SOCIAL CAPITAL AND HUMAN CAPITAL OF NURSE MANAGERS AND REGISTERED NURSES

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DEDICATION

This dissertation is dedicated to the loving memory of my father, Jay A. Gilbert, who desperately wanted but never had the opportunity to achieve higher education, who worked tireless hours until the time of his passing to provide opportunities for his family that he never had, and who taught me that education is a gift to be cherished.

This dissertation is also dedicated to the great nurse mentors I have had throughout my nursing career. These incredible women have made me the man that I am:

To Marcia Van Riper, PhD RN FAAN who mentored me as an undergraduate, who first introduced me to research, who encouraged me to try different types of nursing, and who encouraged me to make career decisions based on my personal passions.

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Jason Howard Gilbert

SOCIAL CAPITAL AND HUMAN CAPITAL OF NURSE MANAGERS AND REGISTERED NURSES

Nurse managers and the teams of registered nurses they lead play a major role in the provision of healthcare outcomes nationally. Nursing leadership models have evolved with contemporary society and have shifted from hierarchical models to those based on interactive relationships. Traditional study of nurse managers and registered nurses has focused on human capital (acquired knowledge, skills, and experience). However, nurse managers and registered nurses must utilize human capital through a network of social relationships or social capital in order to produce positive healthcare outcomes. Little is known about human capital and social capital in nurse managers and registered nurses in the provision of healthcare outcomes. The purpose of this dissertation was to improve our understanding of the importance of human capital and social capital in nurse managers and the nurses. Specific aims included: 1) to explore and describe the concepts of human capital and social capital and to explore if human capital and social capital vary by individual characteristics/human capital attributes (such as education level or years of experience) or by organizational characteristics (such as hospital size or unit type); 2) to examine if human capital and social capital were related; and 3) to explore whether human capital and social capital were related to turnover intent and job satisfaction in a sample of nurse managers and registered nurses. A quantitative descriptive cross-sectional survey of 64 nurse managers and 1139 registered nurses in a 15 hospital healthcare system was conducted. Measures included human capital, social

capital, individual characteristics, organizational characteristics, turnover intent, and job satisfaction. The four major findings of this study were: 1) nurse manager human capital is acquired primarily through experience in the role, 2) nurse manager human capital is positively related to social capital, 3) nurse manager and registered nurse social capital varies by individual and organizational characteristics, and 4) social capital is positively related to job satisfaction and negatively related to turnover intent. This dissertation provides the foundation for further research and targeted interventions for development of human and social capital of nurse managers and registered nurses.

Diane Von Ah, PhD, RN, FAAN, Co-Chair

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CHAPTER 1

This chapter introduces the dissertation topic of human capital and social capital of nurse managers and registered nurses. The chapter provides a discussion on the background and significance of the topic, identifies the overarching purpose and specific aims of the dissertation, and outlines the study methods.

Background and Significance

Changing Dynamics of the Nurse Manager Role

The nurse manager role has been identified as a key role to organizational success and can have profound impact on influencing quality patient care, productivity and financial stability, job satisfaction of nurses, and organizational commitment (Cathcart & Greenspan, 2012; Chase, 2012; Echevarria, Patterson, & Krouse, 2017; Wendler, Olson-Sitki, & Prater, 2009). The nature of the nurse manager role has shifted dramatically throughout the years. Healthcare reform, advances in technology, decreasing operational budgets, redistribution of nursing workforces, reductions in nurse management positions, and increasing regulations have contributed to decreased nurse manager job satisfaction and increased turnover (Hewko, Brown, Fraser, Wong, & Cummings, 2015; Li-Min, Jen-Her, Ing-Chung, Kuo-Hung, & Lawler, 2007; McGillis-Hall, 2003; Shirey, Ebright, & McDaniel, 2008; Steege, Pinekenstein, Arsenault Knudsen, & Rainbow, 2017; Weaver-Moore, Sublett, & Leahy, 2016).

Many healthcare organizations in the United States were formed during the industrial era and adopted the assembly line design in which the leadership styles were autocratic, exploited power differentials, and focused on command and control to maintain equilibrium and achieve organizational goals (Kaiser, 2017; Kellerman, 2012;

Lindberg & Nash, 2008; Zimmerman, Lindberg, & Plsek, 2001). Through rapid expansion of information exchange and technology, the main economic drivers in the United States have shifted from physical production to a focus on knowledge work in which knowledge must be acquired, synthesized, and applied in the production of organizational goals (Kellerman, 2012; Porter-O'Grady, 2003; Uhl-Bien, Marion, & McKelvey, 2007; Zimmerman et al., 2001). As this shift has occurred, contemporary leadership models of nurses in healthcare organizations have shifted from traditional autocratic models to those based on influential relationships (Kaiser, 2017; Kellerman, 2012; Leitch, McMullan, & Harrison, 2013; Morsiani, Bagnasco, & Sasso, 2017). This shift has flattened organizational hierarchical structures, distributed power throughout healthcare organizations, and has changed the type of relationships and increased the frequency of interactions between nurse managers and registered nurses (Daly, Speedy, & Jackson, 2015). Rather than authoritarians, nurse managers must now often be adept in roles such as coach, mentor, advisor, facilitator, and teacher within the complex team (Gilbert & Broome, 2015; Heller et al., 2004; Morsiani et al., 2017).

Human Capital and Social Capital of Nurse Managers

Although the importance of the nurse manager role is well established and there have been a number of leadership models proposed for effective leadership of nurses, the body of research with nurse managers is small. Traditional research of nurse managers has focused on the concept of human capital, which may be defined as the acquired knowledge, skills, and experience of individuals which enable them to act in new ways which are economically valuable to both the individual and to the organization (Nahapiet & Ghoshal, 1998). Research of nurse manager human capital has led to the development

of many nurse manager competency models, which define knowledge, skills, and experience specific to the nurse manager role (Chase, 2010, 2012; Fennimore & Wolf, 2011; Heller et al., 2004; Kleinman, 2003; The American Organization of Nurse Executives, 2011). Development of these models and understanding of human capital specific to nurse managers is important, however, these models neither incorporate nor adequately describe the importance of the formation of the influential relationships, or social capital, that nurse managers must develop with registered nurses in order to influence organizational outcomes including patient care outcomes.

Social capital is a concept emerging in the nursing leadership literature which accounts for the influential relationship-based aspect of leadership and may be defined as "the groups, networks, norms, and trust that people have available to them for productive purposes" (Grootaert, Narayan, Jones, & Woolcock, 2004, p. 3). The ability of the nurse manager to form and maintain productive influential relationships in an organization may be an important complementary factor to their individual human capital. The concepts of human capital and social capital have been studied largely as separate rather than related concepts. Knowledge workers such as nurse managers and registered nurses must access, synthesize, and utilize their individual human capital and the human capital of others in the healthcare organizations in which they are employed through the network of social capital. Empirical support in other disciplines has suggested that human capital and social capital may be may be interrelated concepts that work together in the production of organizational outcomes (Asiaei & Jusoh, 2015; Cabello-Medina, López-Cabrales, & Valle-Cabrera, 2011; Felício, Couto, & Caiado, 2014; Ng & Feldman, 2010).

Human Capital and Social Capital of Registered Nurses

Study of human capital and social capital of nurse managers should be considered in conjunction with the human capital and social capital of the registered nurses they lead. Registered nurses play a vital role in the provision of healthcare and for healthcare outcomes nationally. The human capital of registered nurses is undeniably important to patient care and research has suggested that increased levels of nursing human capital acquired through formal education, professional development, and specialty certification is positively related to improved patient care outcomes (Aiken et al., 2011; Covell & Sidani, 2013; McHugh et al., 2013). Similar to nurse managers, social capital may be an important complementary factor to the human capital of nurses. Study of social capital of registered nurses has demonstrated that social capital has positive effects on organizational engagement, patient focus, perceptions of quality of care, unit effectiveness, knowledge sharing behavior, patient safety, nurse emotional exhaustion, and nursing turnover (Chang, Huang, Chiang, & Hsu, 2012; Ernstmann et al., 2012; C. Hsu, Chang, Huang, & Chiang, 2011; Kowalski et al., 2010; Laschinger, Read, Wilk, & Finegan, 2014; Sheingold & Sheingold, 2013; Shin & Lee, 2016). Further understanding of the related concepts of human capital and social capital in both nurse managers and registered nurses is important to inform strategies to lead and influence nursing teams in healthcare organizations.

Organizational Influence on Human Capital and Social Capital

Although human capital is inherent to an individual employee, it may also be viewed from an organizational perspective, in terms of both quantity (amount of human capital available in an organization such as staffing levels) and quality (specialized

knowledge and performance levels of the collective individuals in an organization). Human capital and social capital in nursing is formed and utilized within the context of the healthcare organization in which nurse managers and registered nurses are employed. Research in nursing and other fields has demonstrated a relationship between organizational characteristics such as the availability of educational development programs, organizational size, organizational setting, workload, culture, staffing, or human resource management practices and the quantity and quality of human capital in the organization (Asiaei & Jusoh, 2015; Covell, 2009; Covell & Sidani, 2013; I. Hsu & Sabherwal, 2011; Kostopoulos, Bozionelos, & Syrigos, 2015; Shin & Lee, 2016). These organizational characteristics may have either positive or negative effects on the quantity and quality of human capital. Few studies in nursing have explored how social capital may be influenced by the organizational context, but evidence in other fields has suggested that social capital may be influenced by similar organizational characteristics (Baughn, Neupert, Anh, & Hang, 2011; Ellinger, Ellinger, Bachrach, Yu-Lin, & Elmadağ Baş, 2011). Study of the influence of organizational characteristics on human capital and social capital is important to further inform targeted interventions, policy, and role design related to nurse managers and registered nurses in healthcare organizations.

Significance of Human Capital and Social Capital in Nursing

Quality of human capital in the nursing workforce as measured by education level, specialty certification, and years of experience as well as quantity of human capital as measured by vacancy, staffing levels, and turnover have been positively linked to the quality of patient outcomes in healthcare organizations (Aiken et al., 2011; Bae, Mark, & Fried, 2010; Kendall-Gallagher, Aiken, Sloane, & Cimiotti, 2011; McHugh et al., 2013;

Unruh & Hofler, 2016). The nursing workforce is aging with anticipated acceleration of retirement rates of more than 80,000 registered nurses annually matched with unprecedented job growth rates of more than 11% annually through 2030 (Auerbach, Buerhaus, & Staiger, 2015; The American Nurses Association, 2017). Extraordinary vacancy and turnover rates are anticipated in both nurse managers and registered nurses for at least the next decade (Hewko et al., 2015; Rodwell, McWilliams, & Gulyas, 2017; Shirey et al., 2008; Steege et al., 2017; Titzer, Shirey, & Hauck, 2014; Weaver-Moore et al., 2016). Replacement of both the quantity and quality of human capital in the nursing workforce is a national priority for healthcare outcomes, and many organizations will likely face an increasingly competitive market from which to recruit, develop, and retain qualified nurse managers and registered nurses (Auerbach et al., 2015; The Institute of Medicine at the National Academies, 2010).

