effective utilization of resources, and improved clinical outcomes.

**Purpose of the Study**

The purpose of this study was to examine which selected demographic variables relate to nurses’ readiness toward interprofessional learning. This study analyzed how these factors may predict readiness toward interprofessional learning. The most recent Institute of Medicine’s (2010) report indicates that to be most effective, health professionals at every stage of their careers must continue learning about advances in research and treatment in their fields in order to obtain and maintain up-to-date
knowledge and skills to care for their patients (IOM, 2010). Research studies are needed to assess practicing registered nurses’ readiness of interprofessional learning in order to align learning with current practice (Halcomb, Meadley, & Streeter, 2009).

**Rationale for the Study**

The suggestion that nurses should be lifelong learners is not a novel idea. Continuing education for nurses in the United States is determined by each state’s Board of Registration and can vary by state. Some states, such as Colorado, have no continuing educational requirements, while others, such as Nevada, require 24 continuing educational hours every 2 years. A few states, such as Florida, require specific coursework such as prevention of medical errors. There currently is no state that requires educational coursework in interprofessional learning. As interprofessional education increases in the United States, it is important to measure not only outcomes obtained by interprofessional collaboration, but also readiness towards interprofessional education. Readiness among the health professions regarding interprofessional education has been studied in academia at the undergraduate level. It has only been recently that licensed professionals have been studied at the graduate level regarding their readiness for interprofessional learning (Reid, Bruce, Allstaff, & McLernon, 2006). This study was conducted at the University of Dundee, Dundee, United Kingdom, and examined the readiness of nurses, general practitioners, pharmacists, and AHP’s (allied health professional). As further interest in interprofessional education grows, it will be important to understand the attitudes and readiness for interprofessional education in the various professions. It is important to the profession of nursing that there is an understanding of nurses’ readiness in the design of future continuing educational
programs. As interprofessional educational nursing programs are created, better collaboration and communication between nurses and other health-care providers will be enhanced, leading to better provision of patient services.

**Significance of the Study**

The significance of this study is that it will increase knowledge regarding the readiness of nurses to learn in an interprofessional environment. The understanding of the engagement of nurses in interprofessional learning will assist in creating continuing professional development programs and assist in tailoring programs to meet specific educational needs of nurses. These data collected on the subscales of teamwork and collaboration can be utilized to promote education on this topic. This data can also be used to help create educational programs specifically designed to foster a better understanding of patient-centered model care. In addition, this study will help to develop continuing educational programs that assist nurses in creating a better understanding of not only their roles but those of other health-care providers in providing patient care. This data can be used to help achieve the overall goal of patient safety, patient quality care, and patient satisfaction. As few studies have been conducted with health-care professionals and their readiness for interprofessional learning, this study aims to provide further knowledge and information that can be utilized at the practice level, to create partnerships and enhance education and training.

**Theoretical Framework: Social Learning Theory**

Interprofessional education is in the infancy stage, multidimensional in practice and currently not universally accepted (Barr, Koppel, Reeves, Hammick, & Freeth, 2005;
Clark, 2006; Interprofessional Education Collaborative Expert Panel, 2011; Stone, 2006). Few rigorous studies have been conducted, although as more professionals understand and conduct interprofessional education, more evidence will emerge. The theoretical base for interprofessional education continues to evolve rapidly, and numerous theoretical perspectives have been suggested (Barr et al., 2005). Several theoretical frameworks have been proposed in areas such as anthropology, education, psychosocial change, communication, group and team building, systems, and quality perspectives. For the purpose of this study, Albert Bandura’s social learning theory was used.

Social learning theory was first introduced by Dollard and Miller (1941). Their psychoanalytic theory was based on the social dimension of personality development and drive conflict. Drive reduction and the combinations of four fundamental concepts regarding learning are the basis for this theory. The first concept is drive. A drive is described as a strong stimulus that causes distress or uneasiness and compels one to action. The second concept is cue. A cue is a trigger that prompts a response to reduce the drive. The third concept is response or acting to reduce the drive. The fourth concept is reinforcement. Reinforcement is the consequence of the reduction of the drive and strengthening of the response (Cervone & Pervin, 2013; Ellis & Abrams, 2009; Engler, 2009; Ryckman, 2008; Schultz & Schultz, 2009).

Dollard and Miller (1941) suggest that human behavior can be understood through the learning process. Whereas primary reinforceers are associated with physiological process required for survival, secondary drives are acquired in the learning process. Socioeconomic status and culture can be determinants of reinforcement in secondary drives. Dollar and Miller’s theory is useful in predicting behavior (Bandura,
The most noted social learning theorist is Albert Bandura. Bandura (1977b, 1986) initiated his theory of social learning in the 1960s. His theory was a bridge between the behaviorist and cognitive theory and stressed the concept of role modeling. Bandura suggested that human behavior is learned through role modeling as opposed to drive reduction, classical conditioning, or operant conditioning. Whereas modeling can enhance learning, Bandura also proposes that learning can be accomplished through observation. Bandura distinguishes imitation from modeling. Imitation is the mimicking of the model, whereas modeling is matching the structure of style of the behavior. For Bandura, learning is not simply imitation but requires active judgment and a constructive process (Bandura, 1977b, 1986; Cervone & Pervin, 2013; Ellis & Abrams, 2009; Engler, 2009; Ryckman, 2008; Schultz & Schultz, 2009).

Bandura (1986) further refined his theory to become a more holistic perspective of human motivation and changed the name of his theory to social cognitive learning theory. His expanded theory included the role of the environment, behavior, and personal factors that play on learning. He called this the bidirectional triadic reciprocal causality. Most recently, Bandura has focused on self-efficacy beliefs.

Bandura’s (1986) social learning theory is applicable for use as a theoretical framework in understanding interprofessional education. Social learning theory attempts to explain behavior through the concepts of expectancies and incentives. Three types of expectancies defined by Bandura are expectancies about how events are connected and the cue provided by the environment. The second type of expectancy concerns the
consequences of one’s own actions and how behavior is likely to influence outcomes. The third expectancy is one’s own competence to perform the behavior.

An incentive is the value ascribed to a particular object or outcome and is regulated by consequences. The consequences have value only from the perspective of the individual’s interpretation and understanding (Bandura, 1977b, 1986).

**Assumptions**

For this study it is assumed that the Readiness for Interprofessional Learning Scale is an accurate instrument and capable of measuring the readiness for interprofessional learning. The RIPLS was chosen among alternative interprofessional learning instruments as it has demonstrated reliability in use in many studies and measured the concepts of: teamwork and collaboration, professional identity and patient centeredness, integral to this study. It is also assumed that registered nurses have complied with continuing education re-licensure requirements in the state of Massachusetts. It is further assumed that nurses have an understanding of teamwork and collaboration, a sense of professional identity, and a belief in patient-centeredness in providing nursing care. Lastly, it is assumes that all participants will answer the survey honestly.

**Research Questions**

The research questions of this study focus on the selected demographic factors in registered nurses and their readiness toward interprofessional learning as defined by teamwork and collaboration, patient-centeredness, and professional identity.

The questions that guided this study are as follows:
1. How does the demographic variable of age predict readiness for interprofessional learning?

2. How does the demographic variable of gender predict readiness for interprofessional learning?

3. How does the demographic variable of generic and second-degree registered nurses predict readiness for interprofessional learning?

4. How does the demographic variable of highest level of nursing education predict readiness for interprofessional learning?

5. How does the demographic variable of number of years practicing as an RN predict readiness for interprofessional learning?

6. How does the demographic variable of types of nursing specialty being practiced predict readiness for interprofessional learning?

**General Methodology**

Using a quantitative approach, data were collected to examine if there was a relationship between the independent variables of demographics and the dependent variable of readiness for interprofessional learning; therefore an ex post facto design was utilized. For this study the RIPLS instrument was utilized to measure nurses’ readiness toward interprofessional learning. The variables examined were demographic factors, teamwork and collaboration, patient-centeredness, and professional identity.

In testing the research hypothesis, data were analyzed using a variety of statistical techniques including correlation, factor analysis, and multiple regression (Field, 2009; Warner, 2008).
Delimitations

Delimitations of this study include using nurses who have at least 5 years of nursing practice experience. This allows for the nurse to have had a minimum of one nursing license renewal cycle. Surveying only nurses working in a community hospital setting is another delimitation that eliminates nurses working outside the hospital setting, such as community health nurses. Choice in the selection of this RIPLS to measure readiness over the Attitudes to Health Professionals Questionnaire or the Interdisciplinary Educational Perception Scale is also a delimitation.

Definitions of Terms

The following definitions clarify the key terms used in this study:

*Continuing professional development*: The system for maintaining, improving, and broadening knowledge and skill throughout one’s professional life. It promotes effective practice, effects change, and includes the integration of content and educational design for individual practitioners in the practice setting (IOM, 2010, p. 18).

*Community hospital*: All nonfederal, short-term, general, and other special hospitals (American Hospital Association [AHA], 2011).

*Interprofessional education*: “Occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care” (Centre for the Advancement of Interprofessional Education [CAIPE], 2002).

*Patient-centeredness*: Care that is patient-centered considers patients’ cultural traditions, their personal preferences and values, their family situations, and their lifestyles. The patient and their loved ones are an integral part of the care team who collaborate with health-care professionals in making clinical decisions. Patient-centered
care puts the responsibility for important aspects of self-care and monitoring in patients’ hands—along with the tools and support they need to carry out that responsibility.

Patient-centered care ensures that transitions between providers, departments, and health-care settings are respectful, coordinated, and efficient as measured by the Institute of Healthcare Improvement (IHI, 2009). For this study, patient-centeredness is measured as defined by a subscale on the RIPLS.

**Professional identity:** The acquired specific knowledge and language unique to a profession; the socialization into professional roles and acceptance of a professional code of practice (Parsell & Bligh, 1999).

**Registered nurse:** An individual who protects, promotes, and optimizes others’ health and abilities, assists in the prevention of illness and injury, aids in the alleviation of suffering through the diagnosis and treatment of the human response, and is an advocate in health-care for individuals, families, communities, and populations (ANA, 2004). In the United States, registered nurses are individually licensed by each state.

**Readiness for Interprofessional Learning Scale (RIPLS):** A rating scale based on the desired outcomes of shared learning that assesses the readiness of health-care students for shared learning activities (Parsell & Bligh, 1999).

**Teamwork and collaboration:** The knowledge, methods, and skills needed to work effectively in groups, to understand and value the perspectives and responsibilities of others, and the capacity to foster the same in others (Batalden et al., 1997) as measured by scores on the RIPLS.
Teaching hospital: Teaching hospitals that train future health-care professionals to conduct medical research and fulfill a distinct, vital role in delivering patient care (AHA, 2009).

Organization of the Study

For this study Chapter 1 provides an overview of the study including the problem statement, hypotheses, and conceptual framework. Chapter 2 reviews the literature relevant to interprofessional learning. As there are few studies to date that have been conducted on interprofessional learning, the historical development of the RIPLS is also included. Chapter 3 is devoted to the methodology of the study, including research design, description of the population, study variables, further details of the RIPLS, and the statistical analysis conducted. Chapter 4 analyzes and presents the data gathered from the RIPLS instrument. Chapter 5 concludes with the presentation of a summary of this study and offers conclusions and implications for practice and further research.
CHAPTER 2

LITERATURE REVIEW

Introduction

Florence Nightingale, who first laid the foundation for professional nursing, was a supporter of education for nurses and believed in lifelong learning. Mandatory continuing education for re-licensure was first introduced in 1973 by the American Nurses Association. Since that time, 23 states in the United States require continuing education for nurses (Eustace, 2001). The American Nurses Association, the professional organization whose mission is to advance and protect the profession of nursing, developed a code of ethics for nurses. In the code, provision number five states that a nurse owes the same duties to self and others, including the responsibility to continue personal and professional growth (ANA, 2010). It is part of the professional responsibility of a nurse to keep abreast of technological changes and relevant medical knowledge in order to provide safe and effective patient care.

Continuing education in nursing is defined as planned, organized learning experiences designed to augment the knowledge, skills, and attitudes for the enhancement of nursing practice, to the goal of improving health-care to the public (EOHHS, 2010). The ANA (2000) adds further that continuing education refers to systematic professional learning that enriches the nurse’s contribution to quality health-care and the pursuit of professional career goals. In reviewing the literature, there is little dispute that continuing
education is needed to provide a competent and safe nursing work force. The Institute of Medicine (IOM, 2010) recently released a report on continuing education in the health professions that stated that in order for health-care professionals to continue to be effective and learn about advances in research and treatment in their field, they need a system of continuing professional development.

**Historical Perspective of Interprofessional Education**

Interprofessional education is not a new concept. The World Health Organization (WHO) first identified interprofessional education as an important component in primary health care in 1978, and in 1988 issued a report that advocated shared learning to complement educational programs. The World Health Organization (1988) defined interprofessional education as

> the process by which a group of students or workers from health related occupations with differentiation, educational backgrounds learn together during certain periods of their education, with interaction as an important goal to collaborate in providing promotive, preventative, curative, rehabilitative and other health related services. (p. 5)

Since that time there has been measured, increased interest in interprofessional education. The Center for the Advancement of Interprofessional Education (CAIPE) in the United Kingdom was founded in 1987 as an independent think tank to oversee and improve collaborative practice. Interprofessional education has been defined and described in many ways. However, the most often used definition of interprofessional education has been created by CAIPE and is defined as “occurring when two or more professions learn with, from and about each other to improve collaboration and the quality of care” (CAIPE, 1997, p. 19).
There has been a growing, albeit unstructured interest in interprofessional learning in the United States. Collaborative practice and its associated outcomes were first researched by Knaus, Draper, Wagner, and Zimmerman (1986). Collaborative practice has been defined as multiple healthcare workers from different professions backgrounds work together to deliver high quality health-care (Interprofessional Education Collaborative Expert panel, 2011). Their study demonstrated an associated decrease in mortality of patients in an Intensive Care Unit employing collaborative practice. Since this initial study, several other researchers have studied interprofessional collaboration and associated patient outcomes (Baldwin & Daugherty, 2008; Cina et al., 2004; Coogle, Parham, Cotter, Welleford, & Netting, 2005; Shiu, Twinn, & Holroyd, 1999).

In 2003, the IOM report *Health Professions Education: A Bridge to Quality* detailed five core competencies they deemed necessary for all health professionals. These competencies include patient-centered care, interdisciplinary team-based care, evidence-based practice, quality improvement strategies, and the use of health informatics. The purpose of creating this set of competencies was to ensure safe and effective delivery of patient care and the prevention of medical errors.

In their studies, Tame (2009), Richards and Potgieter (2010), and Levett-Jones (2005) found that nurses believed that continuing education provided personal and professional growth, and improved patient care, enhancement of knowledge, and technical skills. Nurses also perceived a positive impact in their patient care through enhanced collaboration with medical colleagues. Levett-Jones (2005) also found that nursing leadership perceived a greater staff satisfaction, staff retention, and increase in
quality patient care. Nurses credit continuing education for the observed benefits. In their study, Nalle, Wyatt, and Myers (2010) found that there were several types of motivators for nurses to engage in continuing education. One study found that, for nurses, one of the factors in lifelong learning is both personal and professional satisfaction (Bahn, 2007). One study (Curran, Sargeant, & Hollett, 2007) has addressed interprofessional learning in a continuing professional development in primary health care. In utilizing a mixed-methods approach, this study demonstrated that interprofessional continuing professional development is effective in enhancing the understanding of roles of the other professions, fostering respect and positive attitudes toward interprofessional collaboration, developing collaborative competencies, and promoting organizational change.

Interprofessional collaboration is a multifaceted phenomenon and has been characterized by five elements. The five elements include sharing, partnerships, interdependence, power, and a collaborative process (D’Amour, Ferrand-Videla, Martin, Rodriguez, & Beaulieu, 2005). Relationships between health-care professionals are complex with little understanding of the psychosocial workings. Traditionally, health-care providers have been rigidly educated and socialized in discipline-based contexts. This discipline-based paradigm of education and practice will need to be transformed into one of collaboration and teamwork. Interprofessional education has been criticized for the lack of theoretical framework (Barr et al., 2005; Clark, 2006; Freeth, Hammick, Koppel, Reeves, & Barr, 2002). Barr et al. (2005) identified 18 different theories that are relevant to interprofessional education. They identified three foci that relate to interprofessional education. The first focus is on preparing individuals for collaborative practice. Applicable theoretical frameworks in these foci would include adult learning theory,
contact theory, social identity theory, self-categorization theory, realistic conflict theory, self-presentation theory, theory of loss and change, social defense theory, relational awareness theory, social exchange theory, negation theory, and theories of cooperation. The second focus is on cultivating collaboration in groups and teams. Theoretical frameworks for these foci would include work-group mentality, group development, and team learning theories. The third focus is on improving service and the quality of care. Theories in this category would include systems theory, organizational learning, and activity theories (Barr et al., 2005).

**Interprofessional Education Testing**

Interprofessional learning has been identified by several different names over the last 20 years. Some terms that have been used are shared learning, multiprofessional learning, multiprofessional education, common learning, and collaborative education (Barnsteiner, Dishch, Hall, Mayer, & Moore, 2007). In order to create and measure outcomes in student learning within the context of interprofessional learning, several tools have been created to measure students’ readiness towards interprofessional learning. One tool that was developed was the Attitudes to Health Professionals Questionnaire. This instrument measured whether the different components of interprofessional attitudes in students’ caring, subservience, sympathy, flexibility, approachability, patient-centeredness, gentleness, person centeredness, valuing teamwork, arrogance, practicality, conciliatoriness, confidence, assertiveness, autonomy, focus on technology, independence, remuneration, and confrontational ability are susceptible to change by education or experience occurring over time. This tool demonstrated a good internal consistency and an acceptable test-retest reliability during phase one of the study. The
internal consistency improved with subsequent revisions (Lindqvist, Duncan, Shepstone, Watts, & Pearce, 2005).

Another tool developed to measure interprofessional learning was the Interdisciplinary Educational Perception Scale developed by Luecht, Madsen, Taugher, and Petterson in 1990. This tool built upon the readiness of interprofessional learning and incorporated the added dimension of assessing professionally oriented perceptions and the related affective domains of the participants. This four-subscale tool lacked evidence of stability in the original instrument and was later revised and tested with a larger population. The revised version offered greater reliability and stability (McFayden, MacLean, & Webster, 2007).