Strategies to fill the anticipated shortages of qualified nurse managers and registered nurses should not be reliant solely on replacement. Although important, recruitment may not be enough to mitigate anticipated human capital losses and strategies to increase access to and utilization of the human capital of nurse managers and registered nurses may be equally important. Research has suggested that investment in social capital may have a positive effects on the quality of human capital in an organization by increasing human capital access and utilization and to the quantity of human capital through reductions in turnover and increases in job satisfaction (Asiaei & Jusoh, 2015; Baernholdt & Mark, 2009; Cabello-Medina et al., 2011; Hofmeyer, 2013; Ng & Feldman, 2010; Sheingold & Sheingold, 2013; Shin & Lee, 2016). Positive relationships between nurse managers and the registered nurses that they lead have been

established as a predictor of registered nurse turnover and job satisfaction (Hofmeyer, 2013; Hofmeyer & Marck, 2008; Kaiser, 2017; Morsiani et al., 2017). Further understanding of the relationship between human capital and social capital in the nursing work environment may inform strategies to positively impact patient care by mitigating the anticipated workforce shortages in both the nurse manager and registered nurse role.

Nursing Leadership and Healthcare Transformation: A National Priority

The topic of this dissertation addresses national nursing research priorities. The Institute of Medicine at the National Academies (2011) report *The Future of Nursing: Leading Change, Advancing Health* calls for radical transformation in nursing practice, education, and leadership. The report outlines the need for nursing leadership empowerment and participation in healthcare redesign in order to improve healthcare quality in the United States. Research priorities outlined in the report include: a) identification of the personal and professional characteristics most critical to leadership of health care organizations, b) identification of the skills and knowledge most critical to leaders of health care, c) identification of the characteristics of mentors that have been (or could be) most successful in recruiting and training diverse nurses, and d) identification of the influence of nursing on important health care decisions at all levels (The Institute of Medicine at the National Academies, 2011).

In addition, The American Organization of Nurse Executives, a subsidiary of the American Hospital Association, has outlined national research priorities for nursing leadership including research questions related to: a) emerging nursing leadership roles in the changing landscape, b) nurse influence on practice environments and safe work environments across the continuum, c) nurse influence on outcomes across the

continuum, d) nursing education preparation, e) impact of nurse leadership on organizational value, and f) outcomes related to nursing practice (The American Organization of Nurse Executives, 2016). This dissertation topic addresses these national research priorities by further describing social capital and human capital in the complex healthcare environment and has implications related to education, policy, practice, and research.

Purpose and Specific Aims

The overall purpose of this dissertation was to explore and describe the concepts of human capital and social capital of nurse managers and of the registered nurses that they lead. The specific aims were as follows:

Aim 1 (Chapter 2): To synthesize the literature in leadership related to human capital and social capital and to propose a synthesized conceptual model guiding empirical research of human capital and social capital in nursing.

Aim 2 (Chapter 3): To explore and describe whether human capital and social capital reported by nurse managers varies by individual characteristics including age, education level, specialty certification, experience as a registered nurse, experience as a nurse manager, and experience in the current manager role, and by organizational characteristics including hospital teaching status, hospital bed size, hospital setting, unit type, unit acuity, and position scope.

Aim 3: (Chapter 3): To explore the bivariate relationships between human capital, social capital, turnover intent, and job satisfaction reported by nurse managers.

Aim 4 (Chapter 4): To explore and describe whether social capital reported by registered nurses varies by age, human capital attributes including education level, specialty certification, years of experience as a registered nurse, and years of experience in the current nursing unit, and by organizational characteristics including hospital teaching status, hospital bed size, hospital setting, unit type, and unit acuity.

Aim 5 (Chapter 4): To describe the bivariate relationships between social capital, registered nurse turnover intent, and job satisfaction reported by registered nurses.

Approach

Theoretical Framework

The theoretical framework guiding this research study is a synthesized model based on human capital theory and social capital theory (Becker, 1964; Bourdieu, 1986; Coleman, 1988; Grootaert & Van Bastelaer, 2002; Nahapiet & Ghoshal, 1998; Putnam, 1993). After examining the state of the science of human capital and social capital, it was determined that neither theory included both concepts of interest nor gave a complete conceptualization of how these concepts may be related. Given the need to further evolve the propositions of human capital theory and social capital theory, an integrative review of the literature was conducted resulting in the development of a synthesized conceptual model which will be referred to as the Gilbert Conceptual Model of Organizational Intellectual Capital. Chapter 2 contains a complete description of the integrative review process and introduces the resultant conceptual model which guided this dissertation. Figure 1-1 is a reduced graphical model of the Gilbert Conceptual

Model of Organizational Intellectual Capital. The reduced model contains only the main concepts and propositions of interest to this dissertation. The following concepts were included in this dissertation: a) organizational capital, b) human capital, c) social capital, and d) organizational outcomes. The main propositional statements tested in this dissertation are as follows: a) organizational capital has an effect on human capital and social capital, b) there is a relationship between human capital and social capital, and c) social capital and human capital have a relationship with organizational outcomes.

Research Design

A descriptive cross-sectional quantitative survey design was used.

Measures and Instrumentation

Nurse managers. Nurse manager participants completed a set of questionnaires measuring individual characteristics, organizational characteristics, human capital, and social capital. Individual characteristics included age, nurse manager education level, presence of specialty certification, years of registered nurse experience, years of nurse manager experience, and years of current nurse manager position experience. Organizational characteristics included hospital teaching status, hospital setting, hospital bed size, unit type, unit acuity, and number of full-time equivalents (FTEs) managed.

Nurse manager human capital was measured using the Chase Nurse Manager Competency Instrument (CNMCI) (Chase, 2012). Permission to use the instrument was obtained from the author prior to initiation of the study. The CNMCI is a reliable and valid instrument which measures knowledge and skills specific to the nurse manager role. The instrument asks participants to rate 53 competencies organized into six subscales including: 1) Technical (11 items related to technical aspects of the role such as nursing

care delivery systems and standards, regulatory standards, and technology), 2) Human (13 items related to management of individuals such as recruitment, retention, and performance management), 3) Conceptual (8 items related to concepts such as administrative theory, quality improvement, and legal and ethical issues), 4) Leadership (14 items related to leadership of others such as interdisciplinary coordination, empowerment and delegation, motivation), 5) Financial Management (7 items related to financial principles such as budgeting, cost control and evaluation), and 6) CNMCI total scale (53 items). Participants were asked to rate the items in 2 different ways. First, their personal knowledge and/or understanding of each competency (measuring knowledge) and second, their personal ability to use and/or implement each competency (measuring skill) on a 4-point Likert scale (1 = minimal knowledge or minimal skill to 4 = expert knowledge or expert skill with the competency). Higher ratings indicate a higher level of participant knowledge or skill. This resulted in 12 subscales (6 for each knowledge scale and 6 for each skill scale) measuring nurse manager human capital. In this study, all subscales demonstrated adequate reliability (α-2 values ranged from .870 to .979).

Social capital was measured by the Social Capital Outcomes for Nurses instrument (SCON). Permission to administer the SCON was obtained from the author prior to initiation. This reliable and valid instrument contains 44 items measured on a 5-point Likert scale (1= strongly disagree to 5= strongly agree) reflective of the 6 domains of social capital in the nursing work environment (Sheingold & Sheingold, 2013). The instrument was divided into 6 subscales: 1) external trust and empowerment (12 items reflective of trust in senior executive and others outside of the work unit and empowerment over decisions), 2) internal trust, solidarity, and collective action (8 items

reflective of trust in others within the work unit and feelings of togetherness), 3) social cohesion with co-workers (3 items reflective of social connections with coworkers), 4) participation and affiliation (6 items reflective of participation in work groups, projects, and professional organizations), 5) conflict and solidarity (6 items reflective of work environment conflict and feelings of togetherness), and 6) SCON total scale (44 items). In this study, all social capital subscales were determined via exploratory factor analysis and demonstrated adequate reliability (*A-2* values ranged from .701 to .900).

Finally, participants were asked to complete 3 additional items related to turnover intent (2 items) and job satisfaction (1 item). Questions included: a) I plan to be working for this organization 1 year from now, b) I plan to be working for this organization 5 years from now, and c) Overall I am satisfied with my job. These items were measured on a 5-point Likert scale and were coded so that higher scores indicated higher intent to turnover and higher job satisfaction.

Registered nurses. Registered nurse participants completed a set of questionnaires measuring social capital, age, organizational characteristics, and human capital attributes. Social capital was measured in this study by administering the Social Capital Outcomes for Nurses instrument (SCON). Organizational characteristics included whether or not the RN worked in a float pool, hospital teaching status, hospital bed size, hospital setting, nursing unit type, and unit acuity level. Human capital attributes included formal education level and presence of specialty certification (knowledge and skills), years of experience as a registered nurse, and years of experience in the current nursing unit (experience). Finally, participants were asked the same three questions related to turnover intent and job satisfaction as nurse manager participants.

Setting

The setting for this research study was the hospitals within the Indiana University Health (IU Health) system. The IU Health system is a private, not-for profit system which contains 15 hospitals throughout the state of Indiana. Hospitals in this system range from small critical access hospitals with less than 25 beds in rural communities to large academic tertiary care hospitals in urban areas with more than 300 beds. This setting provided the opportunity to access a large heterogeneous sample of nurse managers and registered nurses and allowed for more robust analysis with greater generalizability of the results to the population of interest.

Sample and Sampling Criteria

The sample for this dissertation study was obtained from a population of 133 nurse managers and 6,190 registered nurses believed to meet inclusion criteria employed at one of the IU Health system hospitals. All known members of the available population believed to meet inclusion and exclusion criteria received the opportunity to participate.

Inclusion and exclusion criteria

Inclusion criteria for nurse managers from the population were nurse managers currently employed on an inpatient, procedural, perioperative, or outpatient (non-clinic) setting at an IU Health hospital. Exclusion criteria for nurse managers from the population included: a) nurse managers who were in an interim status, b) nurse managers who were not employed directly by IU Health, c) nurse managers of outpatient clinics, d) nurse managers who managed units or programs which did not provide direct patient care, and e) nurse managers who did not have registered nurse direct reports.

Inclusion criteria for registered nurses from the population were registered nurses in a full or part time status who were employed on an inpatient, procedural, perioperative, or outpatient (non-clinic) setting at an IU Health hospital. Exclusion criteria for registered nurses from the population included: a) registered nurses who were not employed directly by IU Health, b) registered nurses who did not report to a nurse manager, c) registered nurses working in outpatient clinics, and d) registered nurses who did not primarily function in a direct patient care role (less than 50% of the time).

Rationale for inclusion and exclusion criteria. Only nurse managers and registered nurses employed directly by IU Health were included to reduce variance in organizational characteristics (such as human resource policy and procedure) that may influence the social capital and human capital of employees (Cabello-Medina et al., 2011; Daud & Yusoff, 2010; Kostopoulos et al., 2015). Only registered nurses with direct patient care responsibilities and nurse managers who managed work units that provided direct patient care were included as social capital and human capital may differ in non-patient care settings. Nurse managers and registered nurses of outpatient clinics, nurse managers without registered nurse direct reports, and registered nurses not reporting directly to a nurse manager were all excluded in order to reduce variances in the reporting structure that may have impacted human capital and social capital.

Study Procedures

Institutional review and approval. Prior to initiation, approval as an exempt study was obtained from the Institutional Review Board (IRB) of Indiana University (IRB number 1612402471). Permission to contact potential participants was obtained

from IU Health nursing leadership and the designated nursing research contacts at each of the 15 hospitals.

Recruitment methods. The investigator attended the Indiana University Health system shared leadership councils in order to explain the study and enlist support for completion of the survey. The study sheet which included the purpose, requirements for participation, risks and benefits, and procedures of the study was provided to the research contacts at each hospital and at each shared leadership meeting that the investigator attended. The online study questionnaire was anonymous, confidential, and was administered through the secure RedCap server at Indiana University. An email invitation to participate and the study sheet was sent to nurse managers and registered nurses via the secure hospital intranet email system with a link to the survey applicable to their role. Participation was voluntary and consent to participate was denoted through completion and submission of the questionnaire. Potential participants also received a follow-up electronic message at 2- and 4- weeks after initial contact to increase participation rates. Eligibility was confirmed through a series of screening questions at the start of the survey. Those who were eligible and completed the surveys had the option of entering a random drawing for one of 10 $25 gift cards as an incentive for participation.

Participant privacy and confidentiality. The individual survey responses were de-identified and were not disclosed to the institution in which the study took place. Minimal demographic data were collected to help ensure anonymity. The identity of the participants was not known to the researchers. All reporting was completed in aggregate.

Analysis

Data Management

Data were encrypted and de-identified. Storage occurred on the secure RedCap server through Indiana University.

Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) Version 24.0. Descriptive statistics were analyzed for the individual characteristics, human capital attributes, and organizational characteristics. Means and standard deviations were calculated for the 12 human capital (CNMCI) scales for the overall sample in the nurse manager data set and the 6 social capital (SCON) scales for the overall sample in both the nurse manager and registered nurse data sets. Missing data was handled by calculating means of remaining CNMCI or SCON subscale and total scale items only if not more than 1 subscale item was missing from each subscale and no more than 5 items were missing for total CNMCI and total SCON scales. Guttman's Lambda-2 analysis was used to assess reliability in this dissertation for the CNMCI and SCON instrument scales because the data violated assumptions of normality (Callender & Osburn, 1979).

For the nurse manager data set, differences in human capital as measured by the CNMCI and social capital as measured by the SCON by individual characteristics or organizational characteristics were examined through conducting independent samples t-tests or between subjects one-way ANOVA procedures. For the registered nurse data set, differences in social capital by organizational characteristics and human capital attributes were examined through conducting independent samples t-tests or between subjects one-

way ANOVA procedures. For the independent samples t-tests and ANOVA procedures, if assumptions of the Levene test were violated, interpretation of either the Welch-t or Welch-F test was completed to increase rigor and decrease likelihood of a Type-I error (Tabachnick & Fidell, 2013). If human capital or social capital varied significantly by any other variable, post hoc testing was completed using Tukey HSD procedures or if equality of variance was not assumed through Games-Howell procedures. Pearson's Product-Moment Correlation was used to explore the bivariate relationships between human capital, social capital, turnover intent, and job satisfaction variables. Significance for all analyses was set at the $p < .05$ level.

Conclusion

This chapter has introduced the dissertation topic of human capital and social capital of nurse managers and registered nurses, has outlined the background and significance of the topic, introduced the theoretical basis, and has outlined the study methods. Chapter 2 presents the results of an integrative review of the state of the science in social capital and human capital in leadership literature which resulted in the synthesized conceptual model guiding this dissertation. Chapter 3 presents the results of the dissertation study measuring human capital, social capital, individual characteristics, and organizational characteristics of a sample of 64 nurse managers. Chapter 4 presents the results of the dissertation study measuring social capital, human capital attributes, age, and organizational characteristics of a sample of 1139 registered nurses. This dissertation concludes with Chapter 5, which provides a synthesis of results, discusses the strength and limitations of the dissertation, outlines implications for practice, and makes recommendations for further research.

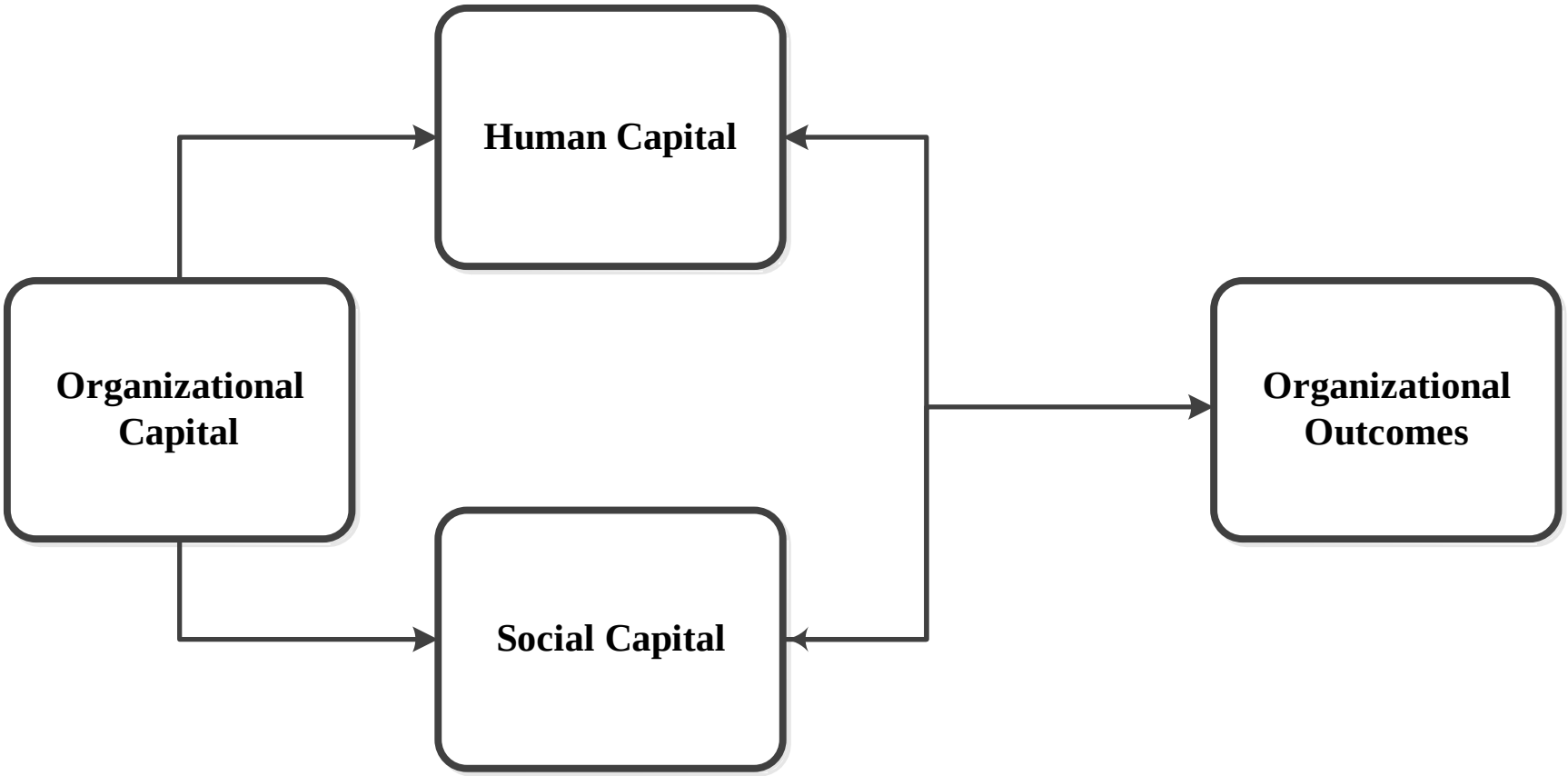

Figure 1-1.
Reduced Gilbert Conceptual Model of Organizational Intellectual Capital guiding dissertation

CHAPTER 2

This chapter presents the results of an integrative review of leadership literature related to social capital and human capital and presents a synthesized conceptual model which advances the propositions of human capital theory and social capital theory.

Introduction

There is a growing crisis of leadership in the nurse manager role. The nurse manager role has been identified as a key leadership role to organizational success and can have profound impact on influencing quality patient care, productivity and financial stability, job satisfaction of nurses, and organizational commitment (Cathcart & Greenspan, 2012; Chase, 2012; Wendler et al., 2009). Healthcare reform, advances in technology, increased budgetary constraints, and increasing regulations have contributed to feelings of being overwhelmed, burnout, and increased turnover in nurse managers. In the United States alone, over half of experienced nurse managers are expected to retire in the next decade and nurse manager vacancy is expected to reach 67,000 by the year 2020 (Cadmus & Johansen, 2012; Cathcart & Greenspan, 2012; Titzer et al., 2014).

In traditional hierarchical based leadership models, the manager was viewed as the all-knowing, all-powerful expert focused on command and control of workers in order to maintain equilibrium and achieve organizational goals (Lindberg & Nash, 2008; Zimmerman et al., 2001). Through rapid expansion of information exchange and technology, main economic drivers have shifted from physical production to a focus on knowledge work in which knowledge must be acquired, synthesized, and applied in the production of organizational goals (Porter-O'Grady, 2003; Uhl-Bien et al., 2007; Zimmerman et al., 2001). As this shift has occurred, contemporary leadership models of

nurses in healthcare organizations have shifted from hierarchical command and control models to those based on influential relationships which require different interactions between the nurse manager and members of the team (Kellerman, 2012; Leitch et al., 2013; Lindberg & Nash, 2008).

Contemporary models of nursing leadership have not always kept pace with the rapidly changing healthcare environment and little attention has been paid in the literature to the importance of productive relationships in the leadership of nurses. Traditional research of nurse manager effectiveness has focused on the concept of human capital, which may be defined as the acquired knowledge, skills, and experience of individuals which enable them to act in new ways which are economically valuable to both the individual and to the organization (Nahapiet & Ghoshal, 1998). Research in this area has led to the development of many nurse manager competency models, which define requisite knowledge, skills, and experience that are important to success in the role (Chase, 2012; The American Organization of Nurse Executives, 2011). Although understanding the requisite human capital of the nurse manager is important, it neither incorporates nor adequately describes the importance of the formation of influential relationships, or social capital, that nurse managers must develop with the intra-professional team in order to influence patient and organizational outcomes.