Parsell and Bligh (1999) developed the Readiness of Interprofessional Learning Scale (RIPLS) which was utilized in the undergraduate context to measure the readiness of students to engage interactively with others in shared learning. Since its creation, this tool has been used in several studies with undergraduate students (Baxter, 2004; Hind et al., 2003; Horsburgh, Lamdin, & Williamson, 2001) where positive correlations were found between professional identity, engagement, shared learning, and the acquisition of teamwork skills. McFadyen et al. (2005) created a revised version which showed a slight improvement in the internal consistency of the tool. The RIPLS was further tested in a small population for test-retest reliability in 2006. The results suggested that of the four subscales, three scale: teamwork and collaboration, professional identity and patient centeredness, appear to have acceptable test-retest reliability (McFadyen, Webster, & Maclaren, 2006, 2007).
The RIPLS has been used with success in measuring the readiness of students at the undergraduate level for interprofessional learning. In 2006, the measurement of readiness towards interprofessional learning was undertaken in the post-graduate context by Reid et al. (2006). This study was an attempt to validate the readiness for interprofessional learning in post-graduate professionals by utilizing the RIPLS. The researchers administered a modified version of the RIPLS to 546 staff comprised of nurses, pharmacists, general practitioners, and allied health-care providers. The results of the study demonstrated that the RIPLS is a valid tool for measuring the readiness to engage in interprofessional learning. The results also demonstrated that health-care professionals had a positive attitude towards interprofessional learning, indicating a favorable readiness toward interprofessional learning but demonstrated key differences between the professions.

Primarily, studies of interprofessional learning have been done in the undergraduate context in the health professions programs. Valid and reliable measurement tools such as RIPLS, Interdisciplinary Educational Perception Scale (Goelen, De Clercq, Huyghens, & Kerckhofs, 2006), or the Attitudes to Health Professionals have been utilized to assess changes in attitudes. Other researchers have created questionnaires unique to their interprofessional programs that measured changes in students’ attitudes (Cooper & Spencer-Dawe, 2006; Cooper, Spencer-Dawe, & McLean, 2005; Coster et al., 2008; Hoffman & Harnish, 2007; Lidskog, Lofmark, & Ahlstrom, 2007; Priest et al., 2008).

An alternative approach was utilized by Copley et al. (2007) where the study was conducted in an on-campus and community-based clinic using an adaptation of the
Brownstein Model of interdisciplinary education with the specific concepts of team orientation, joint goal setting and interventional planning, and the integrated delivery of therapy services. The results of this preliminary study in a qualitative format suggested that interprofessional educational models provide a framework for the development and subsequent refinement of interprofessional teaching strategies and suggest that early interprofessional exposure be considered early on in the health professional programs. The study also suggests that significant support is required for students to learn complex reasoning skills, negotiation skills, and teamwork skills.

Horsburgh, Perkins, Coyle, and Degeling (2006) attempted to determine if attitudes towards other professions are created before students enter health professions programs. The finding indicated that as groups or subgroups, the students had differences in beliefs as to how clinical work should be delivered. This study supports earlier studies that indicate that interprofessional education and socialization should begin early in the health professional curriculum before such attitudes can be solidified.

Stone (2006) utilized a mixed-methods study in a 4-year rural interprofessional education project that measured the effectiveness of interprofessional programs by use of a self-assessment tool to monitor and promote structured, reflective, learning and practice. The data suggest significant educational gains as the result of this type of intervention. The author suggests using both qualitative and quantitative measurement in assessing interprofessional learning as opposed to relying on a single-method controlled study.

There are several gaps in the literature regarding interprofessional learning that Goldman, Zwarenstein, Bhattacharyya, and Reeves (2009) reported from their review of
the interprofessional field. These include differences in learning between students and practicing professionals, the examination of the effectiveness of interprofessional learning, examination of the factors that affect teamwork, and the lack of theoretical models that explore how learning occurs in interprofessional teams. Several systematic literature reviews have been conducted which demonstrate diversity in the conducted studies but relatively little research data, and the reviews are more evaluative in nature (Cooper, Carlisle, Gibbs, & Watkins, 2001; Hammick, Freeth, Koppel, Reeves, & Barr, 2007; Reeves et al., 2007).

One study that was completed examined interprofessional education from the faculty perspective. Holt, Bray, Mayberry, and Overman (2000) conducted a survey of dental hygiene directors across the United States to examine the role of interdisciplinary education in the dental hygiene curricula, to identify factors associated with implementing interprofessional education, and to explore the perceptions of dental hygiene educators and the perceived barriers to implementation. The results of the questionnaire suggested that although many educators felt that interdisciplinary experience for the students were of value, few had incorporated it into their curricula.

One study (Lumague et al., 2006) looked at interprofessional education from a student’s perspective. The students participated and met together over a 5-week period in interprofessional groups led by different health professionals. The students’ perspectives were reviewed after completing the program, and it was found that the students recognized the need for interprofessional teamwork and that interprofessional education in the health professions program should be included to allow for the development of skills, behaviors, and attitudes needed for collaboration.
Little research has been done to identify attitudinal barriers to interprofessional learning. Currently there is not an agreed-upon theoretical framework on which to build interprofessional learning. There is evidence to support that interprofessional education supports change in attitudes in the undergraduate context, but there is little evidence to support that interprofessional education causes change in practice at the professional level. Except for the few limited studies cited previously, there is limited, convincing evidence in the literature that interprofessional education improves patient outcomes.

**Social Learning Theory**

For this study, Albert Bandura’s social cognitive learning theory was utilized. Social learning theory is based on the work of several theorists and has three assumptions in common. The first assumption is behaviorally based and posits that behavior is influenced by a positive or negative consequence. Although not behaviorally based, social theorists believe that learning occurs by observing others. The third assumption is that individual behavior is learned by observing behavior in the model that one most identifies with. Social learning has had contributions from several prominent theorists.

Social learning was first introduced by John Dollard and Neal Miller (1941) with their theory of drive conflict. They describe learning as four processes or factors. The four factors were drives, cues, response and reinforcement. Drive or motivation was defined as what a person must want. The basic motivational force is drive reduction and relief of tension. It is the stimulus that motivates learning. Cues are stimuli that determine the specific manifestation of a response. They can take on any form and can vary in intensity and duration. Response is what the person does or what is actually learned, and reward is what a person gets. It strengthens the response because of the drive-reducing
effect. The more closely the response is followed by reward, the more it is strengthened (Miller & Dollard, 1941; Dollard & Miller, 1950).

Julian Rotter (1954) moved from the psychoanalytical perspective of psychology and instinctual motives to a social learning theory. He presented the idea of motivation and interaction with the environment. He suggested that change in behavior is self-initiated change versus change influenced by others. He believed that change can occur with the development of a sense of personal control.

For Robert Sears (1951), learning and behavior change focused on the socialization process and the influence of culture on the internalization of values, attitudes, and beliefs, whereas Walter Mischel (1968) focused on the specific cognitive variables and the effect of new experiences on individuals. Robert Akers (1973) argues that behavior is shaped by a number of processes and includes the concept of reinforcement and that behavior is a function of consequences. Albert Bandura (1963) built on the earlier work of Miller and Dollard (1941) and suggested that cognition and information processing was the basis of learning and behavior change. His social learning theory was the first to focus on modeling, reciprocal determination, and self-efficacy.

**Bandura’s Social Learning Theory**

Albert Bandura’s theory of social cognitive learning can be considered a bridge between behaviorism and cognitivism as it encompasses attention, memory, and motivation. Bandura’s theory emphasizes how cognitive, behavioral, personal, and environmental factors determine motivations and behavior and that learning occurs via observation, imitation, and modeling. Knowledge is obtained by the observation of others in social interactions and experiences (Crothers, Hughes, & Morine, 2008). The origin of
self-efficacy was developed as part of social learning theory, which later expanded into the social cognitive theory (Levin, Culkin, & Perrotto, 2001).

Bandura’s (1977a) social cognitive theory, while rooted in behavior and cognitive theories, adds the additional component of the social environment. Therefore it is a framework for learning from a behavioral, psychological, and sociological perspective. Bandura theorizes that learning does not occur only from direct reinforcement but that learning can occur through the process of observational learning.

In the famous Bobo doll experiment, Bandura and his colleagues demonstrated that children learn and imitate behaviors that were observed in other people. In this experiment, two groups of children were studied. The control group did not observe an adult acting aggressively toward the doll, whereas the experimental group of children observed adults acting violently toward the doll. When the children were left alone with the doll, they modeled the behavior they had just seen. The behavior of the children in the experimental group later displayed twice the aggressive behaviors toward the doll than the control group. The intensity of the aggression remained the same whether it was modeled live, on television, or as a cartoon character (Bandura, Ross, & Ross, 1961, 1963). The Bobo doll experiment demonstrated that aggressive behavior is learned.

Bandura further researched the impact on modeling on learning. Other experiments included the study of parental behavior and the impact on their children. This study demonstrated that children of inhibited parents display inhibited behavior and children of aggressive parents display aggressive behavior (Bandura, 1963; Bandura & Walters, 1963). Bandura (1961) argued that knowledge alone is not enough to change behavior. Through his experiments he concluded that learning and change in behavior
can occur by watching and imitating others. This vicarious, indirect observational learning is also known as modeling.

Modeling is a four-step process in the context of social learning. They are identified as attention, retention, reproduction, and motivation. Bandura (1971) described attention as more than the exposure to the model. The attentional process is the recognition of the essential features of the model’s behavior. Exposure to the model does not ensure that attention will be paid, or that the most relevant characteristics will be selected, or that there will be an accurate perception of the model’s aspects. Many factors determine observational experiences. Frequent exposure to one’s associates—models that are highly influential and have high interpersonal attraction—will be more attentional. Models that are interesting and winsome will be sought out, while models that display less pleasing characteristics tend to be ignored or rejected although they may excel in other aspects.

The retention process is the storage of information and the creation of a memory of the modeled activity represented in symbolic form. The symbolism that is created can either be imaginal or verbal. It is through the retention process that enduring, retrievable images of the behavior are created. These memory codes serve as guides in matching response to situations (Bandura, 1971).

Reproduction is explained as the process whereby the symbolic representations guide overt actions. Learners mimic the behavior from the modeled patterns. Reproduction of behavior requires a motor skill set, physical capability, and the acquisition of the fundamental skill. If any of these components are missing or deficient, the learning will not take place (Bandura, 1971).
The last component of the modeling process Bandura (1971) described as the reinforcement and motivational processes. Although a person can acquire, retain, and possess the capability for performing a modeled behavior, a desire to learn must be present. Reinforcement and punishment also influence motivation whether felt personally or in the observation of others receiving reinforcements or punishment. Negative consequences may cause a restraint to the performance of the learned behavior. When positive consequences are provided, the learned behavior is translated into action. Reinforcement not only regulates the expression of matched behaviors but also affects the level of observational learning by controlling attention, coding, and rehearsal of modeled behavior.

In 1986, Bandura expanded learning into a more comprehensive theory of human motivation and action and a less linear model of behavior. He changed the name of his theory from social learning theory to social cognitive theory. He described the model as a triadic reciprocal causality. This model of behavior is based on the bidirectional interacting factors of behavioral patterns, environment, and personal factors of cognitive, affective, and biological events. That the three factors do not necessarily make an equal contribution to behavior is influenced by which factor is strongest at any given time. In addition to the influence of the triad, Bandura postulates that humans have five certain capabilities in which to function.

The first capability is the capacity to symbolize. Symbolizing is the ability to attribute abstract thoughts to meaningful experiences. The second capability is forethought. Humans have the ability to weigh probable consequences of actions, establish goals, and plan and select a course of action. The third capability is vicarious
capability. Through vicarious capability a person can learn by observing the actions and consequences of actions by others. The fourth capability is self-regulation. Individuals use personal and social standards in which behavior is evaluated and changed. This self-monitoring can be either motivational or inhibitory. The fifth capability is self-reflection. Through self-reflection, behavior is evaluated and compared to its congruence with society’s standard. This step is integral to self-efficacy. Bandura (1986), however, points out that self-reflection can lead to faulty thought patterns.

Concepts integral to Bandura’s (1986) theory include knowledge, outcome expectations (anticipation of probable outcomes), the outcome experience (the value one places on the outcomes from performing a behavior), the situation perception (how a person perceives and interprets the environment), the environment (the physical and social circumstance), self-efficacy (confidence and competency in overcoming barriers), goal setting and self-control (developing plans to accomplish chosen behavior), and emotion coping (the control of emotional and physiological states) (Sharma & Romas, 2012). Bandura (1986) defines human nature as the genetic factors that affect behavioral potentialities. Human action is described as learned cognitive abilities and inborn psycho-physiological factors.

Although Albert Bandura is a prominent figure in social learning theory, there are several criticisms to his work. Criticism is generally based on lack of focus on the impact of the environment, the role of biological and genetic differences, differences in learning among people, and the role of emotion and personality traits in self-efficacy. Criticism is also leveled at producing a causal demonstration. For example, in studies on delinquent behavior, it is argued that the behavior is developed before group contact. Individuals
with low self-control seek similar attitudes and behavioral qualities in their selection of peers (Akers & Sellers, 2004). Critics also point to Bandura’s lack of attention to the age and development process that have an impact on behavior (Coates & Hartup, 1969). Grusec (1992) speaks to Bandura’s lack of attention to reinforcement and punishment, a central concept of learning theory. Eastman and Marzillier (1984) express concerns with the theoretical and methodology of Bandura’s assessment of self-efficacy. Lack of attention to emotions as they contribute to change is also considered a weakness of this theory (Eccles & Wigfield, 2002).

Bandura’s theory has been used in health professional education, management, and the provision of patient care. Observation-based learning can range from a simple job shadow experience to a more sophisticated application of observational studies from psychodynamic theory employed in training for psychotherapists. Limited research related to interprofessional education has been completed, and the number of interactive learning studies was small (Barr et al., 2005). However, several recent studies have been completed with more studies being undertaken. In one study, nurse managers identified role modeling as providing a positive impact in the work environment (Alligood, 2011; Kane-Urrabazo, 2006). Guest, Smith, Bradshaw, and Hardcastle (2002) used observation-based learning with nursing and medical students to increase the understanding of professionals’ roles. Findings from this study demonstrate that observational-based learning improves the knowledge of other professionals’ roles, responsibilities, and clinical skills. Role modeling as an educational method of instruction may help prepare health professionals to achieve expected clinical competencies. Aronson, Glynn, and Squires (2013) found that student nurses performed better after the exposure to a role-
modeling intervention simulation-based response to a patient rescue event. Abbey, Willett, Selby-Penczak, and McKnight (2010) found that the use of role models assisted preparing physician students in the development of professional attributes. A qualitative study examining role modeling in the operating room defined exemplary professional action and behaviors that were reported by medical students. Themes of teamwork, collegiality, and mutual respect were identified as exemplary and increased the understanding of how professional behavior is viewed and imitated by medical students (Curry, Cortland, & Graham, 2011). Role modeling has been identified in a study as the preferred teaching method to introduce principles of professionalism and professional boundaries (Ratanawongsa et al., 2006; Gaufberg, Baumer, Hinrichs, & Krupat, 2008). Role modeling by exemplary practitioners can contribute to the education of nurses in the practice setting as described in the qualitative study by Perry (2009). Although there is no consensus on the best methods to teach professionalism, professionalism is learned most effectively through the use of role models as noted in a systematic review of proven teaching strategies on professionalism (Birden et al., 2013).

Learning through the use of role models is one method of instruction that can be considered for use in interprofessional education. Although there are limited data to support this methodology, the studies discussed present evidence that role modeling encourages collaboration, improves job satisfaction, and improves the delivery and quality of patient care. Bandura’s social learning theory provides a framework for consideration in interprofessional education.
Interprofessional Learning: Teamwork and Collaboration

Interprofessional learning is based on several concepts. The first concept is related to teamwork and collaboration. Historically, each profession educates and trains future members within its own educational system. Traditionally there is little exposure or interaction with other professionals in which one will eventually work. The training time is spent on acquiring the unique knowledge base and skill set of the profession. The result leads to clinicians who are highly specialized in their field but have little knowledge of the roles of other professionals. This leads to lack of preparation for collaboration and working in interprofessional teams (Freshman, Rubino, & Chassiakos, 2010). For teams to be effective, contact with other professionals is not sufficient. Team members need opportunities to learn about each other and interact with each other as described by Sargeant, Loney, and Murphy (2008) in their qualitative study. They suggest that specific cognitive, technical, and affective competence occurs when professionals are given opportunities to work together.

Although many definitions of collaboration exist, most authors define collaboration as sharing, partnership, and interdependency. It has also been defined as a process of communication and decision making that enables the separate and shared knowledge and skills of health-care providers to synergistically influence the patient or client care provided (Way, Busing, & Jones, 2000).

Working in teams and the interactions between team members are also an important concept to interprofessional learning (D’Amour et al., 2005). Several different definitions can describe teams. Multidisciplinary teams have different professionals working on the same project but independently or in parallel (Paul & Peterson, 2001;
Satin, 1994; Siegler & Whitney, 1994). Interdisciplinary teams imply a greater degree of collaboration between members. For Satin (1994), interdisciplinary teams involve an effort to integrate and translate themes and schemes shared by several professionals. The transdisciplinary team refers to professional practice where consensus seeking and professional boundaries are blurred or vanish (Paul & Peterson, 2001).

Teamwork and collaboration can be considered from several theoretical frameworks. Reeves, Lewin, Espin, and Zwarenstein (2010) discussed using social sciences theories from sociology, social psychology, adult learning, systems theory, psychodynamic or organizational theories to aid in the understanding of interprofessional education.

**Social Psychology Theories**

**Identity Theory**

One identified theory is the social identity theory of Tajfel and Turner (1986). Tajfel and Turner proposed that belonging to a group gives one a sense of social identity and a sense of belonging. Self-image is enhanced by enhancing the status of the group to which one belongs. Groups are then divided into “them” and “us’ and the “in” group will discriminate against “them” in order to enhance self-image. Stereotyping can be created by exaggerating the similarities in the same group or exaggerating the differences between groups. This theory might explain how different health professionals may hold preconceived stereotypical ideas of other health professionals and influence interactions in the health-care team.
Social Exchange Theory

A second theory to consider would be the social exchange theory. The social exchange theory (Thibault & Kelley, 1952) suggests that the worth of a relationship is determined by conducting a cost-benefit analysis. Gitlin, Lyons, and Kolodner (1994) expanded upon the social exchange model into concepts of assessment and goal setting, determination of a collaborative fit, identification of resources and reflection, refinement and implementation, and evaluation and feedback. The adaptation of this model would be a good fit for a culture that supports collaboration (D’Amour et al., 2005).