Social capital is a concept emerging in the nursing leadership literature which accounts for the influential relationship-based aspect of leadership and may be defined as "the groups, networks, norms, and trust that people have available to them for productive purposes" (Grootaert et al., 2004, p. 3). The ability of the nurse manager to form and

maintain productive relationships and influence resource deployment in an organization becomes an important complementary factor to their individual human capital.

The concepts of human capital and social capital have been studied largely as separate rather than complementary factors. Knowledge workers such as nurse managers must access, synthesize, and utilize their own human capital and the human capital of others in a social context through social capital. Little is known about the relationship between human capital and social capital and how these concepts may work together to produce organizational outcomes through leadership of nurses. Further research is necessary to explore the concepts of human capital and social capital on nursing teams and the mechanisms through which nurse managers influence human capital and social capital in the production of organizational outcomes. Empirical study may inform organizational practice, policy and procedure, and education related to nursing leadership.

Purpose

The purpose of this chapter was to explore the concepts of human capital and social capital as they relate to nursing leadership in healthcare organizations. This was accomplished through completing a systematic integrative review of the literature. Specific aims of this chapter include a) to synthesize the literature related to human capital and social capital in leadership, b) to refine the conceptual definitions of human capital and social capital with associated conceptual antecedents and consequences, and c) to propose a synthesized conceptual model guiding further empirical research of human capital and social capital in nursing leadership.

Method

Given the rudimentary state of the science on human capital and social capital in the nursing leadership literature, the methodology of a systematic integrative review was selected in order to include both empirical studies as well as theoretical or conceptual reviews. The specific integrative review methodology selected for the purposes of this chapter is that outlined by Whittemore and Knafl (2005) which allows for the combination of diverse methodologies in the synthesis to advance understanding of a phenomenon of interest.

Literature Search Process and Sample

The EBSCO Host system was used for the literature search. Initially, only CINAHL Plus with Full Text and the MEDLINE databases were searched using the terms "social capital", "human capital", and "management" for the years 1995-2016. This search yielded no articles which focused on nursing leadership. The decision was made to broaden the search to include disciplines outside of nursing. Databases included in the final search were CINAHL Plus with Full Text, Academic Search Premier, Business Source Premier, Health Business FullTEXT, MEDLINE, and PsychINFO for the years 1995-2016. The databases were selected given the prevalence of both human capital and social capital in business, academic, and psychology literature inclusive of leadership. The years searched were limited to the last 20 years with the rationale that the concepts of interest evolve with contemporary society and the most recent literature should be examined. Results were filtered for peer review journals written in the English language. The following search terms were used: "social capital", "human capital", and "management". Search terms were connected with the Boolean operator "AND". The

literature search yielded 729 unique articles. Titles and abstracts were reviewed for relevancy using the following inclusion criteria: a) contain conceptual or operational definitions of social capital and human capital, b) discuss social capital as an attribute of team performance or management performance, or c) contain empirical referents to human capital and social capital. After title and abstract review, 658 articles were excluded. The remaining 71 full text articles were reviewed based on the following exclusion criteria: a) editorials, b) articles focused on human and social capital in firm board of director members, c) articles focused on social capital in sport teams, d) articles focused on social capital and human capital as a basis for exploring gender or racial disparity, e) papers which focused on social capital or human capital as a function of individual financial compensation, f) articles focused on human capital and social capital in family owned and operated businesses, and g) articles written by authors in for-profit companies selling instrumentation to businesses. After the review, 37 articles were included in the final sample. The final sample consisted of theoretical or conceptual reviews (n = 14), quantitative research studies (n = 19), and qualitative research studies (n = 4). The country of origin for the majority of the studies was the United States (n = 18). Journal types were predominantly management (n = 23) and included human resources, economics, engineering, psychology, organizational dynamics, sociology, and nursing management.

Quality Appraisal

Critical appraisal of the quality of each research study was coded using the quality of study instrument developed by Smith and Stullenbarger (1991) (Broome, 2000). Articles were not excluded based on the quality appraisal score for the purpose of this

integrative review, but caution was used when synthesizing the results into the overall conceptual framework for those with lower overall quality scores. Lower scoring items for the majority of sources included operational definitions and reports of instrument validity and instrument reliability. This is likely because of the vague conceptual definitions and lack of consistency found in the literature related to the concept of social capital and the inconsistency in instrumentation. This lack of specificity provided rationale for further development of the conceptual model and associated conceptual definitions.

Data Evaluation

The articles were first read to examine the theoretical or conceptual foundations and the conceptual definitions of social capital and human capital. The following data were abstracted: a) theoretical or conceptual model presented in the paper, b) the conceptual definitions of social capital and human capital identified, c) antecedents and consequences of human and social capital proposed in the article, and d) major propositions or hypotheses. Concepts and propositions were identified, organized, and classified according to the criteria established by Fawcett (1999). The conceptual definitions along with antecedents and consequences were organized by theme cluster and synthesized into concise conceptual definitions with associated domains. Additional data were abstracted from the empirical studies: a) study design, b) sampling procedures, c) sample, d) instrumentation and measures, e) results, and f) practical implications. Empirical support for associated propositions and hypotheses was examined. The propositions and hypotheses with empirical support were synthesized into the final conceptual model.

Proposed Conceptual Model Based on Findings from Integrative Review

The proposed conceptual model resulting from this integrative review will be referred to as the Gilbert Conceptual Model of Organizational Intellectual Capital. Figure 2-1 is a graphical representation of all components in the model with associated propositions synthesized from the existing literature. A complete description of the concepts and proposed propositions are explained in the following sections. The main propositions of this conceptual model are presented in Table 2-1.

Description of Concepts

Human capital. Human capital may be defined as the acquired knowledge, skills, and experience of individuals which enable them to act in new ways which are economically valuable to both the individual and to the organization (Call, Nyberg, & Thatcher, 2015; Felício et al., 2014; Greve, Benassi, & Sti, 2010; Makela, Bjorkman, & Ehrnrooth, 2009; Nahapiet & Ghoshal, 1998). Human capital brings value to the organization as a standard of competency and creativity that employees possess which allows them to solve problems, create new knowledge, challenge current practices, and identify and leverage performance opportunities (Kang & Snell, 2009; Kostopoulos et al., 2015; Subramaniam & Youndt, 2005).

Human capital is largely an individual based phenomenon (Greve et al., 2010; Kang & Snell, 2009; Ng & Feldman, 2010; Youndt, Subramaniam, & Snell, 2004). Organizations do not own human capital, but rather borrow or lease the acquired knowledge, skills, and experience of the individual employee through the employment agreement. Since employment agreements are at will, employees may leave the organization at any time, taking with them their individual human capital (Somaya,

Williamson, & Lorinkova, 2008; Youndt et al., 2004). Quantity and quality of human capital in an organization are affected by hiring practices, involuntary turnover, and employee mobility within the organization (Subramaniam & Youndt, 2005).

In order to produce economic value for individuals or organizations, human capital must be accessed, synthesized, and utilized (Daud & Yusoff, 2010; I. Hsu & Sabherwal, 2011). The relative economic value of human capital is dependent on the context of the organization in which it is used (Call et al., 2015; Choi, 2016; Luthans & Youssef, 2004). Human capital may be industry-specific in nature and verified through specific means such as licensure or certification (Ng & Feldman, 2010). Human capital may be classified in a spectrum ranging from explicit (easily communicated or exchanged) or tacit (difficult to communicate or exchange) (Subramaniam & Youndt, 2005; Youndt et al., 2004). Firm-specific tacit human capital (or specialized knowledge, skills, and experience which is difficult to translate or exchange) of an individual may be the most valuable and difficult to lose in an organization because of the scarcity and replacement costs (Dess & Shaw, 2001).

Social capital. Social Capital is a complex concept that is gaining popularity in the literature, but has also been much debated in terms of definition, operationalization, measurement, and function (C. Hsu et al., 2011; Styhre, 2008). The literature demonstrates that there are three distinct theoretical perspectives of social capital theory each with a slightly different definition of the concept: a) the functional perspective, b) the network perspective, and c) the multidimensional perspective (C. Hsu et al., 2011). The theoretical perspective and conceptual definition of social capital found in the literature may vary dependent on the level of analysis (Pastoriza & Ariño, 2013).

The functional perspective developed by Coleman (1988) and Putnam (1993) conceptualizes social capital as a functional resource which facilitates individuals to action and enhances collaboration. The network perspective of social capital theory developed by Bourdieu (1986) defines social capital as a resource embedded in networks of social relationships in which an individual or groups are members (Nahapiet & Ghoshal, 1998). The network perspective was later evolved to conceptualize social capital in three domains: a) the structural domain which identifies the network connections of individuals, b) the cognitive domain which reflects the extent to which individuals have a common vision or common goals within a network, and c) the relational domain which defines the quality and nature of the relationships between individuals within the network through trust, reciprocity, and emotional intensity (Nahapiet & Ghoshal, 1998).

Grootaert et al. (2004) evolved and synthesized the functional and network theoretical perspectives to develop the multi-dimensional perspective. This perspective conceptualizes social capital as a resource both inherent in a network and as a resource which facilitates action among network members. This conceptual definition identifies social capital as "the groups, networks, norms, and trust that people have available to them for productive purposes" (Grootaert et al., 2004, p. 3). In this perspective, social capital is not viewed as a network or function of relationships alone, but as a phenomenon of six interrelated domains: 1) bonding, bridging, and linking networks, 2) trust and solidarity, 3) collective action and cooperation, 4) information and communication, 5) social cohesion and inclusion, and 6) empowerment and political action (Grootaert et al., 2004; Hofmeyer, 2013).

The concept of social capital had the most variance in conceptual definition across the articles reviewed. The theoretical perspective chosen for the purposes of this chapter is the more contemporary multi-dimensional perspective with the six associated domains. This evolved and complete conceptual definition allows social capital to be applied in a wide range of settings and from the micro level, such as an individual, to the macro level such as an entire population (Grootaert & Van Bastelaer, 2002).

The domain of bonding, bridging, and linking networks are conceptualized as three types of network ties which facilitate access to knowledge and create opportunities for individuals and groups. Bonding network ties are strong ties in closed networks which bind individuals in a social unit with similar backgrounds, status, or experience to each other such as a family, friend, or a colleague (Baughn et al., 2011; Debrulle, Maes, & Sels, 2014; Djuric & Filipovic, 2015; Hofmeyer, 2013; Kostopoulos et al., 2015). These strong network ties assist individuals with access to information and support but may limit the amount of information that is assimilated from outside the social unit. This has the potential to limit processing of external information, incorporation of new evidence into the environment, or innovation (Debrulle et al., 2014; Hofmeyer, 2013; Kostopoulos et al., 2015). An example of a bonding network tie would be a connection between two nurses on the same work unit. The strong bond between those nurses provides a conduit for access to information and support as they work together. This network tie may also limit their ability to trust others outside of the work unit and they may be reluctant to incorporate outside information into their work unit.