Team Effectiveness Theories

Teamwork and collaboration may also be examined from team effectiveness models. Henderson and Walkinshaw (2002) described the effectiveness of a team as containing four factors. The first factor, performance, is the execution of an action. The second factor is the measure of performance of the action. The third factor is effectiveness. The fourth factor is the measurement of the effectiveness. They describe effectiveness as the accomplishment of the goal, and performance as how well the task is carried out.

Driskell, Salas, and Hogan (1987) developed a model of team effectiveness built on Hackman’s (1983) model of team effectiveness requiring an enabling structure, compelling direction, and a real team in a supportive organizational context. Their model consists of three components: the effect of the input factors, the interaction of input factors with team process, and outcome. The focus of this model is process gain and loss.

A fifth model to consider was developed by Salas, Dickinson, Converse, and Tannenbaum (1992). The effect of the environment plays a significant factor in this
model of teamwork and collaboration. The authors suggest that the organizational and environmental factors contribute to the overall success and quality of team performance. This model was expanded upon by Tannenbaum, Beard, and Salas in 1992. The updated model included variables related to team building and feedback loops. This model also distinguishes between teamwork and tasks at the individual and team level.

Klimoski and Jones (1995) also developed a model that used the input, process, and outcome methodology but included the environmental demands on the team and the differences between task and team. Their model differs as they distinguish task accomplishment from quality of outcomes. They also believe that the composition of the team influences team performance and effectiveness.

Group Development Theory

Bruce Tuckman’s (1965) group development theory describes a linear stage that includes forming, storming, norming, performing, and adjourning (University of Oregon, 2007). This theory of team development is one of the most popular and used models of creating teams (Gilbertsen & Ramchandani, 2003). The forming stage is characterized by personal dependency. Group members become oriented to each other and to the task at hand. The storming stage is characterized by conflict. Norming is a sense of beginning cohesion. The performing stage may or may not be met by groups. This stage is characterized by interdependence and problem solving. Adjourning is the phase where tasks are completed and relationships are terminated. This theory was tested by Runkel, Lawrence, Oldfield, Rider, and Clark (1971) and was found to be valid by direct observation in the classroom.
Contact Theory

Contact theory was developed by Allport (1954). Allport proposed that the most effective way to decrease tension between two groups was to bring them together for interactions. However, just introducing the groups to each other is insufficient. Three conditions need to simultaneously exist. The groups need to be of equal status, they need to work on common goals, and cooperation must exist between the groups. Organizational support is also an integral factor in the group’s success. This theory is useful in interprofessional health-care teams to help decrease the prejudice that may exists between the groups. A study by Mandy, Milton, and Mandy (2004) examined the change in stereotyping in both dental and physiotherapy students before and after an interprofessional education. The results of this study suggest that while stereotyping may exist in health-care teams, timing of interprofessional education is an important factor in decreasing stereotyping.

Self-Presentation Theory

Goffman’s (1959) self-presentation theory offers an alternative method to assess teamwork and collaboration. In his theory, an individual attempts to control the perception of others through changing manner, setting, and appearance. Goffman suggests that how we present ourselves to others is aimed at making and controlling an impression. This is a conscious decision on the part of the individual to reveal or conceal certain aspects of ourselves.
Community of Practice

Jean Lave and Etienne Wenger first spoke to theory of community of practice in 1991. A community of practice is a group of individuals sharing a common concern working together to achieve a common goal. Whereas Bandura (1961) speaks to cognitive mental processing, Lave and Wenger (1991) argue that active participation is required and that learning occurs with the interaction among the participants of the group (Filstad, 2004). It should be noted that a community of practice is not a networked connection between people. Communities of practice have three factors in common. First, there is a common body of knowledge and competence. The value is implied in the collective competence. Second there is a commitment to the group and the sharing of ideas. The group engages in joint activities and discussion, assisting each other and sharing information. The interaction of the group members enhances learning. The last factor is the sharing of resources and strategies. The members are practitioners who share their practice (Lave & Wenger, 1991). In 1998, Wenger further suggested that learning occurs based on collaboration among peers where individuals work toward a common purpose and the focus is on the acquisition of knowledge rather than on completion of the task.

The development of a skill set and technical knowledge are the basic foundation of communities of learning. However, it also involves the development of a set of relationships built over time. Communities of practice are created as a joint enterprise in response to a topic that is of importance to a group of interested individuals. Members of the community of practice organize around a particular area of knowledge or activity. This allows the community to create a unique sense of identity (Lave & Wenger, 1991).
Communities of practice evolve over a period of five stages. The first stage is identified as the potential stage. During this time, the group is engaged in similar circumstances without the benefit of shared practice. The second stage is the coalescing stage. During this time members come together and realize potential. The third stage is the active stage where members engage in developing a practice. The fourth stage is the dispersal stage. During this time the members are no longer intensely engaged, but the community is still recognized as a center of knowledge. The final stage is the memorable stage. Although the community is no longer active, it is remembered as a significant part of a produced identity (Wenger, 1998).

In order for communities of practice to be successful, several factors must be present. These factors include the domain, the community and the practice. It is important to note that communities of practice are not merely clubs or networked connections between people. The group is identified by a shared domain of interest and commitment to the group. The group members value the collective competence, have shared competence and learn from each other. The second factor is the community. As a community the group shares their interest and information by engaging in discussions and activity thereby enabling learning. The third factor is the identification of members as practitioners. The members share resources through engaging in conversation, sharing stories, sharing tools all in the context of shared practice and creation of a knowledge base. It is the development of these three factors in parallel that will cultivate a community of learning (Wenger, 2006).

Communities of practice develop by engaging in a variety of activities. Some activities include problem solving, request for information, and seeking experience.
Coordination and synergy and the reusing of assets are other activities that assist in learning. Knowledge mapping and identification of knowledge gaps is another method for communities of practice to share knowledge and learn (Wenger & Snyder, 2000). The importance of sharing knowledge and understanding of the environment was explored in a business simulation game. Results of this study emphasized the importance of developing team learning behaviors and demonstrated improvement in team performance (Van den Bossche, Gijselaers, Segers, Woltjer, & Kirschner, 2011).

Many different models exist to explain teams, teamwork, and collaboration. Some of the more well-known have been discussed. Studies suggest that teamwork and collaboration improve outcomes in patient care, create higher levels of patient satisfaction, and increase problem solving (Hughes et al., 1992; Jansson, Isacsson, & Lindholm, 1992; Lemieux & McGuire, 2006; Mickam, 2005; Westberg & Jason, 1993). Collaborative practice can decrease patient complications, decrease clinical errors and mortality rates, decrease costs, and decrease team conflict (Grant & Finocchio, 1995; Holland, Battersby, Lenagham, Smith, & Hay, 2005; Loxley, 1997; McAllister, Stewart, Ferrua, & McMurray, 2004; Naylor, Griffiths, & Fernandez, 2004). Specific interventions created by organizations have targeted interprofessional teamworking with positive results (Chan et al., 2010). More study is needed to understand the role of teamwork and collaboration; however, studies done thus far have shown the positive impact that teamwork and collaboration have had on patients, outcomes, organizations and the health-care team.
**Patient-Centered Care**

Focus on the client is the next concept many authors address in interprofessional education. Traditionally health-care has been largely paternalistic, where patients are passive and do not have the right or the ability to make their own decisions regarding their health-care (Mosser & Begun, 2013). Ill patients have also traditionally been treated according to the biomedical model. In this model of care the patient’s report of illness is taken to indicate the existence of a disease process that needs to be identified and treated (Mead & Bower, 2000). Effort to change this paradigm started with the Institute of Medicine’s reports.

The Institute of Medicine (2001) report stated that health care should be safe, effective, patient centered, timely, efficient, and equitable, and in 2003 it defined patient-centered care as a core competency of interprofessional teamwork. The client is considered to be part of the health-care team (Golin & Ducanis, 1981), and studies have demonstrated that patients participating in the decision-making process have better outcomes (Anderson, 2002; Hinojosa et al., 2001; Steward et al., 2000; Walker & Dewar, 2001), improved compliance with treatment (Beck, Daughtridge, & Sloane, 2002), and reduction in misdiagnosis due to poor communication (DiMatteo, 1998). Patient-centeredness has also been shown to reduce overuse of medical care and decrease the number of diagnostic tests and referrals (Berry, Seiders, & Wilder, 2003; Little et al., 2001). Studies have also suggested that patient- and family-centered care improved outcomes related to patient safety and satisfaction (Pollack & Koch, 2003; Steward et al., 2000).
In the United States, Harvey Picker created a nonprofit organization in 1986, the Picker Institute, in collaboration with Harvard School of Medicine. It was dedicated to developing and promoting a patient-centered approach to health care. As interest in patient-centered care grew, more institutes were established in Europe. The mission of the Institute was to create a greater understanding and respect for patient values, preferences, and expressed needs through research (Picker Institute, 1986). Many patients, families, and professionals relied on the Institute as a leader in advancing patient-centered care.

The Picker Institute (1986) described eight dimensions of patient-centered care. The first is the respect for patients’ values, preferences, and expressed needs. This implies a sense of patient autonomy and individuality. The second dimension is coordination and integration of care. This dimension helps alleviate the powerlessness and vulnerability patients can experience when faced with illness. The third dimension is information and education. Patients request clear, accurate, honest information regarding illness, treatment plan, and prognosis. The fourth dimension is physical comfort. Comfort measures should be provided to address patients’ need for pain management, and assistance with activities of daily living with the added attention to the environment. The fifth dimension is emotional support and alleviation of fear and anxiety. Health-care providers should attend to patient and family anxiety related to illness, treatments, quality of life, or finances. The sixth dimension is involvement of family and friends. Health-care providers should recognize the needs of the family and provide support and be inclusive of family members. The seventh dimension is continuity and transitions. Patients identified a need for information and assistance in post-discharge care. This includes
medication and dietary management, ongoing outpatient services, and access to community services if needed. The last dimension is access to care. Patients and families need to know how and when to access health-care whether via inpatient or outpatient services (Gerteis, Edgman-Levitan, Daley, Delbanco, & Picker/Commonwealth Program, 1993). The Institute is now closed but has moved its major programs to other organizations such as Planetree, leading the advancement of patient-centered care.

The Planetree organization, founded in 1978 by a patient, partners with organizations across the continuum of care to produce culture change that allows health-care to be delivered by putting the patients’ needs first (Planetree, n.d.). It is through both these organizations that the concepts of patient-centered care have grown.

Although different definitions of patient-centered care exist today, the central theme of patient-centered care is the re-definition of relationship and health-care planning (Frampton et al., 2008). Five key dimensions of patient-centered care have been described by Mead and Bower (2000). The first is patient as a person. This implies an understanding of the personal meaning of illness for the patient. The second dimension is the sharing of power and responsibility. In patient-centered care, the patient and the care provider have an egalitarian relationship. The third dimension is the therapeutic alliance where there is a common understanding of the goals and requirements of treatment. The fourth dimension is the doctor-as-person. The physician takes on an integral role in the relationship. The last dimension is the biopsychosocial perspective. This dimension allows perceiving illness from conventional perspectives of pathology to the inclusion of psychosocial concerns impacting patients (Mead & Bower, 2000).
Others have differing concepts of patient-centeredness. The Institute of Family-Centered Care describes the core concepts of patient-centered care as dignity and respect, information sharing, participation in care and decision making, and collaboration with health-care leaders (Institute for Patient- and Family-Centered Care, 2013). Bechtel and Ness (2010) identified four attributes of patient-centered care: “whole person” care, coordination and communication, patient support and empowerment, and ready access. Patient-centered care establishes a partnership among practitioners and their families to ensure that decisions respect the patient’s wants, needs, and preferences and that they have the education and support to make decisions and partner in their own care (IOM, 2003).

The passage of the Patient Protection and Affordable Care Act in 2010 introduced significant changes in the United States health-care systems. Although commonly understood to impact the quality and affordability of health insurance, this law also contains other reforms. Patient-centered care is an integral part of the law as the focus will be more on quality as opposed to quantity, on a streamlined health-care delivery system and the reduction of costs.

**Professional Identity**

In health care, each health-care profession has created its own sense of professional identity—the manner in which one has been educated and socialized. Professionalism is a word that is used by many different occupations today. Although the term is widely used, it is difficult to specifically define. However, definitions exist in the social science literature that can be considered in an effort to describe what it means to be a professional and act professionally.
When defining professionalism, many use the work of Paul Starr (1984). Starr identified three criteria that must exist in order to be considered a profession. The first criterion is that a profession regulated itself through the acquisition of technical and scientific knowledge. Secondly the knowledge and competency of the professional is validated by a community of peers. Lastly the profession has a service rather than profit orientation and abides by a code of ethics.

A second definition of professionalism was described by William Sullivan (1995). He characterized professionals as having specialized training in an organized body of knowledge obtained through formal education. Secondly, there must be public recognition of autonomy for practitioners to regulate their own practice. Similar to Starr, the third characterization includes the commitment to provide service to the public beyond the economic welfare of the practitioners.

Elliot Freidson (1970) offers a third definition of professionalism. He describes professionalism as an occupation that has control over the determination of its own work, is autonomous, and is self-directed. The members of a profession must demonstrate trustworthiness and act in an ethical manner. The professional must also have knowledgeable skill.

Professional identity has been described as a set of beliefs, attitudes, and understanding of roles within the context of work (Adams, Hean, & Sturgis, 2006; Lingard, Reznick, DeVito, & Espin, 2002). Professional identity is characterized by each individual’s profession with fragmented, discipline-specific knowledge. It is a dynamic process constructed in a variety of social settings (Lawler, 2008). As each profession has defined its identity, values, spheres of practice and role in patient care, this has led to
each health-care profession to work in a silo to ensure common experiences, values, an approach to problem solving, and language (Hall, 2005). Although it is important that each profession develops a sense of professional identity, the challenge with interprofessional practice is balancing the need to maintain a professional identity while acknowledging the value, the contribution, and the expertise of the other health-care professions in providing patient care (World Health Organization [WHO], 2010; Zwarenstein, Goldman, & Reeves, 2009).

Professional practice has been defined by having (a) a high degree of expertise, (b) freedom to control and manage a task, (c) a system of ethics and professional standards, and (d) a sense of autonomy (Southon & Braithwaite, 2000). The process of developing a professional identity begins before entering the educational system. Individuals bring with them unique attitudes, beliefs, understanding of the profession, and how they see themselves in the professional role. During the educational process, a direct transfer of attitudes, knowledge, and prescribed behaviors and culture occurs and is carried over into professional roles. At the completion of the educational process, a mastery of skill and values will have occurred with the acquisition of professional identity and boundaries (Hall, 2005; Oandasan & Reeves, 2005).

Several factors are involved in developing a professional identity. One factor is that of power. The traditional hierarchy that has existed to in health care has led to power with the medical profession. Professional status based on superior knowledge, autonomy, and self-management can result in a reluctance to share power and decision making (Barrett & Keeping, 2005). Unequal power distribution can be oppressive and detrimental to contributions of team members (Payne, 2000). However, interprofessional practice is
built on the premise of shared power and non-hierarchal relationships (Barrett & Keeping, 2005). As health-care providers move to a more interprofessional practice, a change in attitudes towards the struggle for power within the health-care profession will be needed.

A second factor is professional boundaries. Professional boundaries has been defined as the tool used by a profession to promote its ideology and serve as a framework for that profession’s worldview (Gieryn, 1983). Until recently, professional boundary lines have been traditionally stable. However, in today’s dynamic health-care environment, there is concern regarding the blurring and crossing of professional boundaries. There has been a tremendous growth and transformation of existing health professions and the creation of new health-care roles related to technology and education, research, regulation, and shortage of workers (Appel & Malcolm, 2002; Richards, Carley, Jenkins-Clarke, & Richards, 2000; Salsberg, 2002). Health-care providers have seen role expansion, and increase in delegation, diversification, and specialization (Nancarrow & Borthwick, 2005). These changes have caused concern over professional boundaries and role confusion. The lack of clarity and confusion surrounding role and professional boundaries may be a limiting factor in the acceptance of interprofessional practice, and it will take some time for the redefinition of roles and the new delineation of boundaries (Barrett & Keeping, 2005).

One might think that each health-care profession might have the same value system—care of the patient. However, each profession has a different set of value systems that were introduced in the education process. Incorporating these values is an important part of the development of the profession’s worldview. As an example, some
professions value the patient’s perspective while others are more concerned with objective data. This difference in values may lead to conflict. In interprofessional practice, it is important that professional values be clarified and understood between members of the team (Hall, 2005).

Professional identity can be examined from several theoretical perspectives. The most frequently used framework is the social identity theory of Tajfel and Turner (1986). As discussed previously in this paper, social identity theory is concerned with group categorization and group identity. Group membership is internalized into a social identity. Interpersonal relationships are built on integrating positive identities for the self and the in-group. Brown and Williams (1984) further define three models of social identity theory. The first model is the decategorization model that attempts to reduce the differences between groups and their members in encounters. The second model is the in-group identity model. This model focuses on the creation of a larger group that competing groups can join. The third model is the salient category model which maximizes the group as opposed to the individual. This is related to interprofessional practice as it attempts to change one’s professional identity (Barr et al., 2005).

A second theory related to professional identity is the self-categorization theory by Turner, Hogg, Oakes, Reicher, and Wetherall (1987). Turner et al. built on the self-identify theory to include identification of members of a group with a shared identity as opposed to individual identification. Self-identity theory is built on three levels. The first level, the superordinate level, is the identification with other humans as opposed to members of other species. The second level, the social level, is identification with the in-group or out-groups. The third level is the subordinate level where individual
characteristics separate members from the same larger group. Self-identity theory plays a part in interprofessional practice as it allows for the understanding of stereotyping and self-concept as a professional (Barr et al., 2005; Dombeck, 1989).

**Challenges to Interprofessional Education**

Interprofessional practice has several associated challenges. One of the major challenges is related to power. Professional differences have been described as “tribalism” (Beattie, 1995). Differences in training, philosophy, and evolution contribute to the development of tribalism (Baxter & Brumfitt, 2008). In cases where interprofessional practice has not been found to be effective, a key cause of failure has been attributed to interprofessional conflict based on threats to professional identity (McNeil, Mitchell, & Parker, 2013).