Bridging network ties are weak ties in open networks which bridge connections to others of similar social status that reside outside of the social unit (Baughn et al., 2011;

Debrulle et al., 2014; Djuric & Filipovic, 2015; Hofmeyer, 2013; Kostopoulos et al., 2015). These network ties facilitate access to diverse knowledge and resources external to the social unit and may create reciprocity (Hofmeyer, 2013; Kostopoulos et al., 2015). An example of a bridging network tie would be a nurse who is floated to another unit and forms a connection with another nurse working on the unit. These nurses may form a bridging network tie which enhances access to expertise and information outside the confines of their individual work units. Finally, linking network ties are weak ties in open and vertical networks that link individuals in a social unit to those with more authority or power that facilitate access to resources and information that enable social advancement (Hofmeyer, 2013). An example of a linking network tie would be a nurse manager who asks a chief nursing officer to mentor them on their career path. The link that is formed between the nurse manager and the chief nurse could lead to a gain in information or access to resources allowing for an advantage in career advancement opportunities for the nurse manager.

The domain of trust and solidarity as an essential compenent of social capital was commonly found in the articles reviewed. The most commonly discussed attribute reviewed across the studies was trust, with all articles referencing trust as an important component of social capital. Interrelated to trust, the attribute of solidarity was identified across the articles as a cognitive process of feelings of shared meaning and unity (Baughn et al., 2011; Call et al., 2015; Choi, 2016; Dess & Shaw, 2001; Djuric & Filipovic, 2015; Hofmeyer, 2013; Kang & Snell, 2009; Makela et al., 2009; Styhre, 2008). If trust exists between the nurse manager and the nurses on the unit, there will likely be an increase in the feeling of trust and harmony among team members leading to more effective team

dynamics. The domain of collective action and cooperation was also commonly found across the reviewed articles. The purpose of social capital is to serve as a bond between individuals to work collectively towards shared organizational goals through collaboration and cooperation (Djuric & Filipovic, 2015; Hofmeyer, 2013; Makela et al., 2009; Reed, Lubatkin, & Srinivasan, 2006; Styhre, 2008; Tseng, Wang, & Yen, 2014). For instance, a nurse manager who includes staff in setting unit goals and clearly communicates expectations may experience an increase in collaborative practice among team members.

Information and communication is an important domain not found in other conceptualizations of social capital. Accessing, processing, synthesizing, and communicating knowledge within and across units is a key function of social capital as well as a primary form of production in a knowledge-based organization (Asiaei & Jusoh, 2015; Call et al., 2015; Debrulle et al., 2014; Hofmeyer, 2013; Kang & Snell, 2009; Oldroyd & Morris, 2012; Shaw, Duffy, Johnson, & Lockhart, 2005; Styhre, 2008; Youndt et al., 2004). The bonds formed between nurse managers and the teams that they lead serve as a conduit for exchanging vital information necessary to complete identified patient care and organizational goals. The social cohesion and inclusion domain reflects how outsiders are assimilated into a group and how conlifct, diversity, and change is handled in the social unit (Grootaert et al., 2004; Hofmeyer, 2013). Examples of this domain would be the process through which nurses are welcomed onto the unit and oriented or how the nurse manager facilitates conflict between team members. Finally, the empowerment and political action domain reflects the extent to which individuals have control or a voice in the processes and structures that affect them (Cabello-Medina

et al., 2011; Hofmeyer, 2013). An example of this domain would be the nurse manager creating a shared governance model to make decisions with nurses on the unit rather than acting unilaterally.

Organizational capital. When examining the antecedents to human and social capital noted in the literature, a pattern emerged. Many of the antecedents to human and social capital can be conceptualized as inherent structures or processes in organizations. As the antecedents were evaluated, organized, and classified, the concept of organizational capital emerged with the associated domains as a major influence on the development of human capital and social capital. Organizational capital is a concept which may be defined as the "institutionalized knowledge and codified experience that arises from established structures, processes, and routines" (Kang & Snell, 2009, p. 70). The purpose of organizational capital is to coordinate action among a group of interdependent individuals in an organization and provides the context which may define the relative economic value of the human capital and social capital in the organization (Kang & Snell, 2009; Subramaniam & Youndt, 2005; Youndt et al., 2004). Established patterns and structures for organizational capital document and preserve knowledge based on past successful practices in order to encourage repeated use in the organization (Kostopoulos et al., 2015; Subramaniam & Youndt, 2005).

Three distinct domains of organizational capital emerged from the literature review which will be referred to as the following: a) the architectural domain, b) the cultural domain, and c) the knowledge domain. The architectural domain refers to the formalized structures and processes that exist in an organization that guide organizational decision making. Nurse managers and the teams they lead are affected by the context of

the organizational structure and established policy and procedure. This includes established hierarchy or reporting structure and human resource policy and procedures guiding labor management practices such as job descriptions and assignments, hiring, staffing, and disciplinary action (Baughn et al., 2011; Bilhuber Galli & Müller-Stewens, 2012; Cabello-Medina et al., 2011; Call et al., 2015; Debrulle et al., 2014; Ellinger et al., 2011; Kang & Snell, 2009; Kostopoulos et al., 2015; Luthans & Youssef, 2004; Makela et al., 2009; Ng & Feldman, 2010; Oldroyd & Morris, 2012; Reed et al., 2006; Stark & Jeffries, 2011; Subramaniam & Youndt, 2005; Youndt et al., 2004).

The cultural domain of organizational capital accounts for the structures and processes influenced by organizational history and social responsibility. This domain includes the formal objectives, plans, and purpose of action such as the mission, vision, and values, and strategic plans of the organization (Akdere, 2005; Akdere & Roberts, 2008; Djuric & Filipovic, 2015), the established organizational traditions and culture (Asiaei & Jusoh, 2015; Baughn et al., 2011; Dess & Shaw, 2001), and corporate social responsibility (Ferreira-Lopes, Roseta-Palma, & Sequeira, 2012; Stark & Jeffries, 2011). For example, a faith-based healthcare organization may have different policies and procedures based on the doctrine of the affiliated faith which guide provided services and nursing behavior in the organization.

The knowledge domain of organizational capital accounts for the structures and processes through which knowledge is utilized, exchanged, created, and stored. This includes investment in research and development (Youndt et al., 2004), information technology (Choi, 2016; Tseng et al., 2014), patents, policies and procedures (Ellinger et al., 2011), investment in training, development, and mentoring (Baughn et al., 2011;

Bilhuber Galli & Müller-Stewens, 2012), and knowledge management processes such as identification, acquisition, and dissemination of knowledge (Bapuji & Crossan, 2005; Daud & Yusoff, 2010; Styhre, 2008; Tseng et al., 2014). An organization with a commitment to knowledge development may have resources available for nurse manger development or nurse-led research.

Organizational capital differs from other forms of intellectual capital as it is the one form of intellectual capital that is owned by the organization. It is also the least flexible of the three forms of intellectual capital, as it exists in codified rules, regulations, norms, policies, and patents (Subramaniam & Youndt, 2005; Youndt et al., 2004). Organizational capital may be further classified by its rigidity from mechanistic to organic. Mechanistic classifications encourage conformity and rule following which is usually linked to historically successful processes and structures linked to legitimatized and reliable knowledge (Kang & Snell, 2009; Subramaniam & Youndt, 2005). Mechanistic organizational capital allows for the least amount of variation from established processes. Organic organizational capital in contrast still has the intent of coordinating action but allows for more variation from established processes. Organic organizational capital has guiding principles and rules, but they are less structured in nature and allows for more employee independence and autonomy in decision making allowing for increased innovation and absorption of new knowledge (Kang & Snell, 2009). For example, organizations with overly stringent policies and procedures may inadvertently stifle the ability of the nurse manager and nursing team to innovate practice changes.

Intellectual capital. The three forms of capital identified in this review can be organized into one collective construct of intellectual capital. The construct of intellectual capital may be defined as "the sum of all knowledge an organization is able to leverage in the process of conducting business to gain competitive advantage" (Youndt et al., 2004, p. 337). This includes the three forms of intellectual capital described previously: organizational capital, human capital, and social capital. When viewed as a whole, the three forms of intellectual capital may be viewed as interrelated concepts which contribute to organizational knowledge exchange in a distinct yet interrelated way. Human capital is a phenomenon of individual people in an organization, social capital is a phenomenon of relationships in an organization, and organizational capital is a phenomenon of policies, procedures, and technology in an organization (Subramaniam & Youndt, 2005; Youndt et al., 2004). Organizations that invest in and leverage their organizational capital, human capital, and social capital may create a source of competitive advantage through the creation of environments in which knowledge is assimilated, processed, and exchanged in lateral social relationships. This allows the organization to recognize and adapt to external environmental forces that may threaten organizational stability (Youndt et al., 2004).

Organizational Manager. Another concept that emerged during the literature review is that of the organizational manager. The organizational manager may be defined as a key agent of the organization who is responsible for facilitating organizational outcomes through the work of other individuals. Across the articles reviewed, managerial behavior was a commonly identified antecedent of human and social capital (Felício, Couto, & Caiado, 2012; Felício et al., 2014; Hofmeyer, 2013; Leitch et al.,

2013; Luthans & Youssef, 2004). Managerial behavior is also influenced by organizational capital which provides both the context for action and the rules of engagement (Ellinger et al., 2011; Felício et al., 2012; Hofmeyer, 2013). In knowledge-based organizations, the manager must ensure the achievement of shared organizational goals through the facilitation of learning and knowledge exchange by enacting behaviors that enhance employee human and social capital (Ellinger et al., 2011).

Organizational managers are in the unique position of being both an employee of the organization as well as having the responsibility for supervising one or many other employees in the organization, creating a recursive relationship. The organizational manager has a recursive relationship with both the human capital and social capital of one or many of the employees for which they are responsible for supervising. Much support can be found in the literature linking the organizational manager to human capital through staff selection, role definition, appropriation of responsibilities, and staff accountability via application of HR functions and processes (Ellinger et al., 2011; Felício et al., 2012; Hofmeyer, 2013; Stark & Jeffries, 2011). The behavior of the organizational manager may have profound effects on human capital through turnover, recruitment, and retention (Dess & Shaw, 2001; Felício et al., 2012; Hofmeyer, 2013; Oldroyd & Morris, 2012; Stark & Jeffries, 2011; Styhre, 2008).

While less attention has been given to the effects that organizational managers have on social capital, this is arguably the primary source of value for the organizational manager in a knowledge based-organization (Dess & Shaw, 2001; Ellinger et al., 2011). Organizational managers primarily add value through their effects on social capital. They are responsible for facilitating productive relationships with and between

employees leading to organizational outcomes through knowledge exchange and production. These relationships may be less effective when based on command and control or coercive managerial practices than when they are based on credibility, trust, respect, and relational managerial styles (Dess & Shaw, 2001; Djuric & Filipovic, 2015; Ellinger et al., 2011; Hofmeyer, 2013; Stark & Jeffries, 2011).