Stereotyping, or attitude of status, is another challenge to interprofessional education. Studies examining stereotyping and intergroup discrimination demonstrate that stereotyping exists at the undergraduate level (Mandy et al., 2004; Oandasan & Reeves, 2005; Tunstall-Pedoe, Rink, & Hilton, 2003). This suggests that education be proactively engaged to diminish the effects of stereotyping while students are in professional educational programs so that stereotypical beliefs and associated behaviors be eliminated at the professional level.

As stated previously, health professionals are educated and socialized to their professional roles and scope of practice. With the ever-increasing change in health-care delivery models, there is also a corresponding change, along with challenges, on defining and interpreting professional roles (Falk, 1977). Role blurring and role confusion are becoming more evident as policy changes have taken effect. Although some argue that
the health-care system is in need of an overhaul with creative changes to role
development (Cameron & Masterson, 2001; Doyal & Cameron, 2001; Masterson, 2002),
there are others who argue that each profession should retain its individual knowledge,
responsibility, and expertise with the integration of interprofessionalism (Biggs, 2000).

Individuals in the health-care professions have been educated with limited
interaction with other health-care professional students, which leads to the development
of strong bonds in group formation. Social identity theory provides an explanation of
intergroup relations between those who are considered in the group and those who are
excluded (Tajfel, Billig, Bundy, & Flament, 1971). Each individual professional operates
within a silo, owns a specific core of knowledge, and works within a specific scope of
practice. In order to be effective, each team member must accept responsibility to act
within the role of their professional standards of practice and communicate this scope of
practice to others (MacDonald, Bally, Ferguson, Murray, & Fowler-Kerry, 2009).
CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to examine which selected factors relate to nurses’ readiness toward interprofessional learning. This study examined the relationship between selected demographic factors and readiness for interprofessional learning for registered nurses in a hospital-based practice in Boston, MA, in the context of continued professional development. This chapter describes the research methodology that was used for this study. This study is an ex post facto study, examining the demographic variables in relationship to readiness toward professional learning. The population and sample, instrument, and procedures used in this investigation will also be discussed.

Research Design

In an attempt to identify what selected factors are related to nurses’ readiness for interprofessional learning in a continuing education context, a non-experimental, ex post facto design was used. This research design was selected because the independent variables cannot be manipulated and have already occurred (Newman, Newman, Brown, & McNeely, 2006). The independent variables in this study include demographic factors of (a) age; (b) gender; (c) highest level of nursing education; (d) generic or second-degree nurse education; (e) number of years practicing as an RN; (f) specialty being practiced. The dependent factors in this study are teamwork and collaboration, sense of professional
identity, and patient-centeredness. The ex post facto research design is a systematic inquiry that explores possible relationships (Newman, Benz, Weis, & McNeil, 1997). It should be noted that one of the limitations to a non-experimental study is that it has weak internal validity, meaning that the fact that two or more variables are correlated is not sufficient basis for causal inferences (Warner, 2008).

There are three types of ex post facto research. The first type is exploratory or descriptive and looks at relationships without hypotheses. It is the weakest ex post facto research design and has the weakest internal validity. The second type of ex post facto research design has hypotheses and is perceived to be good as long as the hypotheses are credible. The last type of ex post facto research design has hypotheses and controls for viable alternative explanations of the research outcomes. This type of research frequently uses analysis of covariance techniques to control for a variety of predictor variables as alternative explanations (Campbell & Stanley, 1963; Kerlinger & Lee, 2000; Newman et al., 2006).

The independent variables in this study include age, gender, highest level of nursing education achieved, generic or second-degree nurse education, number of years practicing as a registered nurse, and the types of specialty areas of nursing in which employed. The dependent variables in this study are readiness towards teamwork and collaboration, sense of professional identity and patient-centeredness as determined by scores on the Readiness for Interprofessional Learning Scale (RIPLS). In this study, inferences were made about the relationship among the variables without direct intervention from “concomitant variation of independent and dependent variables” (Kerlinger, 1972, p. 379).
Ex post facto design is used to demonstrate relationships, not causation. Causation can be determined only from experimental design. In ex post facto research, causation is sometimes improperly inferred because “there is a tendency for assuming a variable is likely to be the cause of another because it precedes it in occurrence” (Newman et al., 2006, p. 101).

Therefore, this study does not infer causation, but studies the relationships between the variables to determine which variable may predict readiness for interprofessional learning. Without an experimental research design, it is not possible to conclude that a specific demographic predictor caused the result.

There are three major weaknesses associated with ex post facto research design. The weaknesses include: (a) the inability to manipulate independent variables, (b) the lack of ability to randomize, and (c) the risk of improper interpretation which is due to the lack of manipulation (Campbell & Stanley, 1963; Kerlinger, 1972; Newman et al., 1997).

Even though this study is ex post facto in nature, it is guided by the hypotheses as noted previously. This study contributes to a greater understanding of the relationships between nursing demographic factors and teamwork and collaboration, patient-centeredness, and professional identity but will not infer causation. It should be noted that one of the limitations to a non-experimental study is that it has weak internal validity, meaning that just because two or more variables are correlated, there is not a sufficient basis for causal inferences (Warner, 2008). Other limitations are the inability to manipulate variables and the inability to randomize the participants and the tendency of the researcher to draw inaccurate conclusions because of the inability to manipulate the
variables (Newman et al., 1997, p. 38). The utilization of a convenience sample may add to confounding factors of the study. Confounding variables are extraneous variables that the researcher cannot control or eliminate, which are not part of the study and which may damage the internal validity of the study (Cohen, 1988; McNeil, Newman, & Kelly, 1996; Newman & McNeil, 1998; Shuttleworth, 2008).

**Research Hypotheses**

The research hypotheses that guided this study were as follows:

Hypothesis 1: There is a significant relationship between selected independent demographic variables and the dependent variable of readiness for interprofessional learning for registered nurses.

Hypothesis 2: There is significant relationship between independent demographic variables of age, gender, primary or secondary degree nurses, highest level of nursing education, number of years practicing as a registered nurse, and nursing specialty and the dependent variable of teamwork and collaboration among registered nurses.

Hypothesis 3: There is a significant relationship between independent demographic variables of age, gender, primary or secondary degree nurses, highest level of nursing education, number of years practicing as a registered nurse, and nursing specialty and the dependent variable of sense of professional identity among registered nurses.

Hypothesis 4: There is a significant relationship between independent demographic variables of age, gender, primary or secondary degree nurses, highest level of nursing education, and number of years practicing as a registered nurse, and nursing specialty and the dependent variable of patient-centeredness among registered nurses.
Description of the Sample

Today’s health-care professionals practice in a highly technological, multidisciplinary environment. In order to provide safe, effective, and high-quality patient care, collaboration is required among all professionals. Traditionally each profession has operated independently in regard to continued professional development. Study is needed to assess practicing registered nurses’ readiness toward interprofessional learning in order to align learning with current practice.

The sample included registered nurses from a local community hospital in Boston, Massachusetts, providing a convenience sample of 69 participants. Creswell (2008) suggests that a sample should contain a commonality of the characteristics shared by individuals or groups when selecting a population to study. Subjects in this study were registered nurses who have been practicing in the acute-care setting for at least 5 years, allowing for the nurses to have met the State of Massachusetts requirement of 15 continuing education hours for license renewal. For this study, the sample included registered nurses employed at a community hospital in the Boston area.

The reliability of the sample value is determined by how closely it represents the relevant population and is not dependent on the size of sample. The estimated \( n \) size for this study is based upon three parameter estimates, which include effect size, alpha level, and statistical power. The effect size denotes the degree to which the phenomenon exists. To determine the \( n \) needed for this sample, a power analysis was conducted assuming a power of .80 for an alpha of .05 for a medium-size effect \( (f^2 = .15) \). An alternative way to estimate the sample size needed is to use the general “rule of thumb” that suggests taking
a sample of 5 to 10 subjects for each independent variable. For this study, a sample size of \( n=69 \) nurses employed at one community hospital in the Boston area was used.

**Sampling Procedures**

A convenience sample was utilized with the knowledge that convenience samples are not necessarily representative of the population. With this in mind, this sample can provide a useful initial understanding of the characteristics in registered nurses that make them ready to learn in an interprofessional environment. This sample is a convenience sample and includes registered nurses at the local community hospital who have had their licenses to practice nursing in Massachusetts for a minimum of 5 years.

I received Institutional Review Board (IRB) approval from Andrews University. As the local community hospitals do not have an Institutional Review Board, I sought permission from the Vice President of Patient Care services at the community hospital to conduct the survey. Permission was received.

**Data Collection**

I requested permission from the nurse managers to attend unit-based staff nurse meetings in all the clinical areas to introduce myself, provide an explanation of the study, and offer the opportunity to participate. Meetings were held in the intensive care unit, the two general medical surgical units, emergency department, peri-operative unit, and geriatric-psych unit. After explaining the study and requesting participation from the registered nurses, a letter of introduction, instructions to complete the survey, and a paper version of the survey and RIPLS were distributed at the meetings. Nurses self-selected by
their personal decision to participate. The survey window was open for a 2-week period of time.

Measures were taken to protect the confidentiality of the participants. The precautions that were taken included: having the data forms not identifiable with names, addresses, or clinical units. Each of the unit managers kept the completed surveys locked in their office. This prevented tampering with the data.

The estimated time of completion of the survey was 10 to 15 minutes. Participants completed surveys at their convenience, placed them in the provided sealed envelopes, and returned them to his/her unit nurse manager. Completed envelopes were collected daily from the nurse managers and kept in a locked office until the 2-week closure date. All data were inputted and analyzed using Software Package for Social Sciences (SPSS) in a password-protected computer.

**Instrument**

The Readiness for Interprofessional Learning Scale (RIPLS) was first developed by Parsell and Bligh in 1999. The original version was intended to measure undergraduate students’ readiness towards interprofessional learning. In its original form, the tool resulted in a three-factor scale with 19 items. The three factors, “team work and collaboration,” “professional identity,” and “professional roles,” were described and had an internal consistency of 0.9 (Parsell & Bligh, 1999). Since its inception, the researchers further refined the tool to strengthen the third factor of roles and responsibilities and explored the concept of patient-centeredness. McFadyen et al. in 2005 further attempted to improve the reliability for use of the RIPLS instrument in the undergraduate setting. The tool was administered to undergraduate students at the beginning and end of the
academic year. The researchers identified a four-subscale model which included the factors of teamwork and collaboration, negative professional identity, positive professional identity, and roles and responsibilities. The results indicated an improvement in Cronbach’s alpha on each of the subscales measured at the beginning and end of the academic year. However, roles and responsibility showed an unacceptable reliability of 0.40 and 0.43. The total internal consistency of the tool improved to 0.84 to 0.89, respectively. The authors reported a superior goodness of fit with a Chi-square value of 1.77 (desired value less than 2.0) and goodness of fit index of 0.904 (desired value of greater than 0.9). The authors suggested that the RIPLS tool appeared to measure the constructs in assessing changes in attitudes towards interprofessional learning in students; they recommended further study on the appropriateness of the tool in different clinical contexts. In 2006, McFadyen et al. examined the test-retest reliability of the RIPLS instrument. Although the RIPLS was found to have satisfactory test-retest reliability, it identified some areas of improvement of the scale. The results of the statistical analysis demonstrated the item reliability at a moderate level, with the totals of the subscales in excess of 0.60, indicating an acceptable value (McFadyen et al., 2006). Since the tool was originally designed for use in the undergraduate academic setting, Reid et al. (2006) suggested the appropriateness for using the tool to measure readiness of health-care professionals in the post-graduate context. In their study, Reid et al. hypothesized that the RIPLS could be useful in assessing the readiness for interprofessional learning in the professional context.

The RIPLS tool used in this study is a modified version of the original 19-item instrument. The instrument used in this study is the 23-item RIPLS instrument comprised
of three subscales, which are identified as teamwork and collaboration, Cronbach’s $\alpha$ estimated to be 0.88, professional identity, Cronbach’s $\alpha$ estimated to be 0.86, and patient-centeredness, Cronbach’s $\alpha$ estimated to be 0.88. The survey uses a Likert scale of response with $1 = \text{strongly disagree}$ to $5 = \text{strongly agree}$. Each subscale ranges from 1 to 5.

Validity

Validity is addressed in four ways. The first is content validity. Content validity is determined by subject-matter experts who review the instrument and determine if the concepts and items sufficiently measure the concepts. Criterion-related validity determines if the scores from an instrument are a good predictor of the outcome they are expected to predict. Concurrent-related validity compares test scores with the variables known to measure the attribute under study. Construct validity refers to the extent that the measurement tool actually measures the theoretical concepts it is intended to measure. It links statistics and practice and is a conglomeration of all other types of validity.

Construct validity can be measured in at least two ways. First, convergent validity is the correlation between a measure of the construct and a number of other measures that are associated with the construct. It determines that the constructs and related items are in fact related. The second manner is discriminant validity. Discriminant validity on the other hand measures how the correlations between a measure of the constructs and the measure that is associated with the construct vary independently. It verifies that the constructs and the variables are related in relationships as predicted by the theory. The fourth method is by confirmatory factor analysis (Bryman, 2012; Creswell, 2008, 2009; Field, 2009; Hoy, 2010; Johnson & Christensen, 2012; Kerlinger & Lee, 2000; Kimberlin

The revised RIPLS instrument was found to have good estimates of validity as estimated at the undergraduate level and it was proposed that the tool would also be valid at the professional level. According to Reid et al. (2006), the tool was found valid for use in the post-graduate level for assessing attitudes towards interprofessional learning by the examination of the instrument by an interprofessional group of health-care experts and construct validity demonstrated by the factor analysis.

**Reliability**

Reliability of a test is the consistency in its measure and will produce the same value each time it is used (Creswell, 2008; Kerlinger & Lee, 2000; Newman et al., 2006). Reliability can be assessed by several methods. Correlation, test-retest reliability, interrater reliability, and internal consistency reliability can be used to examine an instrument’s reliability. Reliability coefficients range from 0.00 to 1.00. A higher coefficient implies a higher reliability of the instrument. A second method is to assess the internal consistency. Internal consistency can be measured by utilizing Cronbach’s alpha. Cronbach’s alpha assesses the degree to which responses are consistent across multiple measures of the same construct. A value of 0.7 to 0.9 is considered a good value. Lower values may indicate an unreliable scale. A third method is to utilize a test-retest procedure (Creswell, 2008; Kerlinger & Lee, 2000; Newman et al., 2006). The original RIPLS instrument had a reliability measure of 0.76 and a Cronbach’s alpha of 0.81. The RIPLS instrument revised in 2006 and used in this study has a Cronbach’s alpha estimating the internal consistency to be 0.9 (Reid et al., 2006).
Variable List

The variables for this study were organized into the following categories: the participant’s demographic variables and the scores on the RIPLS instrument. Independent variables will include age, gender, highest level of nursing education achieved, generic or second-degree nurse education, number of years practicing as a registered nurse, whether employed at a community hospital, and the types of specialty areas of nursing in which employed. Dependent variables include readiness towards teamwork and collaboration, sense of professional identity, and patient-centeredness as determined by scores on the Readiness for Interprofessional Learning Scale (RIPLS) (see Table 1).

Variable Measures: Readiness for Interprofessional Learning Variables

The scores of the 23 questions, broken down into three subsets of teamwork and collaboration, professional identity, and patient-centeredness, were analyzed. Items 1-13 address the concept of teamwork and collaboration. Items 14-18 address the concept of professional identity. Items 19-23 address the concept of patient-centeredness. The 23 questions were rated on a Likert scale with “1” (strongly disagree), to “5” (strongly agree).

Demographic Variables

Independent variables include age, gender, highest level of nursing education achieved, generic or second-degree nurse education, number of years practicing as a registered nurse, and the types of specialty areas of nursing in which employed. Table 1 describes the operationalization of the variables. Dependent variables include readiness towards teamwork and collaboration, sense of professional identity and
Table 1

**Operationalization of the Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Conceptual Definition</th>
<th>Instrumental Definition</th>
<th>Operational Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Actual number of years being alive</td>
<td>List actual age on survey instrument</td>
<td>Actual number</td>
</tr>
</tbody>
</table>
| Gender                          | The sex of the participant | Your gender | Male = 1  
Female = 0  |
| Type of nursing degree          | This refers to whether nursing is the primary degree or whether a nursing degree was obtained after being awarded a degree in another field. | Type of nursing degree | Primary = 1  
Secondary = 0  |
| Highest level of nursing education | This refers to the highest degree in nursing awarded. | Type of degree awarded | Diploma  
Associate Degree  
Bachelor’s Degree  
Master’s Degree  
Doctor in Nursing Practice  
Other |
| Number of years practicing as a registered nurse | This refers to the number of years employed as a registered nurse. | The number of years you have been working as a registered nurse | 0-3 = 1  
3-5 = 2  
6-10 = 3  
11-20 = 4  
20+ = 5  |
| Type of areas working in the hospital | This refers to the specialty areas within the hospital system that registered nurses may provide patient care. | Which specialty area are you employed in? | Emergency Department  
Surgical Services  
Ambulatory Care  
Intensive Care  
Medical-Surgical Unit  
Psychiatric  
Pediatrics  
Other | 1= yes, 2=no  |

58
<table>
<thead>
<tr>
<th>Variable</th>
<th>Conceptual Definition</th>
<th>Instrumental Definition</th>
<th>Operational Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct 1 Collaboration and teamwork</td>
<td>This refers to the process between people to work together to solve problems or complete tasks, developing positive relationships.</td>
<td>Participants’ responses to items 1-13 on the RIPLS instrument: 1. Learning with other health-care professionals will help me be a more effective member of a health-care team. 2. For small group learning to work, health-care professionals need to trust and respect each other. 3. Team-working skills are essential for all health-care professionals to learn. 4. Shared learning will help me understand my own limitations. 5. Patients ultimately benefit if health-care professionals work together to solve patient problems. 6. Shared learning with other health-care professionals will increase my ability to understand clinical problems. 7. Learning with health-care students from other disciplines before qualification would improve relationships after qualification. 8. Communication skills should be learned with other health-care professionals. 9. Shared learning will help me to think positively about other health-care professionals. 10. Shared learning with other health-care professionals will help me to communicate better with patients and other professionals. 11. I would welcome the opportunity to work on small-group projects with other health-care professionals. 12. Shared learning helps to clarify the nature of patient problems. 13. Shared learning before qualification would help health-care professionals become better team workers.</td>
<td>Likert Scale*</td>
</tr>
<tr>
<td>Construct 2 Professional Identity</td>
<td>Variation in the attitudes between professional groups including prejudice, stereotypical views, historical legacy, status of professional knowledge.</td>
<td>Participants response to items 14, 15, 16, 17, 18 on the RIPLS Instrument 14. Clinical problem-solving skills should only be learned with professionals from my own discipline. 15. The function of nurses and therapists is mainly to provide support for doctors. 16. There is little overlap between my role and that of other health-care professionals. 17. I would feel uncomfortable if another health-care professional knew more about a topic than I did. 18. I have to acquire much more knowledge and skills than other health-care professionals.</td>
<td>Likert Scale*</td>
</tr>
<tr>
<td>Construct 3 Patient-centeredness</td>
<td>Interest in serving the patient’s needs.</td>
<td>Participants response to items 19-23 on the RIPLS instrument 19. I like to understand the patient’s side of the problem. 20. Establishing trust with my patients is important to me. 21. I try to communicate compassion to my patients. 22. Thinking about the patient as a person is important in getting treatment right. 23. In my profession one needs skills in interacting and cooperating with patients.</td>
<td>Likert Scale*</td>
</tr>
</tbody>
</table>

*Likert scale ranges from 1 = *Strongly Disagree*; 2 = *Disagree*; 3 = *Neutral*; 4 = *Agree*; 5 = *Strongly Agree.*
patient-centeredness as determined by scores on the Readiness for Interprofessional Learning Scale (RIPLS).

**Statistical Treatment**

Using a quantitative approach, data were collected to examine if there is a relationship between the independent variables of demographics and the dependent variable of readiness for interprofessional learning; therefore an ex post facto design was utilized. In testing the null hypotheses, data were collected and analyzed using a multiple regression statistical test (Field, 2009; Warner, 2008). If the test statistic exceeds the critical value, then the null hypothesis was rejected at an alpha of 0.05. The data were analyzed using IBM SPSS software. The results for this study begin with a description of each of the variables, followed by correlations between the demographic factors and the concepts of teamwork and collaboration, professional identity, and patient-centeredness.

The $F$ test was used to test the statistical significance of the proposed relationships in the hypotheses. The $F$ test was chosen because it is very robust. The assumptions of random selection of subjects and normal distribution of the variables can be violated without doing serious harm to the procedure (Newman et al., 2006).

**Correlation**

A Pearson correlation technique was used to examine and measure the relationships between the variables and to determine if they are related to one another. This statistical test allows for the identification of the independent variables that would predict the criterion variable of readiness for interprofessional learning. The predictor variable included the demographic factors, and the outcome criterion variables were
RIPLS test scores. Statistical significance testing using $t$-tests was used for each estimate of correlation. The probability level of .05 was used for rejecting the null hypotheses as is the standard for educational studies.

**Regression Analysis**

This study was conducted to test the hypotheses to see if a relationship existed between the demographic variables and readiness for interprofessional learning. A regression analysis was used to identify which characteristics in registered nurses are related to teamwork and collaboration, professional identity, and patient-centeredness. A multiple regression analysis was performed to determine if there was a combination of factors that could be used to predict readiness for interprofessional learning. Multiple linear regression was used in analyzing the variance in predicting one variable to another when covarying some of the variables to test alternative hypotheses (Newman & McNeil, 1998). Multiple linear regression was chosen as it is more flexible than the traditional analysis of variance. With multiple linear regression, a model can be written that reflects the specific research question being asked. Multiple regression assists in predicting the value of the outcome variable $Y$ with given values of each predictor variable and its regression coefficient and assists in writing models to reflect the specific research questions. The relationships between various types of variables, either categorical or continuous, can also be tested (Field, 2009; Warner, 2008). A multiple regression equation was created; $Y = b_1(X_1) + b_2(X_2) + a$, where $Y$ is the predicted scores, $b_1$ is a constant for the slope of $X_1$, and $a$ is the intercept. The $b$ value weight was examined for each independent variable: the $R$ which measures the relationship of the combination of variables being tested, the $R^2$ which can be interpreted as the proportion of variance
accounted for in Y that can be predicted from set of independent variables, the effect size or Pearson’s correlation squared, and the statistical significance of the test. In addition, McNeil et al. (1996) point out that with multiple linear regression, one can test relationships between categorical variables, between categorical and continuous variables or between continuous variables.

Two-tailed tests of significance were used to test the relationships of those variables where the direction of the correlation was uncertain.

The 0.5 level of significance was used since the consequences for rejecting a true null hypothesis are not so serious as to warrant a more stringent confidence level (Field, 2009; Warner, 2008).

**Factor Analysis**

A factor analysis was completed on the scale to determine if the RIPLS instrument were measuring the variables they were created to evaluate. A factor analysis is a method of data reduction that describes observed variables from a large set of variables and sorts them into similarly associated subsets. There are two types of a factor analysis, exploratory and confirmation. Factors are constructs or latent variables that are assumed to underlie tests, scales, items, and other measures. This statistical analysis is used on large numbers of variables to identify any underlying dimensions that can be used to describe the variables under study. It is used to provide evidence of the presence or absence of significant factors. The dimensions validity estimates the construct validity of the instrument.

A factor analysis is composed of two steps, extraction and rotation. Factor extraction is used to make an initial decision about the number of factors underlying a set
of measured variables. Factor rotation chosen for this study was varimax; statistically orthogonally rotated factor loadings are used to facilitate the interpretation and assist in making decisions about the interpretation of underlying factors. The variability accounted for is called an eigenvalue. There are several methods that can be used to determine the number of factors to include. The first is a prior conceptual belief about the number of factors based on past research or theory. The second is utilization of a scree plot. A scree plot graphs the eigenvalue on the Y axis against the factor in which it is associated on the X axis. The scree plot will have a few factors of high eigenvalues and many factors with low eigenvalues. The cut-off point for selecting factors is at the inflexion of the curve. The third method selects all factors extracted that have an eigenvalue equal to or greater than 1.00 (Field, 2009; Kerlinger & Lee, 2000; Warner, 2008). For this study, the eigenvalues for the given factors measured the variance in all the variables that are accounted for that factor in the RIPLS scale. A factor analysis on the three subscales on the RIPLS instrument was computed. Eigenvalues and scree plot are provided to describe the subscales.

**Limitations**

A primary limitation to this study was access to practicing registered nurses in the hospital environment and limitation of access to a local community hospital. This may preclude generalization of the study results. For example, small community hospital nurses may differ in the amount, exposure, and experience in interprofessional learning as compared to registered nurses in large, teaching academic centers. Limitation to this study also included lack of validity estimates for the RIPLS tool. Another limitation was the small sample size due to lack of willingness to participate in the study. In this study
the number of variables was larger relative to the number of subjects. This produced the possibility of power concerns. Limitations to this study also include using self-reporting data. Another limiting factor is that the RIPLS has been used once at the professional level in studies. Acquiring the RIPLS tool is not a limitation as permission has been granted by the original authors.

Use of an ex post facto research design is also a limiting factor. In ex-post-facto, causation cannot be determined as there is no manipulation of the independent factors. The reliability of the tool is good at Cronbach’s alpha 0.81 and reported validity was good.
CHAPTER 4

RESULTS

The present study was an investigation into factors that relate to readiness for interprofessional education in the context of continuing education in registered nurses. The following results will be reported: descriptive and demographic factors of the study sample. Also reported is the correlation between the independent demographic factors which are: teamwork and collaboration, professional identity, and patient-centeredness. A multiple regression analysis was done to predict interprofessional readiness (McNeil, Newman, & Fraas, 2011; Newman & McNeil, 1998). Lastly, a factor analysis was completed on the instrument.

Descriptives: Demographic Participant Descriptives

This study used a convenience sampling method to obtain 69 responses. The sample was obtained from registered nurses employed in a local community hospital who have been practicing in the acute-care setting for at least 5 years, allowing for the nurses to have renewed their nursing license at least once. In this section descriptive results are shared for the demographic variables of age, gender, type of nursing degree, highest level of nursing degree, types of specialty practice within the profession of nursing, and number of years employed as a registered nurse.
Of the 69 respondents, the average age of the registered nurse was 47.5 years old. Similarly the national average age of registered nurses is 46 years (ANA, 2011; United States Department of Health and Human Services Administration, 2010). The largest age group was 40-49 years old, representing 35% of the participants. However, nurses ages 50 or older make up 40% of the sample. This corresponds to the national statistics that 45% of nurses are 50 years old and older (ANA, 2011; United States Department of Health and Human Services Administration, 2010). In this study, nurses under the age of 30 represented 12% of the participants which is reflective that in the United States, only 10.6% of all registered nurses are under the age of 30 (ANA, 2011; United States Department of Health and Human Services, 2010). It is interesting to note that 10% of the participants are 60 years and older, which is similar to the national statistic of 14% (United States Department of Health and Human Services, 2010). Four respondents were male (6%) and 65 were female. Again this is similar to the national statistic of 6.6% of nurses being male (ANA, 2011; United States Department of Health and Human Services, 2010). This suggests that the sample used in this study is representative of the registered nurse population in the United States regarding age and gender.

Of the nurses who responded, 94% held nursing as their primary degree and 18% with nursing as a secondary degree. Nationally, 22% of nurses have nursing as a second degree (United States Department of Health and Human Services, 2010). The participants’ levels of education ranged from 13% having a diploma in nursing (nationally, 20%), 43% having an associate degree (nationally, 45%), 27% having a bachelor’s degree (nationally, 34%), 11% having a master’s degree (nationally, 13% of registered nurses have a master’s or doctoral degree) and 1% having a doctorate in
nursing practice (ANA, 2011; United States Department of Health and Human Services, 2010). Nationally less than 1% of nurses have a doctoral degree (United States Health Resource and Services, 2004). This suggests that the sample used in this study is representative of the registered nurse population in the United States regarding education.

The nurses at this community hospital had many years of work experience. The largest percentage, 42%, had 20 or more years of experience. This institution also had a large number of nurses with 11-20 years of experience (27.5%). Together these two groups make up almost 70% of the work force. The nurses worked in a variety of clinical settings. The majority of participants worked in the medical-surgical area (37%) whereas the remainder of nurses were employed in the Emergency Department (8%), Surgical Services (14%), Ambulatory Care (8%), ICU (15%), and Psychiatry (16%). Pediatrics and other specialty areas had no representation. Nationally, 29% of nurses work on general medical-surgical units, 19% in critical care, and 19% in surgical services (United States Department of Health and Human Services, 2010). This suggests that the sample used in this study is representative of the registered nurse population in the United States regarding employment in the specialty areas for general inpatient units, critical care, and surgical services.

The demographics of the participants are shown in Tables 2–7. Even though the nurses with less than 5 years’ experience were excluded in the interpretation of the data, Table 6 includes all years of experience. Some of the nurses who responded may have identified themselves as working in two specialty areas; therefore, the percentages in Table 7 will be greater than 100%.
Table 2

**Participant Descriptives: Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>4</td>
<td>5.8</td>
</tr>
<tr>
<td>Female</td>
<td>65</td>
<td>94.0</td>
</tr>
</tbody>
</table>

Table 3

**Participant Descriptives: Age**

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-29</td>
<td>8</td>
<td>12.1</td>
</tr>
<tr>
<td>30-39</td>
<td>9</td>
<td>13.6</td>
</tr>
<tr>
<td>40-49</td>
<td>23</td>
<td>34.8</td>
</tr>
<tr>
<td>50-59</td>
<td>19</td>
<td>28.8</td>
</tr>
<tr>
<td>60+</td>
<td>7</td>
<td>10.6</td>
</tr>
</tbody>
</table>

Table 4

**Participant Descriptives: Nursing Degree**

<table>
<thead>
<tr>
<th>Nursing Degree</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing as primary degree</td>
<td>65</td>
<td>94.0</td>
</tr>
<tr>
<td>Nursing as secondary degree</td>
<td>5</td>
<td>7.2</td>
</tr>
</tbody>
</table>
Table 5

Participant Descriptives: Levels of Education

<table>
<thead>
<tr>
<th>Highest Level of Nursing Education</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>9</td>
<td>13.0</td>
</tr>
<tr>
<td>Associates Degree</td>
<td>30</td>
<td>43.5</td>
</tr>
<tr>
<td>Bachelors’ Degree</td>
<td>19</td>
<td>27.5</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>8</td>
<td>11.6</td>
</tr>
<tr>
<td>Doctorate in Nursing Practice</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Table 6

Participant Descriptives: Years as an RN

<table>
<thead>
<tr>
<th>Years as a Registered Nurse</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>1.0</td>
<td>1.4</td>
</tr>
<tr>
<td>3-5</td>
<td>6.0</td>
<td>8.7</td>
</tr>
<tr>
<td>6-10</td>
<td>14.0</td>
<td>20.3</td>
</tr>
<tr>
<td>11-20</td>
<td>19.0</td>
<td>27.5</td>
</tr>
<tr>
<td>20+</td>
<td>29.0</td>
<td>42.0</td>
</tr>
</tbody>
</table>

Table 7

Participant Descriptives: Specialty Areas

<table>
<thead>
<tr>
<th>Specialty Areas</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Department</td>
<td>4.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Surgical Services</td>
<td>8.0</td>
<td>11.6</td>
</tr>
<tr>
<td>Ambulatory Care</td>
<td>4.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Intensive Care</td>
<td>9.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Medical-Surgical</td>
<td>24.0</td>
<td>34.8</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>11.0</td>
<td>16.2</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Other</td>
<td>10.0</td>
<td>14.5</td>
</tr>
</tbody>
</table>
Scale Descriptives

The 23-item modified RIPLS tool used in this study is comprised of three subscales, which are identified as teamwork and collaboration with a Cronbach’s $\alpha = 0.88$; professional identity, Cronbach’s $\alpha = 0.86$; and patient-centeredness, Cronbach’s estimated to be $\alpha = 0.88$. The survey used a Likert scale of response with “1” (strongly disagree) to “5” (strongly agree). Each subscale ranges from 1 to 5 (see Tables 8-10).

Table 8

*Scale Descriptives: Teamwork and Collaboration*

<table>
<thead>
<tr>
<th>Teamwork and Collaboration</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>69</td>
<td>4.42</td>
<td>0.81</td>
</tr>
<tr>
<td>Item 2</td>
<td>69</td>
<td>4.50</td>
<td>0.81</td>
</tr>
<tr>
<td>Item 3</td>
<td>69</td>
<td>4.56</td>
<td>0.88</td>
</tr>
<tr>
<td>Item 4</td>
<td>69</td>
<td>4.30</td>
<td>0.82</td>
</tr>
<tr>
<td>Item 5</td>
<td>68</td>
<td>4.57</td>
<td>0.88</td>
</tr>
<tr>
<td>Item 6</td>
<td>69</td>
<td>4.50</td>
<td>0.81</td>
</tr>
<tr>
<td>Item 7</td>
<td>69</td>
<td>3.98</td>
<td>0.86</td>
</tr>
<tr>
<td>Item 8</td>
<td>69</td>
<td>4.13</td>
<td>0.95</td>
</tr>
<tr>
<td>Item 9</td>
<td>69</td>
<td>4.14</td>
<td>0.91</td>
</tr>
<tr>
<td>Item 10</td>
<td>69</td>
<td>4.15</td>
<td>0.87</td>
</tr>
<tr>
<td>Item 11</td>
<td>69</td>
<td>4.12</td>
<td>0.79</td>
</tr>
<tr>
<td>Item 12</td>
<td>69</td>
<td>4.26</td>
<td>0.79</td>
</tr>
<tr>
<td>Item 13</td>
<td>69</td>
<td>4.13</td>
<td>0.84</td>
</tr>
</tbody>
</table>

*Note.* Cronbach’s $\alpha$ estimated to be 0.88.
Table 9

*Scale Descriptives: Professional Identity*

<table>
<thead>
<tr>
<th>Professional identity</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 14</td>
<td>68</td>
<td>2.30</td>
<td>0.98</td>
</tr>
<tr>
<td>Item 15</td>
<td>68</td>
<td>2.01</td>
<td>1.09</td>
</tr>
<tr>
<td>Item 16</td>
<td>68</td>
<td>2.25</td>
<td>1.06</td>
</tr>
<tr>
<td>Item 17</td>
<td>67</td>
<td>1.92</td>
<td>0.91</td>
</tr>
<tr>
<td>Item 18</td>
<td>68</td>
<td>2.50</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note.* Cronbach’s α estimated to be 0.86.

Table 10

*Scale Descriptives: Patient-Centeredness*

<table>
<thead>
<tr>
<th>Patient-centeredness</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 19</td>
<td>68</td>
<td>4.57</td>
<td>0.65</td>
</tr>
<tr>
<td>Item 20</td>
<td>68</td>
<td>4.75</td>
<td>0.61</td>
</tr>
<tr>
<td>Item 21</td>
<td>68</td>
<td>4.69</td>
<td>0.75</td>
</tr>
<tr>
<td>Item 22</td>
<td>68</td>
<td>4.63</td>
<td>0.75</td>
</tr>
<tr>
<td>Item 23</td>
<td>68</td>
<td>4.72</td>
<td>0.62</td>
</tr>
</tbody>
</table>

*Note.* Cronbach’s α estimated to be 0.88.

**Results of Testing the Research Hypotheses: Factor Analysis**

A factor analysis was run to identify the underlying constructs that make up readiness for interprofessional learning scale scores by using data reduction. Readiness for interprofessional learning identified four underlying constructs that were being measured by the 23-item instrument. The three theoretical factors suggested by Reid et al. (2006) seem to suggest that the RIPLS measures what it says it measures. The factor loading shows how much each of the variables correlates with each factor measuring the concepts. The shared factors include team work and collaboration, professional identity,
and patient-centeredness. An additional factor, which I called *shared learning*, supported
the theoretical framework. The next section discusses the factor analysis results.