Organizational managers have direct relationships with human and social capital in their areas, but may also moderate the relationship between organizational capital and human and social capital. Organizational managers are the closest to employees in an organization and have the most influence in moderating the relationship between the employee and the organization because of frequent personal interactions (Ellinger et al., 2011). The recursive nature of the relationship between the individual manager and the employees they supervise creates a feedback loop which impacts the manager's ability to moderate the relationship between the employee and the organization within the larger context to ultimately impact organizational outcomes. Organizational managers are responsible for communicating the moral tone of the work unit and hold employees accountable for expectations related to reciprocity, cooperation, and respect (Hofmeyer, 2013). Organizational managers are responsible for brokering employee access to organizational capital such as professional development which may increase employee human capital (Felício et al., 2012). Organizational managers must translate and communicate organizational goals to employees which helps to coordinate action and understanding of shared goals (Hofmeyer, 2013). Organizational managers may also facilitate employee relationships outside of the work unit with others in the organization. These relationships increase access to the human capital and social capital of others

allowing for increased organizational knowledge exchange (Dess & Shaw, 2001; Leitch et al., 2013; Oldroyd & Morris, 2012).

Organizational knowledge exchange. The concept of organizational knowledge exchange was identified in the articles reviewed as the consequence of the utilization of human capital and social capital in organizations. Knowledge-based organizations require the exchange of information between members in the social network in order to produce outcomes. Neither human capital nor social capital may act independently of the other in order to produce outcomes. The process of organizational knowledge exchange may be defined as the access, exchange, and synthesis of acquired knowledge, skills, and experience of individuals through the network of social relationships leading to the production of organizational outcomes (Bapuji & Crossan, 2005; Kang & Snell, 2009; Subramaniam & Youndt, 2005; Youndt et al., 2004). Organizational knowledge exchange may be viewed as a primary source of competitive advantage for organizations (I. Hsu & Sabherwal, 2011; Kang & Snell, 2009; Makela et al., 2009; Reed et al., 2006; Somaya et al., 2008; Stark & Jeffries, 2011).

The efficacy of organizational knowledge exchange is affected by the quality and quantity of the human capital and the social capital present in the exchange. The quality and combination of the human capital and social capital will influence the opportunity, motivation and ability to exchange knowledge, the dominant pattern of decision making from the exchange, and ease of information exchange (Akdere, 2005; Bilhuber Galli & Müller-Stewens, 2012; Kang & Snell, 2009; Kor & Mesko, 2013; Shaw et al., 2005; Styhre, 2008). Nurse managers who cultivate teams with higher levels of requisite

human capital while facilitating productive social dynamics through social capital may experience an increase in knowledge exchange among team members on their work units.

Organizational outcomes. Many of the consequences of social capital and human capital examined were classified as organizational outcomes. Organizational outcomes may be defined as the intended or unintended consequences of the utilization of organizational intellectual capital in the production of work. Organizational outcomes resulting from the utilization of human capital and social capital through organizational knowledge exchange were examined and classified into four domains: 1) financial, 2) reputational, 3) human, and 4) organizational learning. The financial domain includes wealth, efficiency, profit, productivity, and sustainable development (Akdere, 2005; Akdere & Roberts, 2008; Asiaei & Jusoh, 2015; Cabello-Medina et al., 2011; Dess & Shaw, 2001; Djuric & Filipovic, 2015; Felício et al., 2012, 2014; Greve et al., 2010; Leitch et al., 2013; Reed et al., 2006; Somaya et al., 2008; Youndt et al., 2004). The reputational domain includes reputational power, goodwill, and competitive advantage (Akdere, 2005; Akdere & Roberts, 2008; Bilhuber Galli & Müller-Stewens, 2012; Daud & Yusoff, 2010; Dess & Shaw, 2001; Felício et al., 2014; Kang & Snell, 2009; Luthans & Youssef, 2004; Makela et al., 2009; Reed et al., 2006; Somaya et al., 2008; Stark & Jeffries, 2011). The human domain includes employee performance, employee commitment, employee engagement, recruitment, retention, and turnover (Call et al., 2015; Ellinger et al., 2011; Hofmeyer, 2013; Leitch et al., 2013; Oldroyd & Morris, 2012; Shaw et al., 2005; Somaya et al., 2008; Stark & Jeffries, 2011). Finally, the organizational learning domain includes the production and storage of new knowledge acquired from organizational knowledge exchange. This includes the results of research

and development activities, innovation, the ability to assimilate and exploit new information, and the evaluation of outcomes (Akdere, 2005; Akdere & Roberts, 2008; Debrulle et al., 2014; Hofmeyer, 2013; Kang & Snell, 2009; Kor & Mesko, 2013; Styhre, 2008; Subramaniam & Youndt, 2005; Tseng et al., 2014; Youndt et al., 2004). The organizational learning domain also provides the mechanism through which organizational outcomes are evaluated, synthesized, and assimilated into organizational capital. Changes in organizational capital may occur as organizations evaluate and learn from the intended and unintended consequences of their structures and processes.

Patient care outcomes are key organizational outcomes of primary concern to many healthcare organizations and to the nursing profession as a whole. Although the primary literature sources in this review did not specifically include patient care outcomes, this model may be used to analyze and classify patient care outcomes dependent on the level of analysis. For example, consider a healthcare organization that may use a shared governance model to design and implement an evidence based practice intervention that leads to significant reduction in patient harm. This reduction in patient harm may generate cost savings to the healthcare organization (financial), increase the reputation of the healthcare organization among consumers (reputational), increase nurse commitment and engagement (human), and inform changes in organizational policy and procedure (organizational learning).

Empirical Support for Proposed Conceptual Model from Reviewed Studies

The results of the empirical studies reviewed provide support for the synthesized propositions in the Gilbert Conceptual Model of Organizational Intellectual Capital (Table 2-2). Many of the reviewed empirical studies related human capital and/or social

capital directly to organizational outcomes, but did not include the mechanism through which outcomes are produced, or the concept of organizational knowledge exchange. None of the empirical studies reviewed provided empirical support for the following proposition: organizational outcomes have an effect on organizational capital through organizational learning. This proposition was derived from the conceptual papers included in the sample and from the literature reviews found in selected empirical studies and was included in the final model (Akdere, 2005; Akdere & Roberts, 2008; Debrulle et al., 2014; Hofmeyer, 2013; Kang & Snell, 2009; Kor & Mesko, 2013; Styhre, 2008; Subramaniam & Youndt, 2005; Tseng et al., 2014; Youndt et al., 2004).

Limitations

This integrative review has several limitations. Given the vast nature of available leadership literature, it is possible that the search terms limited the results. The literature search included professions outside of nursing and it is possible that some of the results may not be applicable in the nursing work environment. Since the literature search was not limited to empirical studies, the conceptual definitions and the associated propositions may be based partially on expert opinion rather than empirical evidence. The inconsistent approaches and lack of uniform instrumentation for human capital and social capital across the articles may have also limited the interpretability of the results.

Future Development of the Conceptual Model

The specific aims of this integrative review were to explore and refine the concepts of human capital and social capital as they relate to nursing leadership in healthcare organizations and to propose a synthesized conceptual model guiding further empirical research. The Gilbert Conceptual Model of Organizational Intellectual Capital

advances the theoretical propositions of both human capital theory and social capital theory by providing a more complete conceptualization of the relationship between human capital and social capital along with associated factors in the provision of organizational outcomes based on the integrative literature review. In addition, this conceptual model is the first to propose the direct and moderating effects of the organizational manager on human and social capital within the context of healthcare organizations.

While the relationships between the nurse manager and staff have demonstrated positive or adverse influence on relationships with staff, productivity, turnover, job satisfaction, and quality patient outcomes, empirical research has not yet identified the specific mechanisms through with nurse mangers form and utilize these influential relationships (Hofmeyer, 2013). The proposed conceptual model provides a framework to identify and define the mechanism of these influential relationships in a healthcare organization. This model needs to be empirically tested in the nursing work environment in order to validate the proposed propositions. Further research using the Gilbert Conceptual Model of Organizational Intellectual Capital has implications for practice, organizational policy, and education and may be applied to various levels of nursing leadership.

Empirical research guided by the proposed conceptual model may contribute to organizational role design, organizational policy and procedure development, nurse manager hiring and retention practices, and nursing leadership curriculum design for traditional academic institutions and organizational continued professional development

programs. Further understanding of these factors is likely to inform interventions which may improve the nurse work environment, patient care, and organizational outcomes.

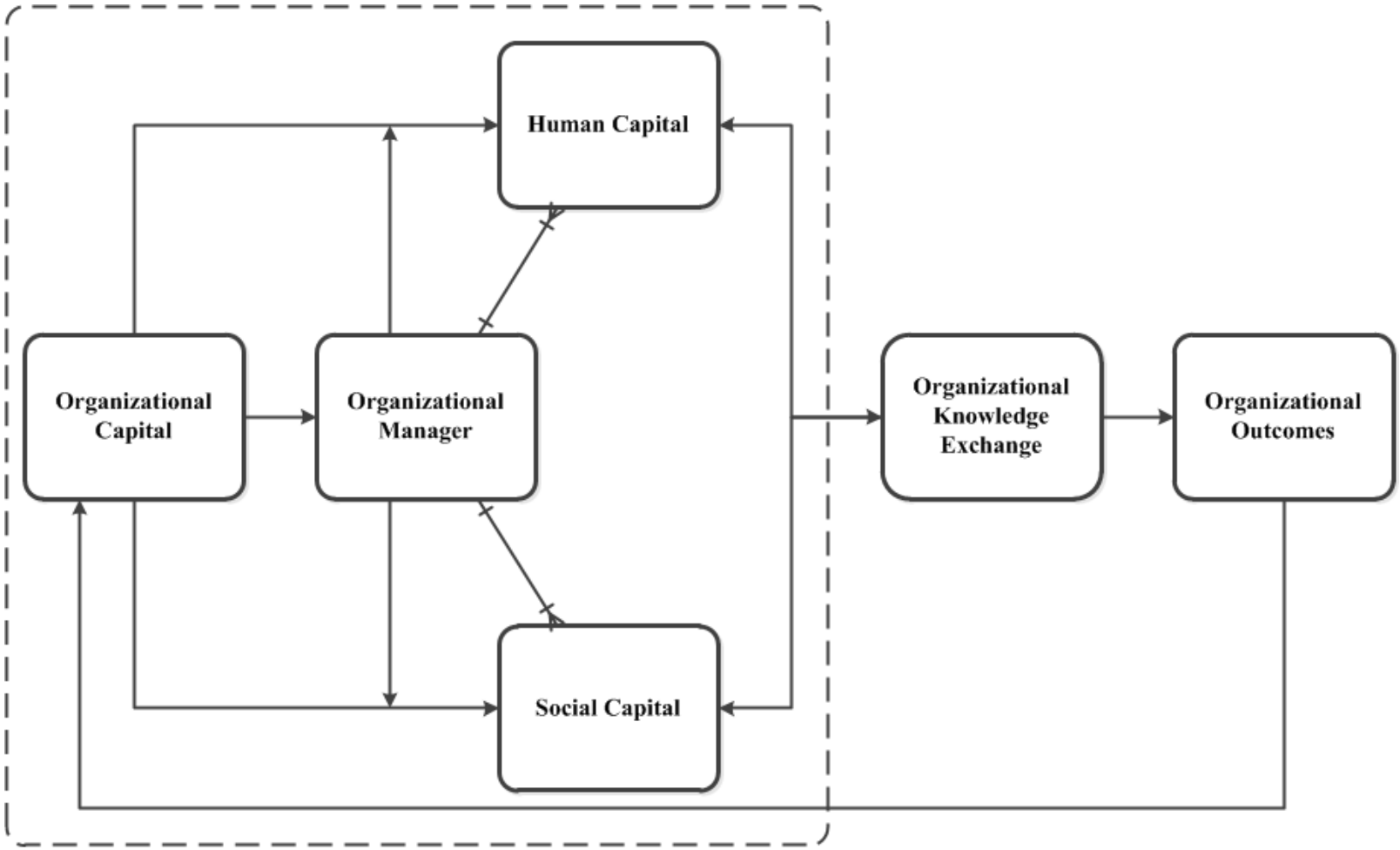

Figure 2-1.
Gilbert Conceptual Model of Organizational Intellectual Capital

Table 2-1.