A measurement of the three subscales of the Readiness for Interprofessional
Learning Scale was completed utilizing a factor analysis with extraction method of
principle component analysis with rotation converged in five iterations. The eigenvalue
for a given factor measures the variance in all the variables that are associated with that
factor. It depicts how evenly the variables of the matrix are distributed. If a factor has a
low eigenvalue, then it is contributing little to the explanation of variance in the variables
and may be ignored as redundant. Eigenvalues measure whether a given factor explains a
considerable portion of the total variance of the observed measures (Brown, 2006;
Rencher & Christensen, 2012; Warner, 2008). An eigenvalue for a factor should be
greater than or equal to zero and cannot exceed the total variance. Eigenvalues are helpful
in deciding how many factors should be used in the interpretation of the analysis. The
scree test is a visual depiction of the plot of eigenvalues (Brown, 2006; Warner, 2008).
Factors are retained in the sharp descent part of the plot before the eigenvalues start to
level off (Figure 1).

To assess the dimensionality of the set of items on the RIPLS instrument (*N=23*),
a factor analysis was performed with a varimax rotation. The items included self-reported
ratings on the following three categories: teamwork and collaboration, patient-
centeredness, and professional identity. The first 13 items were associated with teamwork
and collaboration. The second group of questions, 14 through 18, was identified with the
sense of professional identity. The last group of questions, 19 through 23, was identified
with patient-centeredness. Each item was rated on a 5-point scale that ranged from “1” (strongly disagree) to “5” (strongly agree).

The loading matrix that appears in Table 11 indicates that 23 items formed four separate groups. The factor analysis revealed four factors given the criterion using the scree plot and eigenvalue of 1.0, included the previous three categories but now also included a fourth category of shared learning. Factor 1, teamwork and collaboration, accounted for 26% of the variance. Factor 2, shared learning, accounted for 19% of the variance. Factor 3, patient-centeredness accounted, for 18% of the variance. Factor 4, professional identity, accounted for the least amount of variability at 11%. These four factors explain 75% of the variance in the instrument.

Figure 1. Scree plot of RIPLS instrument factor analysis.
Parson and Bligh (1999) first identified three key dimensions that the RIPLS instrument measured: teamwork and collaboration, professional identity, and professional roles. The first factor, collaboration and teamwork, considered what knowledge and skills are required to work interprofessionally in a team-based approach. The second factor was professional identity. This was defined as specific forms of knowledge and language used by each professional with an accepted code and required practice. The third factor was the role and responsibilities of each profession. This factor was concerned with how to provide a holistic approach to managing patient care and the contribution of different professionals. Upon revision and refinement of the tool for use at the professional level, the authors defined three subscales that they identified as teamwork and collaboration, professional identity, and patient-centeredness (Reid et al., 2006). The weights of items identified a fourth factor called shared learning. Shared learning is the underlying framework for interprofessional learning and therefore is consistent with the RIPLS instrument. Visually, the four factors noted on the scree plot were similar to the three theoretical factors. This suggests that the RIPLS questionnaire measures what it says it measures (see Table 11).

Factors are statistical entities that can be visualized along axes along which measurement variables can be plotted (Field, 2009). The co-ordinates of the variables along each axis represent the strength of relationship between variables and each factor. The coordinate of a variable along a classification axis is known as factor loading (Field, 2009). The factor loading can be thought of as the Pearson correlation between a factor and a variable. It is possible to calculate the variance for any given variable. The total variance for a particular variable consists of two components. The first is the common
variance, which is shared with other variables, and the second is unique variance, which is specific to that measure. The percentage of variance in a given variable explained by all the factors is known as communality. Communality will range between 0 and 1.0. The higher the communality is, the better the explanation of variance of the analyzed variables. A variable that has no correlation with any other variable in the matrix would be 0.0, whereas a variable with a perfect correlation to the set of factors in the matrix would be 1.0. Subjectively, when considering factor loadings, a rule of thumb is that the factor loading should be 0.4 in order to be considered meaningful based on an alpha level of .01 (two-tailed) (Field, 2009).

The weight of a loading indicates the importance of a variable to a factor. The eigenvalue can be found by squaring the factor loading to give an estimate of the amount of variance in a factor accounted for by all the variables. Factor loadings describe the relative contribution that a variable makes to a factor. It is recommended that factor loading with an absolute value greater than 0.4 be interpreted as strong (Field, 2009).

A scree plot is a visual depiction of each eigenvalue on the Y axis against the factor in which it is associated along the X axis (Field, 2009). By graphing the eigenvalues, the importance of each factor becomes evident. The scree plot has a characteristic shape of a sharply descending curve with a leveling off. The point of inflection of the curve is usually considered the cut-off point for selecting factors. It is suggested that factors with eigenvalues greater than 1.0 be retained. This is based on the argument that eigenvalues represent the amount of variation explained by a factor and that an eigenvalues of 1 represent a substantial amount of variation. Figure 1 presents a scree plot showing the clinical instrument was actually measuring four factors.
Table 11

*Factor Loading for the Factor Analysis on the RIPLS Instrument With the Full Scale Score (Rotated Component Matrix)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Teamwork and Collaboration</th>
<th>Sense of Professional Identity</th>
<th>Patient-centeredness</th>
<th>Shared Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>.421</td>
<td>.806</td>
<td>.127</td>
<td>-.097</td>
</tr>
<tr>
<td>Item 2</td>
<td>.348</td>
<td>.834</td>
<td>.116</td>
<td>-.056</td>
</tr>
<tr>
<td>Item 3</td>
<td>.297</td>
<td>.835</td>
<td>-.027</td>
<td>.007</td>
</tr>
<tr>
<td>Item 4</td>
<td>.733</td>
<td>.344</td>
<td>.140</td>
<td>.028</td>
</tr>
<tr>
<td>Item 5</td>
<td>.348</td>
<td>.851</td>
<td>.144</td>
<td>-.051</td>
</tr>
<tr>
<td>Item 6</td>
<td>.393</td>
<td>.804</td>
<td>.118</td>
<td>-.063</td>
</tr>
<tr>
<td>Item 7</td>
<td>.744</td>
<td>.275</td>
<td>-.026</td>
<td>.078</td>
</tr>
<tr>
<td>Item 8</td>
<td>.672</td>
<td>.561</td>
<td>.050</td>
<td>.012</td>
</tr>
<tr>
<td>Item 9</td>
<td>.845</td>
<td>.310</td>
<td>.015</td>
<td>-.041</td>
</tr>
<tr>
<td>Item 10</td>
<td>.891</td>
<td>.246</td>
<td>-.042</td>
<td>-.050</td>
</tr>
<tr>
<td>Item 11</td>
<td>.819</td>
<td>.132</td>
<td>.001</td>
<td>-.108</td>
</tr>
<tr>
<td>Item 12</td>
<td>.831</td>
<td>.283</td>
<td>-.050</td>
<td>-.031</td>
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<tr>
<td>Item 13</td>
<td>.919</td>
<td>.216</td>
<td>.032</td>
<td>.378</td>
</tr>
<tr>
<td>Item 14</td>
<td>.158</td>
<td>-.034</td>
<td>-.060</td>
<td>.800</td>
</tr>
<tr>
<td>Item 15</td>
<td>.128</td>
<td>.121</td>
<td>-.788</td>
<td>.744</td>
</tr>
<tr>
<td>Item 16</td>
<td>-.170</td>
<td>-.130</td>
<td>.095</td>
<td>.619</td>
</tr>
<tr>
<td>Item 17</td>
<td>-.127</td>
<td>-.057</td>
<td>-.024</td>
<td>.813</td>
</tr>
<tr>
<td>Item 18</td>
<td>-.062</td>
<td>-.085</td>
<td>.099</td>
<td>.553</td>
</tr>
<tr>
<td>Item 19</td>
<td>.085</td>
<td>.002</td>
<td>.891</td>
<td>.053</td>
</tr>
<tr>
<td>Item 20</td>
<td>.016</td>
<td>.051</td>
<td>.947</td>
<td>.044</td>
</tr>
<tr>
<td>Item 21</td>
<td>-.076</td>
<td>.415</td>
<td>.852</td>
<td>.032</td>
</tr>
<tr>
<td>Item 22</td>
<td>.002</td>
<td>-.026</td>
<td>.871</td>
<td>-.105</td>
</tr>
<tr>
<td>Item 23</td>
<td>.012</td>
<td>.096</td>
<td>.952</td>
<td>.070</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eigenvalues</th>
<th>Total</th>
<th>6.021</th>
<th>4.452</th>
<th>4.203</th>
<th>2.657</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Variance Explained</td>
<td>26.17</td>
<td>19.35</td>
<td>18.27</td>
<td>11.55</td>
<td></td>
</tr>
</tbody>
</table>
Correlations

Correlations refers to the linear relationship between two variables. This section reports the correlations with each dependent variable (RIPLS scores) and the independent variables of age, gender, type of nursing degree, highest level of nursing education, number of years practicing as an registered nurse, and area of specialty. Each of the correlations examines the linear relationship between a set of variables and readiness for interprofessional learning as indicated by the RIPLS instrument scores.

Demographic Correlations

This section is devoted to exploring the correlation between dependent demographic variables of age, gender, type of nursing degree, highest level of nursing education, number of years as a practicing registered nurse, and specialty area, and the independent variables of teamwork and collaboration, sense of professional identity, and patient-centeredness on the RIPLS scores of the 69 participants. The results shown in Table 12 suggest that associate degree nurses have a negative relationship to both the learning factor and professional identity. Nurses holding a master’s degree have a positive relationship to the learning factor and professional identity. Nurses with a bachelor’s degree had a positive relationship to the professional identity factor. Only the significant data is reported in Table 12.
Table 12

Correlations of Demographic Factors to Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pearson $r$</th>
<th>Sig. (2-tailed)</th>
<th>$N$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Identity Factor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSN</td>
<td>.265</td>
<td>.028</td>
<td>69</td>
</tr>
<tr>
<td>Learning Factor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADN</td>
<td>-.342</td>
<td>.005</td>
<td>67</td>
</tr>
<tr>
<td>MSN</td>
<td>.244</td>
<td>.047</td>
<td>67</td>
</tr>
<tr>
<td>Professional Identity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADN</td>
<td>-.295</td>
<td>.015</td>
<td>67</td>
</tr>
<tr>
<td>MSN</td>
<td>.247</td>
<td>.044</td>
<td>67</td>
</tr>
</tbody>
</table>

Note. Learning Factor and Professional Identity Factor were derived from the factor analysis; Professional Identity was derived from scores on the RIPLS instrument. BSN= Bachelor’s degree in nursing; ADN= Associate degree in nursing; MSN= Master’s degree in nursing.* $p<.05$ level (2 tailed).

Multiple Regression Analysis

Upon completion of the correlational analysis the next step was to search and examine combinations of registered nurse variables that can be used to predict readiness for interprofessional learning utilizing the demographic data and independent variables of teamwork and collaboration, professional identity, and patient-centeredness. Multiple linear regression is a statistical method that examines the combined relationship of multiple independent variables with a single dependent variable. The variation in the dependent variable is explained by the variance of each independent variable as well as the combined effect of all independent variables. Multiple regression assists in predicting by using a linear combination of two or more predictor variables. Each predictor has a coefficient that indicates the magnitude of prediction for a variable after removing the effects of all other predictors (Field, 2009; McNeil et al., 2011; Newman & McNeil,
Linear regression allows for the creation of models that mathematically reflect the specific research question being asked. The $R^2$ is the overall amount of variance explained in the dependent variable by all independent variables. For this study, a .05 level of significance was used as is standard practice in educational studies as a higher confidence level is not warranted (Field, 2009).

A multiple regression was conducted to determine whether demographic variables (independent variables) could be used to predict teamwork and collaboration, professional identity, patient-centeredness, and RIPLS scores (dependent variables). The total $n$ for this analysis = 69.

The result for the multiple linear regressions suggests that nurses working on medical-surgical units account for a significant proportion of unique variance when controlling for other variables (age, gender, years as an RN, primary or secondary nursing degree, highest level of nursing education, and area of specialty) when predicting professional identity, patient-centeredness, and RIPLS scores. None of the selected and tested demographic variables accounted for unique variance in the prediction of teamwork and collaboration.

The results shown in Table 13 suggest that no selected and tested demographic variables account for a significant amount of the unique variance in predicting teamwork and collaboration at an alpha of .05.

The results shown in Table 14 suggest that nurses working on a medical-surgical unit account for a significant amount of the unique variance when controlling for other variables (age, gender, years as an RN, primary or secondary nursing degree, highest level of nursing education, and area of specialty) in predicting professional identity at an
The results shown in Table 15 suggest that nurses working on a medical-surgical unit account for a significant amount of the unique variance when controlling for other variables (age, gender, years as an RN, primary or secondary nursing degree, highest level of nursing education, and area of specialty) in predicting patient-centeredness at an alpha of .05. All other selected and tested demographic variables did not account for significant amounts of unique variance except for nurses working on medical-surgical units.

The results shown in Table 16 suggest that nurses working on a medical-surgical unit account for a significant amount of the unique variance when controlling for other variables (age, gender, years as an RN, primary or secondary nursing degree, highest level of nursing education, and area of specialty) in predicting RIPLS scores at an alpha of .05. All other selected and tested demographic variables are not significant.
Table 13

**Summary of Multiple Regression Analysis Using the Enter Method for Demographic Factor Variables Predicting Teamwork and Collaboration (n=68)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SEB</th>
<th>( \beta )</th>
<th>( p )</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>-.562</td>
<td>.383</td>
<td>-.194</td>
<td>.148</td>
<td>-1.460</td>
</tr>
<tr>
<td>2(^{nd}) Degree</td>
<td>.142</td>
<td>.451</td>
<td>.049</td>
<td>.755</td>
<td>.314</td>
</tr>
<tr>
<td>Diploma</td>
<td>-.076</td>
<td>.556</td>
<td>-.038</td>
<td>.892</td>
<td>-.136</td>
</tr>
<tr>
<td>AND</td>
<td>-.373</td>
<td>.508</td>
<td>-.272</td>
<td>.466</td>
<td>-.735</td>
</tr>
<tr>
<td>BSN</td>
<td>-.585</td>
<td>.513</td>
<td>-.386</td>
<td>.259</td>
<td>-1.140</td>
</tr>
<tr>
<td>MSN</td>
<td>-.110</td>
<td>.588</td>
<td>-.049</td>
<td>.852</td>
<td>-.187</td>
</tr>
<tr>
<td>PhD</td>
<td>.371</td>
<td>.883</td>
<td>.066</td>
<td>.676</td>
<td>.420</td>
</tr>
<tr>
<td>Yrs. Experience</td>
<td>-.080</td>
<td>.099</td>
<td>-.125</td>
<td>.421</td>
<td>-.811</td>
</tr>
<tr>
<td>ED</td>
<td>-.205</td>
<td>.457</td>
<td>-.071</td>
<td>.656</td>
<td>-.449</td>
</tr>
<tr>
<td>OR</td>
<td>-.155</td>
<td>.367</td>
<td>-.073</td>
<td>.676</td>
<td>-.421</td>
</tr>
<tr>
<td>Amb</td>
<td>-.548</td>
<td>.429</td>
<td>-.190</td>
<td>.207</td>
<td>-1.270</td>
</tr>
<tr>
<td>ICU</td>
<td>.062</td>
<td>.369</td>
<td>.031</td>
<td>.867</td>
<td>.168</td>
</tr>
<tr>
<td>MS</td>
<td>-.290</td>
<td>.304</td>
<td>-.204</td>
<td>.344</td>
<td>-.954</td>
</tr>
<tr>
<td>Psych</td>
<td>.176</td>
<td>.336</td>
<td>.095</td>
<td>.602</td>
<td>.524</td>
</tr>
</tbody>
</table>

**Model**

<table>
<thead>
<tr>
<th>( R )</th>
<th>( R^2 )</th>
<th>Adj ( R^2 )</th>
<th>( df )( \frac{1}{2} )</th>
<th>( F ) Change</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>.481</td>
<td>.231</td>
<td>.028</td>
<td>14/53</td>
<td>.347</td>
<td>N</td>
</tr>
</tbody>
</table>

*Note.* ADN=Associate degree in nursing; BSN= Bachelor’s degree in nursing; MSN= Master’s degree in nursing; PhD= Doctor of Philosophy; Yrs. Experience = years of nursing experience; ED= Emergency department; OR= Operating room; Amb= Ambulatory Care; ICU = Intensive care unit; MS= Medical-Surgical unit; Psych= Psychiatry unit.

* \( p < .05 \). ** \( p < .01 \).
Table 14

Summary of Multiple Regression Analysis Using the Enter Method for Demographic Factor Variables Predicting Professional Identity (n=68)

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SEB</th>
<th>B</th>
<th>p</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>-.527</td>
<td>.397</td>
<td>-.176</td>
<td>.190</td>
<td>-1.326</td>
</tr>
<tr>
<td>1st Degree</td>
<td>.398</td>
<td>.468</td>
<td>.133</td>
<td>.399</td>
<td>.850</td>
</tr>
<tr>
<td>Diploma</td>
<td>.036</td>
<td>.576</td>
<td>.017</td>
<td>.950</td>
<td>.063</td>
</tr>
<tr>
<td>AND</td>
<td>.244</td>
<td>.527</td>
<td>.171</td>
<td>.646</td>
<td>.462</td>
</tr>
<tr>
<td>BSN</td>
<td>-.189</td>
<td>.532</td>
<td>-.120</td>
<td>.723</td>
<td>-.356</td>
</tr>
<tr>
<td>MSN</td>
<td>-.466</td>
<td>.610</td>
<td>-.201</td>
<td>.448</td>
<td>-.765</td>
</tr>
<tr>
<td>PhD</td>
<td>.406</td>
<td>.916</td>
<td>.069</td>
<td>.443</td>
<td>.443</td>
</tr>
<tr>
<td>Yrs. Experience</td>
<td>-.006</td>
<td>.103</td>
<td>-.009</td>
<td>.952</td>
<td>-.060</td>
</tr>
<tr>
<td>ED</td>
<td>.026</td>
<td>.474</td>
<td>.009</td>
<td>.057</td>
<td>1.55</td>
</tr>
<tr>
<td>OR</td>
<td>.244</td>
<td>.381</td>
<td>.112</td>
<td>.524</td>
<td>.642</td>
</tr>
<tr>
<td>Amb</td>
<td>.219</td>
<td>.445</td>
<td>.073</td>
<td>.625</td>
<td>.492</td>
</tr>
<tr>
<td>ICU</td>
<td>.475</td>
<td>.382</td>
<td>.229</td>
<td>.219</td>
<td>1.243</td>
</tr>
<tr>
<td>MS</td>
<td>.677</td>
<td>.317</td>
<td>.454</td>
<td>.037*</td>
<td>1.136</td>
</tr>
<tr>
<td>Psych</td>
<td>.315</td>
<td>.348</td>
<td>.165</td>
<td>.369</td>
<td>.907</td>
</tr>
</tbody>
</table>

Model  | $R$  | $R^2$  | Adj $R^2$ | $df$ 1/2 | $F$ Change | Significance |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.491</td>
<td>.241</td>
<td>.037</td>
<td>14/52</td>
<td>.317</td>
<td>$N$</td>
</tr>
</tbody>
</table>

Note. ADN=Associate degree in nursing; BSN= Bachelor’s degree in nursing; MSN= Master’s degree in nursing; PhD= Doctor of Philosophy; Yrs. Experience = years of nursing experience; ED= Emergency department; OR= Operating room; Amb= Ambulatory Care; ICU = Intensive care unit; MS= Medical-Surgical unit; Psych= Psychiatry unit.

*p<.05. **p<.01.
Table 15

Summary of Multiple Regression Analysis Using the Enter Method for Demographic Factor Variables Predicting Patient-Centeredness (n=68)

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SEB</th>
<th>β</th>
<th>p</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>.012</td>
<td>.357</td>
<td>.005</td>
<td>.974</td>
<td>.033</td>
</tr>
<tr>
<td>1st Degree</td>
<td>.083</td>
<td>.420</td>
<td>.032</td>
<td>.845</td>
<td>.197</td>
</tr>
<tr>
<td>Diploma</td>
<td>-.091</td>
<td>.518</td>
<td>-.050</td>
<td>.862</td>
<td>-.175</td>
</tr>
<tr>
<td>AND</td>
<td>-.473</td>
<td>.473</td>
<td>-.383</td>
<td>.322</td>
<td>-1.000</td>
</tr>
<tr>
<td>BSN</td>
<td>-.400</td>
<td>.478</td>
<td>-.294</td>
<td>.406</td>
<td>-.837</td>
</tr>
<tr>
<td>MSN</td>
<td>-.170</td>
<td>.548</td>
<td>-.085</td>
<td>.757</td>
<td>-.311</td>
</tr>
<tr>
<td>PhD</td>
<td>-.286</td>
<td>.822</td>
<td>-.057</td>
<td>.729</td>
<td>-.348</td>
</tr>
<tr>
<td>Yrs. Experience</td>
<td>-.099</td>
<td>.092</td>
<td>-.171</td>
<td>.290</td>
<td>-1.068</td>
</tr>
<tr>
<td>ED</td>
<td>-.054</td>
<td>.425</td>
<td>-.021</td>
<td>.900</td>
<td>-1.27</td>
</tr>
<tr>
<td>OR</td>
<td>-.271</td>
<td>.342</td>
<td>-.143</td>
<td>.431</td>
<td>-.793</td>
</tr>
<tr>
<td>Amb</td>
<td>-.526</td>
<td>.400</td>
<td>-.203</td>
<td>.194</td>
<td>-1.316</td>
</tr>
<tr>
<td>ICU</td>
<td>-.261</td>
<td>.343</td>
<td>-.145</td>
<td>.450</td>
<td>-.761</td>
</tr>
<tr>
<td>MS</td>
<td>-.632</td>
<td>.285</td>
<td>-.489</td>
<td>.031*</td>
<td>-2.219</td>
</tr>
<tr>
<td>Psych</td>
<td>-.236</td>
<td>.312</td>
<td>-.143</td>
<td>.454</td>
<td>-.755</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R²</th>
<th>Adj R²</th>
<th>df/½</th>
<th>F Change</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.428</td>
<td>.183</td>
<td>-.037</td>
<td>14/52</td>
<td>.832</td>
<td>N</td>
</tr>
</tbody>
</table>

Note. ADN=Associate degree in nursing; BSN= Bachelor’s degree in nursing; MSN= Master’s degree in nursing; PhD= Doctor of Philosophy; Yrs. Experience = years of nursing experience; ED= Emergency department; OR= Operating room; Amb= Ambulatory Care; ICU = Intensive care unit; MS= Medical-Surgical unit; Psych= Psychiatry unit.
*p<.05. **p<.01.
Table 16

Summary of Multiple Regression Analysis Using the Enter Method for Demographic Factor Variables Predicting RIPLS Scores (n=68)

<table>
<thead>
<tr>
<th>Variable</th>
<th>b</th>
<th>SEB</th>
<th>B</th>
<th>p</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>.402</td>
<td>.287</td>
<td>-.180</td>
<td>.168</td>
<td>-.140</td>
</tr>
<tr>
<td>2nd Degree</td>
<td>.093</td>
<td>.340</td>
<td>.042</td>
<td>.785</td>
<td>.275</td>
</tr>
<tr>
<td>Diploma</td>
<td>-.265</td>
<td>.581</td>
<td>-.170</td>
<td>.650</td>
<td>-.456</td>
</tr>
<tr>
<td>AND</td>
<td>-.667</td>
<td>.538</td>
<td>-.615</td>
<td>.221</td>
<td>-1.240</td>
</tr>
<tr>
<td>BSN</td>
<td>-.748</td>
<td>.539</td>
<td>-633</td>
<td>.171</td>
<td>-1.380</td>
</tr>
<tr>
<td>MSN</td>
<td>-.385</td>
<td>.594</td>
<td>-.222</td>
<td>.592</td>
<td>-.648</td>
</tr>
<tr>
<td>PhD</td>
<td>-.084</td>
<td>.768</td>
<td>-.019</td>
<td>.524</td>
<td>-.109</td>
</tr>
<tr>
<td>Yrs Experience</td>
<td>-.098</td>
<td>.078</td>
<td>-.195</td>
<td>.215</td>
<td>-1.250</td>
</tr>
<tr>
<td>ED</td>
<td>-.184</td>
<td>.341</td>
<td>-.082</td>
<td>.592</td>
<td>-.539</td>
</tr>
<tr>
<td>OR</td>
<td>-.176</td>
<td>.274</td>
<td>-.108</td>
<td>.524</td>
<td>-1.342</td>
</tr>
<tr>
<td>Amb</td>
<td>-.556</td>
<td>.320</td>
<td>-.249</td>
<td>.089</td>
<td>-1.730</td>
</tr>
<tr>
<td>ICU</td>
<td>-.054</td>
<td>.275</td>
<td>-.035</td>
<td>.846</td>
<td>-.195</td>
</tr>
<tr>
<td>MS</td>
<td>-.471</td>
<td>.230</td>
<td>-.415</td>
<td>.046*</td>
<td>-2.040</td>
</tr>
<tr>
<td>Psych</td>
<td>.045</td>
<td>.253</td>
<td>.030</td>
<td>.859</td>
<td>.179</td>
</tr>
</tbody>
</table>

Model

<table>
<thead>
<tr>
<th>R</th>
<th>R²</th>
<th>Adj R²</th>
<th>df 1/2</th>
<th>F Change</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>.399</td>
<td>.159</td>
<td>.072</td>
<td>6/58</td>
<td>.108</td>
<td>N</td>
</tr>
</tbody>
</table>

Note. RIPLS Score: Total calculated individual responses to the 23 items on the RIPLS instrument. ADN=Associate degree in nursing; BSN= Bachelor’s degree in nursing; MSN= Master’s degree in nursing; PhD= Doctor of Philosophy; Yrs. Experience = years of nursing experience; ED= Emergency department; OR= Operating room; Amb= Ambulatory Care; ICU = Intensive care unit; MS= Medical-Surgical unit; Psych= Psychiatry unit.
*p<.05. **p<.01.
Summary

In this chapter, the descriptive statistics for each variable were reported. A factor analysis was completed on the RIPLS instrument, and four factors were extracted. The first factor was teamwork and collaboration, the second factor was professional identity, the third factor was patient-centeredness. These factors are similar to the theoretical factors in the 2006 study by Reid et al. A fourth factor called shared learning was also identified. Although this factor was selected out, it is a theoretical concept of interprofessional learning that I called shared learning. The three theoretical factors explain 68% of the variance in the instrument. The fourth factor of shared learning explains 7% of the variance in the instrument. The total of the four factors explains 75% of the variance in the instrument.

Correlations for each set of variables were analyzed. The professional identity factor had a negative correlation ($r = -.265, p = .028$) with having a bachelor degree in nursing. An associate degree in nursing had a positive correlation ($r = .342, p = .005$), whereas the master’s degree had a negative correlation ($r = -.244, p = .047$) with the learning factor. Lastly, the associate degree in nursing had a positive correlation ($r = .295, p = .015$) whereas the master’s degree had a negative correlation ($r = -.247, p = .044$) with professional identity.

A multiple regression was performed and the results reported. Four hypotheses were analyzed. The data indicated that there were no factors that were significant in predicting teamwork and collaboration. The data indicated that working on a medical-surgical unit was predictive of professional identity, patient-centeredness, and RIPLS scores.
Chapter 5 discusses the results and recommendations for practice and future research.
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter contains a summary of the study, which includes a review of the literature, statement of the problem, research design and procedures, and research hypothesis. This chapter also provides a summary of the findings of this study, a discussion and conclusions from this research, and provides recommendations for practice and further research.

Summary of the Study

With the fast pace of technological advancement today, a wealth of information is available in today’s health care. It is very important that nurses remain up to date on the latest advances in technology, information, and standards of practice. The need for continued professional learning for nurses was first suggested by Florence Nightingale (Selanders & Crane, 2012). After the completion of initial education and obtaining a first license to practice, it is left primarily to the nurse and the individual states to regulate the number of hours of continuing education required to renew licensure. Much debate and discussion have been centered on professional nursing and continuing professional education. The American Nurses Association (ANA) in 2010 attempted to further refine the definition and need for continued education. The significance and value of continuing
education had such importance, that continuing education was placed in the Nursing Code of Ethics, Provision 5.2: Professional Growth and Maintenance of Competency (ANA, 2010). Nursing continuing education is managed at each individual state level through the Board of Nursing (National Council of State Boards of Nursing, 2011).

Although not much change had occurred over the years regarding continuing education for health-care professionals, the 2000 landmark study by the Institute of Medicine in 1999, *To Err Is Human: Building a Safer Health System*, was a call to action to change the health-care system (IOM, 1999). The first topic that the IOM invested in was quality, safety, and the prevention of errors. Shortly after this publication in 2003, the IOM published *Health Professions Education: A Bridge to Quality* (IOM, 2003). This report detailed five core competencies deemed necessary for all health professionals. These competencies include patient-centered care, interdisciplinary team-based care, evidence-based practice, quality improvement strategies, and the use of health informatics. The IOM (2010) continued its investigation of health professional education and released another report indicating that to be most effective, health professionals at every stage of their careers must continue learning about advances in research and treatment in their fields in order to obtain and maintain up-to-date knowledge and skills to care for their patients. It is part of the professional responsibility of a nurse to keep abreast of technological changes and relevant medical knowledge in order to provide quality patient care.

**Statement of the Problem**

Although many prestigious organizations such as the World Health Organization and the Institute of Medicine call for interprofessional education, little education and
research concerning this topic has been done. Little is known concerning nurses’ readiness for interprofessional learning and continued professional development. Study is needed to assess practicing registered nurses’ readiness for interprofessional learning in order to align learning with current practice. The focus of this study was to examine whether there was a relationship between selected demographic variables in registered nurses and readiness for interprofessional learning.

**Purpose**

This study investigated the relationship between selected demographic factors in registered nurses and readiness toward interprofessional learning. The study analyzed how these factors predict readiness for interprofessional learning.

The major contributions of this study are a measure of demographic variables that relate to or can predict readiness for interprofessional education. The RIPLS, an instrument developed to assess the readiness for interprofessional learning, was also tested for estimates of reliability and validity (McFadyen et al., 2006).

**Research Design**

The research design for this study was ex post facto, where variables are assigned or have already occurred. Since the variables cannot be manipulated, causation cannot be determined. However, inference can be made about the relationships among the selected independent demographic variables and the dependent variables, which include readiness towards teamwork and collaboration, sense of professional identity, and patient-centeredness as determined by scores on the Readiness for Interprofessional Learning Scale (RIPLS). However, the low statistical power in this study makes it difficult to
detect effect. Low power might be explained by the relationship of the larger number of variables to the smaller number of subjects.

**Procedures**

The population that was studied was that of registered nurses working at a community hospital who had renewed their nursing license at least one time. A convenience sample was used to access registered nurses. A tool was created to collect demographic data, and the Readiness for Interprofessional Learning Scale was used to measure readiness for interprofessional learning. The pen-and-paper survey, with removed identifiers, was conducted for a 2-week interval from July 11-July 22, 2011. The responses were collected and analyzed. Statistical analysis included both descriptive and inferential statistics, which included description of the sample, correlations between variables, and multiple regression analysis to determine which variables predict readiness for interprofessional learning. A factor analysis was conducted on the RIPLS instrument to provide estimates of validity and stability of the instrument.

**Results**

The major findings of this study are a better understanding of which selected demographic factors in registered nurses may predict readiness for interprofessional learning. In addition, this study also suggests that the RIPLS is a reliable tool in measuring the readiness for interprofessional learning.

The descriptive statistics for each demographic variable for registered nurses were examined. The majority of nurses were primarily female, between 40 and 50 years old (39%), experienced practitioners with 20 or more years of employment (40%), and
worked on a medical-surgical unit (37%). The largest percentage of nurses had an associate’s degree in nursing (43%).

**Research Hypotheses**

In this section, each hypothesis was examined. In this research study each hypothesis sought to examine the relationship between a set of variables and the readiness for interprofessional learning.

The first hypothesis was: There is a significant relationship between selected demographic factors of age, gender, primary or secondary degree nurses, highest level of nursing education, number of years practicing as a registered nurse, and nursing specialty related to readiness toward interprofessional learning for registered nurses. The data suggest that there are selected relationships between the selected and tested demographic variables of levels of education and readiness subscales for interprofessional education as measured by scores on the RIPLS instrument. Bachelor’s degree-prepared nurses had a negative relationship to the professional identity factor. Nurses with an associate’s degree had a positive relationship with the learning factor and professional identity whereas the master’s-prepared nurse had a negative relationship with both the learning factor and professional identity. One possible explanation might be that the selected demographic variables are not good predictors of a relationship to readiness for interprofessional learning.

After correlations were examined, multiple regression was used to determine which variables account for unique variance in predicting readiness for interprofessional learning as determined by scores on the RIPLS instrument. In this study, specialty-practice nurses working on a medical-surgical unit were the only significant variables that
could predict readiness ($b = -.471, p = .046, \text{ Adj } R^2 = .037$). This suggests that there is no significant relationship between selected independent demographic variables, with the exception of nurses working on a medical-surgical unit, which can predict unique variance accounted for in the readiness for interprofessional learning. One possible explanation may be that medical-surgical nurses have a broader, diverse practice area as opposed to the intensive, detailed depth of knowledge in the specialty nursing areas.

The second hypothesis was: There is a significant relationship between demographic factors of age, gender, primary or secondary degree nurses, highest level of nursing education, number of years practicing as a registered nurse, and nursing specialty and teamwork and collaboration among registered nurses. The data suggest that there is no significant unique variance accounted for between the selected and tested demographic variables and teamwork and collaboration.

After correlations were examined, multiple regression was used to determine which variables predict readiness for teamwork and collaboration. In this study there were no significant demographic variables that predicted teamwork and collaboration. This suggests that there is no unique variance accounted for between selected independent demographic variables that can predict teamwork and collaboration in registered nurses. One possible explanation may be that the selected demographic factors may not be suitable in predicting teamwork and collaboration or these variables overlap in measuring the same thing.

The third hypothesis was: There is a significant relationship between demographic variables of age, gender, primary or secondary degree nurses, highest level of nursing education, number of years practicing as a registered nurse, and nursing specialty, and
sense of professional identity among registered nurses. The data suggest that while associate degree nurses had a negative correlation ($r = .2952, p = .015$), master’s-prepared nurses had a positive correlation ($r = -.247, p = -.044$) to professional identity.

After correlations were examined, multiple regression was used to determine which variables predict professional identity. In this study, medical-surgical nursing was the only significant factor that could predict readiness ($b = .677, p = .037, \text{Adj } R^2 = .037$). This suggests that there is no significant relationship between selected independent demographic variables except for nurses working on a medical-surgical unit, which can predict professional identity in registered nurses.

The fourth hypothesis was: There is a significant relationship between demographic variables of age, gender, primary or secondary degree nurses, highest level of nursing education, number of years practicing as a registered nurse, nursing specialty, and patient-centeredness among registered nurses. The data suggest that there is no significant relationship between age, gender, type of nursing degree, highest level of nursing degree, types of specialty practice within the profession of nursing, and patient-centeredness among registered nurses.

After correlations were examined, multiple regression was used to determine which variables predict patient-centeredness. In this study, specifically, specialty-practice nurses working on a medical-surgical unit were the only significant variables that could predict readiness ($b = -.632, p = .031, \text{Adj } R^2 = .037$). This suggests that there is no other independent demographic variable that accounts for unique variance except for nurses working on a medical-surgical unit, which can predict patient-centeredness in registered nurses.
When teamwork and collaboration, sense of professional identity, and patient-centeredness were examined as factors in the factor analysis, including the fourth identified factor of learning, significance in the results was noted. Registered nurses had a statistically negative correlation ($r = -0.265, p = 0.028$) with the professional identity factor. There was statistical significance noted with the learning factor. The shared learning factor is one of the four items that emerged from the factor analysis with varimax rotation. Associate degree nurses had a negative correlation ($r = 0.342, p = 0.005$) whereas master’s-prepared registered nurses had a positive correlation ($r = -0.244, p = 0.047$). This may suggest that as a nurse obtains a higher level of education there is a corresponding increase in a sense of professional identity. Further research needs to be conducted to determine if this is generalizable to nurses, and, if so, investigate possible reasons for this phenomenon.