Main Propositions of the Gilbert Conceptual Model of Organizational Intellectual Capital

- Organizational Intellectual Capital consists of three interrelated forms of intellectual capital: organizational capital, human capital, and social capital.
- Organizational capital has an effect on human capital and social capital.
- Organizational capital has an effect on the organizational manager.
- The organizational manager moderates the relationship between organizational capital and human capital.
- The organizational manager moderates the relationship between organizational capital and social capital.
- There is a recursive relationship between the organizational manager and human capital.
- There is a recursive relationship between the organizational manager and social capital.
- There is a relationship between human capital and social capital.
- Human capital and social capital have an effect on organizational knowledge exchange.
- Organizational knowledge exchange has an effect on organizational outcomes.
- Organizational outcomes have an effect on organizational capital through organizational learning.

Table 2-2.

Gilbert Conceptual Model of Organizational Intellectual Capital Propositions and Associated Empirical Support

Proposition	**Empirical support from reviewed literature**
Organizational capital has an effect on human capital.	Organizational culture has a positive significant effect on human capital (Asiaei & Jusoh, 2015). Developmental human resource management practices have a positive significant effect on the value of knowledge (Cabello-Medina et al., 2011). Organizational capital is positively and significantly related to human capital (I. Hsu & Sabherwal, 2011; Kostopoulos et al., 2015). The relationships between human capital and unit ambidexterity were stronger when high performance human resource practices were greater (Kostopoulos et al., 2015). Training programs assist in developing firm specific human capital (Tseng et al., 2014). Development of an organization's knowledge base is based on strategic investment decisions that influence patterns of human capital; Human resource management investment was significantly higher in high human capital and high overall IC profiles (Youndt et al., 2004).
Organizational capital has an effect on social capital.	Overall measures of organizational training were significant predictors of social capital participation, connections, and trust and cooperation; Operational training was a significant predictor in trust and cooperation and in social capital participation; Cultural training was a significant predictor of social capital participation and connections; Initial control of HR functions was significantly and positively related to social capital (Baughn et al., 2011). Orientation of selection processes have a significant positive effect on social capital; Staffing practices based on interpersonal skills and learning potential affect social capital; empowerment and involvement practices have a significant positive effect on social capital (Cabello-Medina et al., 2011).

Table continues

	Organizational knowledge management practices explained 37% of the variance in social capital; Knowledge acquisition and knowledge conversion both have a positive and significant effect on social capital (Daud & Yusoff, 2010). Organizational investments in social capital have a strong positive relationship with measures of social capital and job performance (Ellinger et al., 2011). Cross level interactions of organizational capital and social capital were positive and significant (Kostopoulos et al., 2015). Organizational investment in social capital has a strong positive relationship with commitment to service quality, person-focused citizenship behavior, and task-focused citizenship behavior (Ellinger et al., 2011). Social capital has a positive significant effect on organizational capital (I. Hsu & Sabherwal, 2011). Development of an organization's knowledge base is based on strategic investment decisions that influence patterns of social capital; Human resource management investment was significantly higher in high social capital, and high overall IC profiles (Youndt et al., 2004).
Organizational capital has an effect on the organizational manager.	Developing social capital through a leadership development program may be a source of competitive advantage (Bilhuber Galli & Müller-Stewens, 2012). Companies in different business sectors vary in their association with human capital that predominantly typifies actions of the entrepreneur or manager. (Felício et al., 2012). Management of services depends highly on human capital, but ethical standards in the company strengthens and rewards managerial behavior (Tseng et al., 2014).
The organizational manager moderates the relationship between organizational capital and human capital.	Characteristics of human capital are associated with a predominant profile of a manager of significant status and influential personal and social relationships; Companies in different business sectors vary in their association with human capital that predominantly typifies actions of the entrepreneur or manager (Felício et al., 2012).

Table continues

	High and ambiguous leader-member exchange had significantly higher means than low leader-member exchange for intent to stay and disposition towards the organization (Stark & Jeffries, 2011).
The organizational manager moderates the relationship between organizational capital and social capital.	Companies in different business sectors vary in their association with social capital that predominantly typify actions of the entrepreneur or manager (Felício et al., 2012). Social capital may be described as a collective phenomenon through which those who have lower levels of social capital may have spillover effects through connection with those who have higher levels (Leitch et al., 2013). High quality leader-member exchange had a significantly higher mean than other groups for willingness to endorse the organization (Stark & Jeffries, 2011).
There is a recursive relationship between the organizational manager and human capital.	Less managerial experience in an industry is associated with greater family entanglement and professional complicity (Felício et al., 2012). Leadership development enhances human capital (Leitch et al., 2013). Once managers are highly embedded in an organization, the less likely they are to engage in development of internal social capital, in turn leading to a decrease in the development of human capital; (Ng & Feldman, 2010).
There is a recursive relationship between the organizational manager and social capital.	Benefits of managerial coaching was considerably stronger under low coaching conditions (Ellinger et al., 2011). Less managerial experience in an industry is associated with greater family entanglement and professional complicity; Entrepreneurs were generally associated with complicity and family support, managers with economic status, social status, social interlinking, intense personal relationships, and social influence. (Felício et al., 2012). Leadership development relies on social capital on two levels: peer-to-peer relationships through interactions among participants and through mediating effects of bridging social capital through the program director's link to other courses and cohorts (Leitch et al., 2013).

Table continues

	Once managers are highly embedded in an organization, the less likely they are to engage in development of internal social capital, in turn leading to a decrease in the development of human capital (Ng & Feldman, 2010).
There is a relationship between human capital and social capital.	Trust has a significant positive effect on human capital (Asiaei & Jusoh, 2015). Social capital significantly and positively affects the value of human capital; Empowerment practices significantly increase the uniqueness of human capital (Cabello-Medina et al., 2011). Cognitive ability and experience are factors that relate to social capital variables; Human capital accounts for firm performance as social capital and its formation is dependent on human capital (Felício et al., 2014). Declines in social capital development behaviors were significantly related to declines in human capital development behaviors; Initial status of social capital development behaviors were positively related to human capital development behaviors (Ng & Feldman, 2010).
Human capital and social capital have an effect on organizational knowledge exchange.	Trust, commitment, expertise, and tenure were all significantly and positively related to knowledge sharing behavior; norms of cooperation were negatively and significantly related to knowledge sharing behavior; With a low level of IT usage, trust is a more significant indicator of knowledge sharing behavior, with a high level of IT usage, trust is less significant. The interaction of level of expertise and IT usage is positive and significant (Choi, 2016). The relationship between start-up experience and start-up absorptive capacity (ability to recognize and assimilate new information) is positive and significant; The relationship between bridging social capital and start-up absorptive capacity was positive and significant (Debrulle et al., 2014). Social capital has a positive significant effect on knowledge enhancement capability and knowledge utilization capacity; Human capital has a significant effect on knowledge utilization capability and innovation (I. Hsu & Sabherwal, 2011).

Table continues

	Social capital enhances performance and allows for knowledge exchange as human capital becomes obsolete over time (Tseng et al., 2014). Human capital and social capital have positive significant effects on unit ambidexterity (Kostopoulos et al., 2015). Four archetypes of subsidiary staffing with different levels of human and social capital emerged each with different influence on knowledge management; The optimal staffing architecture is dependent on the goals of the organization and the markets in which they function (Makela et al., 2009). Human capital by social capital interaction had a significant positive relationship with radical innovative capability; Social capital was significantly and positively related to both radical innovative capability and incremental innovative capability (Subramaniam & Youndt, 2005).
Organizational knowledge exchange has an effect on organizational outcomes.	Human capital and social capital are related to firm performance (Baughn et al., 2011). Knowledge management processes explained 39% of the variance in firm performance (Daud & Yusoff, 2010). Turnover rate significantly and negatively related to productivity; There is a curvilinear relationship between social capital losses and performance; Turnover and communication network density moderate this relationship (Shaw et al., 2005). Movement of employees to both partners and competitors has an effect on the amount of business received through the social ties the employee has created (Somaya et al., 2008).

CHAPTER 3

This chapter presents the results of a quantitative descriptive cross sectional study measuring human capital, social capital, individual characteristics, and organizational characteristics of 64 nurse managers working in a 15 hospital healthcare system in the Midwest.

Background

The nurse manager has been established as one of the most influential roles in healthcare organizations due to it's influence on organizational outcomes such as quality of patient care, financial stability, productivity, nursing turnover, and nurse engagement (Chase, 2012; Manning, 2016; Morsiani et al., 2017) The expectations and work environment complexity for nurse managers is expected to continue to increase through the economic effects of healthcare reform, redistribution of nursing workforces, and advances in technology (Hewko et al., 2015; Steege et al., 2017). Leadership models in healthcare organizations have evolved with contemporary society and have shifted from autocratic command and control models to transformational leadership models based on productive influential relationships (Echevarria et al., 2017; Kellerman, 2012; Leitch et al., 2013; Morsiani et al., 2017). This shift in contemporary leadership models has changed the role of the nurse manager from the authoritarian to the main influencer of nursing practice on their units and has necessitated nurse managers to learn new roles as coaches, mentors, facilitators, and educators (Gilbert & Broome, 2015; Heller et al., 2004; Morsiani et al., 2017).