Curran et al. (2007) showed that interprofessional continuing professional development is effective in enhancing the understanding of roles of the other professions and fostering positive regard toward interprofessional collaboration. This study suggests a significant relationship between nurses working on a medical-surgical unit and professional identity. It is speculated that nurses working on medical-surgical units require versatility in the breadth of knowledge and exposure to various health-care professionals in caring for the medically complex adult patients on a medical-surgical unit, as opposed to a specific, concentrated body of knowledge working with specialists in caring for a particular subset of patients. Further research is suggested to examine which variables in medical-surgical nurses may contribute to professional identity.
Reid et al. (2006) studied the three concepts of teamwork and collaboration, patient-centeredness, and sense of professional identity in comparison to different health-care professionals. In their study, nurses had a significant relationship to teamwork and collaboration as compared to physicians. Nurses also had a significant relationship as compared to other health-care professionals on patient-centeredness. Lastly, physicians had a higher mean score for sense of professional identity than did nurses (Reid et al., 2006). It is interesting to note that in this study, the data suggest that associate degree nurses had a higher sense of professional identity that did those nurses with a more advanced education. One explanation might be related to the change in roles and role blurring that occurs as nurses’ advance in their education (Barrett & Keeping, 2005). Further research needs to be conducted to investigate possible explanations for this phenomenon.

While Tame (2009), Richards and Potgieter (2010), and Levett-Jones (2005) found that nurses perceive that enhanced collaboration with medical colleagues has a positive impact in the delivery of patient care, the results of this study suggest that working on a medical-surgical unit is the only predictor that accounted for unique variance of readiness for interprofessional learning. One possible explanation might be because, although it has been demonstrated useful at the academic level, the RIPLS might not be the best tool to measure readiness for interprofessional learning at the professional level. Consideration should be given to investigate other tools that measure readiness for interprofessional at the professional level.

It is interesting to note that levels of nursing education and the number of years practicing as a registered nurse had no significance relationship to readiness for
interprofessional learning. This might be the case because nurses on the whole, regardless of levels of education or number of years practicing as a registered nurse, as part of their nursing education are taught the concept of teamwork and the importance of continuing education in providing safe and effective patient care.

**Unexpected Findings**

One of the unexpected results in this study included the lack of finding of a significant relationship between the selected demographic variables and teamwork and collaboration, patient-centeredness, and scores on the RIPLS tool. The results suggest that associate-degree nurses and master’s-prepared nurses were the only group that had a sense of professional identity. The master’s-prepared nurses had a positive sense of professional identity while the associate-degree prepared nurses had a negative sense of professional identity. As one might imagine a higher level of education would elicit a higher sense of professional identity. A possible explanation may be that nurses with a master’s degree may have in depth learning, interactive and socialization experiences that account for the differences in sense of professional identity. This could be related to an intrinsic value system or the fundamental sense of professional identity, or the beliefs, attitudes, and understanding of roles within the context of work. An alternative explanation may be the power struggle that has existed between nurses and physicians in the professional hierarchy that is counter to interprofessionalism (Peplau, 1999; Rosenstein, 2002; Stein, 1967). Changes in the health-care industry have caused role expansion and diversification leading to confusion over professional boundaries and role. This may cause limitations to acceptance of interprofessional learning and that
overcoming professional identity barriers plays an important aspect of successful interprofessional education (Barrett & Keeping, 2005; Nancarrow & Borthwick, 2005).

Although medical-surgical nursing had significance as an isolated sub-variable, there was no collection of variables that could be used to create a prediction model. This result suggests that the selected demographic variables do not predict readiness for interprofessional learning and perhaps other demographic factors may be more predictive in nature. This study also suggests that demographic factors are not the best predictor of readiness for interprofessional learning. I would suggest investigating personality characteristics as a better predictor of readiness for interprofessional learning. I would also recommend that educators consider the uniqueness of each health profession when developing educational programs.

The second surprising finding was the identification of a fourth factor, shared learning that emerged in the factor analysis. The original RIPLS tool published by Parsell and Bligh in 1999 resulted in three factors, which they called teamwork and collaboration (Cronbach’s alpha 0.88), professional identity (Cronbach’s alpha 0.63), and roles and responsibilities (Cronbach’s alpha 0.88). The instrument underwent further development in 2004-2005 with the intent of strengthening the factor of roles and responsibilities and exploring a new factor of patient-centeredness. This revised version for use at the undergraduate level was examined by McFadyen et al. in 2005. In their study they found four factors which they called teamwork and collaboration (Cronbach’s alpha 0.88), negative professional identity (Cronbach’s alpha 0.76), positive professional identity (Cronbach’s alpha 0.81) and roles and responsibility (Cronbach’s alpha 0.43). The instrument at that time appeared to measure constructs relevant to assessing change or the
effect of interprofessional interventions with the exception of the negative professional identity subscale. It was suggested that the entire subscale of professional identity may not be appropriate for use at an early career stage as the students have not had post-graduate professional role experience. The instrument was further assessed for use in the post-graduate context by McFadyen et al. in 2006 using a factor analysis. Four factors were identified; teamwork and collaboration, negative professional identity, positive professional identity, and role and responsibilities. However, the eigenvalues were not reported. The scree plot showed three components, teamwork and collaboration, positive professional identity, and role and responsibilities, contributing the most and explaining 44.3% of the variance in the data. The factors were identified as teamwork and collaboration (Cronbach’s alpha 0.88), patient-centeredness (Cronbach’s alpha 0.86), and sense of professional identity (Cronbach’s alpha 0.69). A finding of a fourth factor identified as shared learning may be due to my subjective inclusion of a shared learning factor at the elbow of the decline. The elbow of the decline is the point at which the curve bends on the scree plot. Also noted was the factor loading for the shared learning factor explained by 11.55% of the variance in the rotated component matrix.

A third finding was that the RIPLS instrument reliability estimates remain stable with different populations use in this study. Factors held up at both the undergraduate and post graduate level. Traditionally this tool has been used at the post-secondary level and a one-time use at the professional level. This study suggests that the RIPLS is stable for use with different populations.
Conclusion

Interprofessional education has been supported for many years, although it was attempted mostly at the undergraduate level and with little rigorous research to substantiate the enthusiasm and effort to create interprofessional education programs. This study focused on select demographic variables in registered nurses that are related to readiness for interprofessional learning. The major finding of this study is that there is a relationship between medical-surgical nurses and readiness for interprofessional learning. This suggests that medical-surgical nurses may be more likely to change and be engaged in interprofessional learning. The findings support Bandura’s social learning theory and self-efficacy in development of personal beliefs as it relates to teamwork and collaboration and professional identity. Of all the specialty nurses in this study, the medical-surgical nurses demonstrated a strong personal belief in self as identified in the professional identity scores. This study also found that there are no selected demographic variables in registered nurses that predict readiness for interprofessional learning. In addition, the RIPLS instrument was verified to have good estimates of reliability. This preliminary study was able to collect data on nurses’ readiness for interprofessional learning and test data analysis techniques. The results can be used to advance interprofessional learning in the context of continuing professional development.

Recommendations

The research results derived from this study contribute to the literature and research on interprofessional learning and continuing professional development. The results contribute furthering the understanding of interprofessional learning, teamwork and collaboration, professional identity, and patient-centeredness. This study also
provides several recommendations for practice that will be useful to planners of continuing education programs for health-care professionals and the undergraduate education in health-care professions. It is suggested that interprofessional learning be introduced at orientation programs to increase sensitization to interprofessional learning and demonstrating interprofessionalism as an organizational value. The data from this study suggest, and it is recommended, that health-care organizations cultivate interprofessional education planning teams to incorporate multidisciplinary perspectives in designing educational activities. This study contributes to the better understanding of which demographic factors of nurses contribute to readiness as measured by the RIPLS for interprofessional learning.

In this study, selected demographic factors did not account for a significant amount of the unique variance when controlling for other variables (age, gender, years as an RN, primary or secondary nursing degree, highest level of nursing education, and area of specialty) in predicting readiness for interprofessional learning. The data suggest that there is a correlation between nurses working on a medical-surgical unit and the variables of professional identity, patient-centeredness, and scores on the RIPLS. The data also suggest that none of the selected demographic variables can predict unique variance for readiness for interprofessional learning from this sample. It appears that selected demographic variables alone did not account for unique variance, with the exception of medical-surgical nurses, in predicting readiness toward interprofessional learning in nurses.
Recommendations for Practice

1. Provide professional development programs for health-care professionals in health-care organizations. Although not substantiated by the data in the results of this study and little research is currently available on outcomes of interprofessional education, there is a general consensus that interprofessional education is valuable in promoting safety, enhanced quality care, greater job satisfaction, lower health cost, and prevention of errors (Bahn, 2007; Curran et al., 2007; Jones & Gates, 2005).

2. Provide professional development programs for nurses that address the value of collaborative learning and the development of interprofessional teams. Currently, many of the continuing education programs of today address solely pathophysiological and disease-management issues. Learning together will assist in decreasing stereotyping, assist sharing of knowledge, and create team-learning behaviors (Mandy et al., 2004; Van den Bossche et al., 2011; Wenger & Snyder, 2000).

3. Provide professional development programs that endorse the clarification and appreciation of roles and responsibilities. The use of role models will assist in educating health professionals on interprofessional practice, assist in creating a positive working environment, improve understanding of professional values, decrease “tribalism” and assist in achieving clinical competencies (Alligood, 2011; Aronson et al., 2013; Hall, 2005; Kane-Urrabazo, 2006; McNeil et al., 2013).

4. Provide professional development programs that create a greater understanding and focus on patient-centeredness. A paradigm shift to patient-centered care will improve outcomes and safety while decreasing medical errors and costs (Anderson, 2002; Hinojosa et al., 2001; Steward et al., 2000; Walker & Dewar, 2001). Teaching others how
to change their paradigm and focus to patient-centered care will require advocates to assist in demonstrating and modeling appropriate behaviors.

5. Develop mentor/coaching programs to create role models and educators for others in the learning and application of interprofessional knowledge and skills. Mentoring programs will create and develop an organizational culture of interprofessionalism and construct the milieu for the socialization of collaborative practice. The development of mentors and role models will allow for the continued proliferation of interprofessional practice and has been demonstrated as a proven strategy for teaching professionalism (Birden et al., 2013; Gaufberg et al., 2008; Ratanawongsa et al., 2006).

Although the results of this study do not indicate that there are specific variables in registered nurses that demonstrate readiness for interprofessional learning, many leading professional health-care organizations support and encourage interprofessional learning. Although interprofessional learning is being introduced at the undergraduate level and will be successful in creating health-care professionals in the future who have the knowledge and skill set for interprofessionalism, current nurses and other health-care providers have a paucity of opportunity to attend continuing professional development programs whose content includes the principles of interprofessionalism.

Recommendations for Further Research

Although the concept of interprofessional education has existed and been supported for many years, there has been little study addressing the barriers to interprofessional education which include readiness, attitudinal barriers, cultural barriers, development of faculty and educators to teach the knowledge, skills set and attitudes to
foster interprofessionalism, composition of a consistent interprofessional curriculum, communication, professional autonomy boundaries, economic and fiscal constraints, and impact analysis of interprofessional education on professional practice or health-care outcomes. Many of the published articles on interprofessional learning are anecdotal program descriptive summaries and do not conform to the rigors of empirical research (Hammick et al., 2007; Zwarenstein et al., 2000).

Suggested Topics for Further Research

1. Further research is suggested to examine the relationship of demographic variables and readiness for interprofessional learning using a larger sample size. A larger sample size with a statistical power of .8 or higher would be more representative of the general population, detect a smaller effect, detect statistically significant results, and assist in the prevention of committing a Type I or Type II error.

2. Further research is suggested examining the relationship of demographic variables and readiness for interprofessional learning with the inclusion of additional demographic variables such as different types of hospitals (e.g., rural, academic, and community-based hospitals) or the number of times a nursing license has been renewed, whether nurses have had any exposure to interprofessional education as part of their basic education, and whether nurses have been instructed on interprofessional education at the professional level. The addition of additional demographic variables may assist in determining which variable or group of variables may better predict readiness for interprofessional learning.

3. Further investigation is suggested to examine the levels of nursing education and their relationship to professional identity. In this study, only nurses with an associate
degree and master’s degree were found to have statistical significance. Master’s-prepared nurses may have unidentified psychological, emotional, or educational factors that may increase readiness for interprofessional learning. Health-care organizations should consider integrating interprofessional learning into continued professional development activities to enhance the integration of interprofessional competencies, and to develop simulation team-based educational experiences to assist in increasing the clarification of team roles, communication techniques, and attitudes towards interprofessional interaction. It is also suggested that health-care organizations develop and educate all staff members on interprofessional competencies and include these competencies as part of the evaluation of professional practice.

4. Further research is suggested in examining and determining what qualities exist in medical-surgical nurses that produced readiness for interprofessional learning, professional identity, and patient-centeredness as opposed to other specialty areas as demonstrated by the significant results in this study.

5. Further research is suggested using a representative sampling technique such a random or stratified sample to more specifically reflect the characteristics of the general nursing population.

6. Further research is suggested to examine if the use of other readiness for interprofessional learning instruments would be better suited to measure the relationship between select demographic factors and readiness for interprofessional learning. For consideration, the Interdisciplinary Educational Perception Scale (McFayden et al., 2007) or the Attitudes to Health Professionals Questionnaire (Lindqvist et al., 2005) might be used. One might consider using DiClemente and Prochaska’s (1998) Readiness to
Change instrument. However, it is important to understand that the Readiness to Change instrument measures change from a health-behavior modification perspective as opposed to measuring change from the perspective of attitudes toward learning.

7. It is suggested that this study be replicated to include samples of other health professionals including physicians, mid-level health-care providers, and allied health-care providers to test the relationship between demographic variables and readiness for interprofessional learning. This would also allow for testing the stability of the instrument with other disciplines.
APPENDIX A

INFORMED CONSENT FORM

FACTORS THAT INFLUENCE REGISTERED NURSES READINESS FOR INTERPROFESSIONAL LEARNING IN THE CONTEXT OF CONTINUING PROFESSIONAL DEVELOPMENT

Dear Participant:

I am a doctoral student in the Leadership Program in the Educational Department at Andrews University and I am conducting a study on interprofessional learning. The objective of this research is to attempt to understand which factors influence nurse’s readiness for collaborative learning.

Enclosed with this letter is a brief questionnaire that asks 23 questions about your attitude toward patient-centeredness, collaboration and teamwork and professional identity in the context of continued professional development. If you choose to complete the questionnaire,

Your responses will not be identified with you personally and all information will be kept confidential. Your participation is voluntary and there is no consequence is you do not participate. There are no known risks associated with this study.

If you have any questions or concerns about completing the questionnaire or about participating in this study, please contact me at (617) 376-5584 or cwilliamsS@quincymc.org. If you have any questions about your rights as a research participant, you may contact the Andrews University Institutional Review Board at (269) 471-6361 or research@andrews.edu or irb@andrews.edu.

Sincerely,

Collette Williams MSN, RN
32 Farnham Road
Stoughton, MA 02072
APPENDIX B

DEMOGRAPHIC INFORMATION TOOL

*Please respond to the following questions by placing an X in the appropriate corresponding answer.*

Age: ___

Gender: Male_____ Female __

Nursing degree: Primary: ____________ Second Degree: ______

Highest level of nursing education:
  Diploma  ___
  Associate Degree  ___
  Bachelor’s Degree  ___
  Master’s Degree  ___
  Doctor of Nursing Practice  ___
  PhD or EdD  ___
  Other  ___

Number of years practicing as a registered nurse:
  0-3  ___
  3-5  ___
  6-10  ___
  11-20  ___
  20 +  ___

In which specialty area are you employed?
  Emergency Department  ___
  Surgical Services  ___
  Ambulatory Care  ___
  Intensive Care  ___
  Medical-Surgical Unit  ___
  Psychiatric  ___
  Pediatrics  ___
  Other  ___
APPENDIX C

READINESS FOR INTERPROFESSIONAL LEARNING TOOL

Attitudes to Interprofessional Learning (IPL)

For the purposes of this questionnaire Interprofessional Learning is defined as two or more professional groups learning with, from and about each other at the same learning events, with a view to improving collaboration and the quality of care.

Please respond to the following questions by placing a cross $\square$ in one box for each question to indicate the extent to which you agree or disagree with each statement.

Teamwork and Collaboration

1. Learning with other health-care professionals will help me be a more effective member of a health-care team.

2. For small group learning to work, health-care professionals need to trust and respect each other.

3. Team working skills are essential for all health-care professionals to learn.

4. Shared learning will help me understand my own limitations.

5. Patients ultimately benefit if health-care professionals work together to solve patient problems.

6. Shared learning with other health-care professionals will increase my ability to understand clinical problems.

7. Learning with healthcare students from other disciplines before qualification would improve relationships after qualification.

8. Communication skills should be learned with other health-care professionals.

9. Shared learning will help me to think positively about other health-care professionals.

10. Shared learning with other health-care professionals will help me to communicate better with patients and other professionals.
11. I would welcome the opportunity to work on small-group projects with other health-care professionals.

12. Shared learning helps to clarify the nature of patient problems.

13. Shared learning before qualification would help health-care professionals become better team workers.

14. Clinical problem-solving skills should only be learned with professionals from my own discipline.

15. The function of nurses and therapists is mainly to provide support for doctors.

16. There is little overlap between my role and that of other health-care professionals.

17. I would feel uncomfortable if another health-care professional knew more about a topic than I did.

18. I have to acquire much more knowledge and skills than other health-care professionals.

**Sense of Professional Identity**

19. I like to understand the patient’s side of the problem.

20. Establishing trust with my patients is important to me.

21. I try to communicate compassion to my patients.

22. Thinking about the patient as a person is important in getting treatment right.

23. In my profession one needs skills in interacting and cooperating with patients.

**Patient Centeredness**
REFERENCE LIST


VITA

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EDUCATION

Andrews University, Berrien Spring, MI
Doctoral Candidate, Leadership program
August 2013

Andrews University, Berrien Spring, MI
Master of Science Degree in Nursing 1999

Coe College, Cedar Rapids, IA
Bachelor of Science Degree in Nursing 1988

Bridgeport Hospital School of Nursing, Bridgeport, CT
Diploma in Nursing 1981

PROFESSIONAL EXPERIENCE

Healthcare
Manager, Clinical Education/Stroke Coordinator
Steward Health, Boston, MA
2010-present

• Developed and executed educational activities including clinical and compliance education of multi-level competency programs for staff, meeting ANCC compliance standards when appropriate

• Created, coordinated and implemented competency skills-based fair for 300 staff

• Leader for stroke program. Responsible for meeting state accreditation standards and benchmarks. Achieved 2013 Defect-Free Care SCORE award.

PUBLICATIONS