Human Capital and Social Capital of Nurse Managers

Although the importance of the nurse manager role is well established, the body of research on nurse managers is relatively small and has traditionally focused on human capital. Human capital has been defined as the acquired knowledge, skills, and experience of individuals which enable them to act in new ways which are economically valuable to both the individual and to the organization (Nahapiet & Ghoshal, 1998). Previous studies regarding nurse manager human capital has led to the development of competency models identifying knowledge, skills, and experience as essential to the nurse manager role (Chase, 2012; Fennimore & Wolf, 2011; Heller et al., 2004; Kleinman, 2003). Many nurses are promoted into nurse manager roles because of their knowledge, skills, and experience as bedside clinicians, but this type of human capital may not lead to success in the nurse manager role (Heller et al., 2004; Titzer et al., 2014). In addition, although traditional educational preparation has been linked to higher levels of critical thinking and leadership competency, many formal educational programs are thought to inadequately prepare nurses to assume nurse manager roles (Heller et al., 2004; Thompson & Fairchild, 2013; Titzer et al., 2014). In other fields, empirical evidence has also demonstrated that human capital may be influenced by individual and organizational characteristics (Baughn et al., 2011; Cabello-Medina et al., 2011; Ellinger et al., 2011; Kostopoulos et al., 2015). However, a gap in the nursing literature exists on how nurse manager human capital has evolved and may vary by individual characteristics such as educational preparation, registered nurse experience, managerial experience, or by organizational characteristics such as hospital setting, hospital size, or work unit type.

Nurse manager human capital is not used in isolation of other factors. Nurse managers must access and synthesize their knowledge, skills, and experience through the network of social relationships within the healthcare organization. Little is understood about these influential relationships, or social capital, that nurse managers must create and maintain with their teams in the provision of organizational outcomes. Social capital has been defined as the groups, networks, norms, and trust that people have available to them for productive purposes and has been conceptualized in six related domains: 1) bonding, bridging, and linking networks, 2) trust and solidarity, 3) collective action and cooperation, 4) information and communication, 5) social cohesion and inclusion, and 6) empowerment and political action (Grootaert et al., 2004; Hofmeyer, 2013; Sheingold & Sheingold, 2013). In a prior qualitative study, the importance of nurse manager social capital in influencing nurse relationships and quality outcomes has been suggested (Hofmeyer, 2013). These relationships are not well understood in the nurse manager population, but similar to human capital, empirical evidence in other fields has suggested that social capital may vary by individual and organizational characteristics (Baughn et al., 2011; Ellinger et al., 2011).

The increasing demands on nurse managers have led to increased turnover and decreased job satisfaction, impacting the ability of organizations to recruit qualified candidates to fill critical nurse manager vacancies (Hewko et al., 2015; Steege et al., 2017; Weaver-Moore et al., 2016). Research has demonstrated that job satisfaction and turnover may be affected by the quantity and quality of human capital and social capital in the organization (Dess & Shaw, 2001; Hewko et al., 2015; Hofmeyer, 2013). Empirical study of human capital and social capital in fields outside of nursing supports

that these concepts have a positive relationship and may ultimately work together to influence the quality of organizational outcomes (Ellinger et al., 2011; Kang & Snell, 2009; Subramaniam & Youndt, 2005). Empirical research of the concepts of human capital and social capital in nurse managers may inform targeted interventions that affect nurse manager practice, organizational policy and role design, nurse manager turnover and job satisfaction, and ultimately improve organizational and patient outcomes.

Aims

The purpose of this chapter was to explore the concepts of human capital and social capital in a sample of nurse managers. Specific aims were to: 1) explore and describe whether human capital and social capital reported by nurse managers varies by individual characteristics including age, education level, specialty certification, experience as a registered nurse, experience as a nurse manager, and experience in the current manager role, and by organizational characteristics including hospital teaching status, hospital bed size, hospital setting, unit type, unit acuity, and position scope, and 2) explore the bivariate relationships between human capital, social capital, turnover intent, and job satisfaction reported by nurse managers.

Method

Research Design

A descriptive cross-sectional quantitative survey design was used in a large Midwestern healthcare system consisting of 15 hospitals ranging from small rural critical-access hospitals (< 25 beds) to large urban academic tertiary care hospitals (> 300 beds). The conceptual model guiding this research study was the Gilbert Conceptual Model of Organizational Intellectual Capital which proposes that human capital and

social capital are related concepts influenced by organizational characteristics that ultimately effect organizational outcomes. Inclusion criteria were nurse managers employed full-time on an inpatient, procedural, perioperative, or emergency department setting within the healthcare system. Exclusion criteria included nurse managers who: a) were in an interim status, b) were not employed directly by the healthcare system, c) managed outpatient clinics, d) managed programs or units which did not provide direct patient care, and e) did not have registered nurses as direct reports.

The University Institutional Review Board granted approval as an exempt study prior to initiation. The purpose of the study, risks and benefits of participation, requirements of participation, and a link to a questionnaire was sent to all nurse managers who were believed to meet inclusion criteria. Completion of the survey was denoted as consent to participate. Potential participants also received a follow-up electronic message to participate at 2- and 4- weeks after initial contact to increase participation rates. Eligibility was confirmed through a series of screening questions at the start of the survey. Those who were eligible and completed the surveys had the option of entering a drawing for a $25 gift card as an incentive for participation. The online questionnaire was anonymous, confidential, and was administered through a secure server outside of the healthcare system network. A total of 133 potentially eligible nurse managers were surveyed of which 104 (78.2%) responses were returned. Upon secondary screening, 17 of the respondents were not eligible through 1 or more positive responses to exclusion criteria on the online survey. An additional 23 responses were incomplete. Therefore, a final sample of 64 nurse managers completed the study (48.1% of those originally surveyed).

Measures and Instrumentation

Participants completed a set of 3 questionnaires measuring individual and organizational characteristics, human capital, and social capital. Individual characteristics included age, nurse manager education level, presence of specialty certification, years of registered nurse experience, years of nurse manager experience, and years of current nurse manager position experience. Organizational characteristics included hospital teaching status, hospital setting, hospital bed size, unit type, unit acuity, and number of full-time equivalents (FTEs) managed.

Nurse manager human capital was measured using the Chase Nurse Manager Competency Instrument (CNMCI) (Chase, 2012). The CNMCI is a reliable and valid instrument which measures knowledge and skills specific to the nurse manager role. The instrument asks participants to rate 53 competencies organized into six subscales including: 1) Technical (11 items related to technical aspects of the role such as nursing care delivery systems and standards, regulatory standards, and technology), 2) Human (13 items related to management of individuals such as recruitment, retention, and performance management), 3) Conceptual (8 items related to concepts such as administrative theory, quality improvement, and legal and ethical issues), 4) Leadership (14 items related to leadership of others such as interdisciplinary coordination, empowerment and delegation, motivation), 5) Financial Management (7 items related to financial principles such as budgeting, cost control and evaluation), and 6) total scale (53 items). Participants were asked to rate the items in 2 different ways. First, their personal knowledge and/or understanding of each competency (measuring knowledge) and second, their personal ability to use and/or implement each competency (measuring skill)

on a 4-point Likert scale (1 = minimal knowledge or minimal skill to 4 = expert knowledge or expert skill with the competency). Higher ratings indicate a higher level of participant knowledge or skill. This resulted in 12 subscales (6 for each knowledge scale and 6 for each skill scale) measuring nurse manager human capital. In this study, all subscales demonstrated adequate reliability (Λ-2 values ranged from .870 to .979).

Social capital was measured by the Social Capital Outcomes for Nurses instrument (SCON). This reliable and valid instrument contains 44 items measured on a 5-point Likert scale (1= strongly disagree to 5= strongly agree) reflective of the 6 domains of social capital in the nursing work environment (Sheingold & Sheingold, 2013). The instrument was divided into 6 subscales: 1) external trust and empowerment (12 items reflective of trust in senior executive and others outside of the work unit and empowerment over decisions), 2) internal trust, solidarity, and collective action (8 items reflective of trust in others within the work unit and feelings of togetherness), 3) social cohesion with co-workers (3 items reflective of social connections with coworkers), 4) participation and affiliation (6 items reflective of participation in work groups, projects, and professional organizations), 5) conflict and solidarity (6 items reflective of work environment conflict and feelings of togetherness), and 6) SCON total scale (44 items). In this study, all social capital subscales demonstrated adequate reliability (Λ-2 values ranged from .701 to .900). Finally, participants were asked to complete 3 additional items related to turnover intent (2 items) and job satisfaction (1 item): a) I plan to be working for this organization 1 year from now, b) I plan to be working for this organization 5 years from now, and c) Overall I am satisfied with my job. These items

were measured on a 5-point Likert scale and were coded so that higher scores indicated higher intent to turnover and higher job satisfaction.

Data Analysis

Data analyses were conducted using the Statistical Package for the Social Sciences (SPSS) Version 24.0. Descriptive statistics were analyzed for individual and organizational characteristics. Means and standard deviations were calculated for the 12 human capital (CNMCI) scales and the 6 social capital (SCON) scales for the overall sample. Guttman's Lambda-2 analysis was used for the CNMCI and SCON instrument scales and subscale scores because the data violated assumptions of normality (Callender & Osburn, 1979).

Differences in human capital and social capital by individual and organizational characteristics were examined through conducting independent samples t-tests or between subjects one-way ANOVA procedures. For the independent samples t-tests and ANOVA procedures, if assumptions of the Levene test were violated, interpretation of either the Welch-t or Welch-F test was completed to increase rigor and decrease likelihood of a Type-I error. If human capital or social capital varied significantly by an individual or organizational characteristic, post hoc testing was completed using Tukey HSD procedures or if equality of variance was not assumed through Games-Howell procedures. Pearson's Product-Moment Correlation was used to explore the bivariate relationships between human capital, social capital, turnover intent, and job satisfaction variables. Significance for all analyses was set at the $p < .05$ level.

Results

Sample

Table 3-1 describes the individual and organizational characteristics of the sample. In general the majority of participants had 10 or more years of experience as a registered nurse, and almost half (47.6%) had less than 5 years of experience in the nurse manager role. No participants had a formal educational level of less than a Bachelor Degree and the majority (59.4%) held a professional specialty certification. Participants were primarily nurse managers of inpatient units (75.8%).

Human Capital

Table 3-2 displays the differences in human capital by individual and organizational characteristics. Human capital significantly differed by years of registered nurse experience on the financial knowledge scale ($p = .036$). Post hoc testing revealed that nurse managers with greater than 20 years or more of registered nurse experience reported greater levels of financial knowledge than those with less than 10 years.

Human capital significantly differed by years of nurse manager experience for the following CNMCI subscales: technical knowledge ($p = .024$), human knowledge ($p < .001$), conceptual knowledge ($p < .001$), leadership knowledge ($p < .001$), financial knowledge ($p < .001$), total knowledge ($p < .001$), human skill ($p = .003$), conceptual skill ($p = .001$), leadership skill ($p = .002$), financial skill $p < .001$), and total skill ($p = .001$). Post hoc tests for each CNMCI scale for which there was a significant difference in human capital revealed that those with less than 3 years of nurse manager experience reported lower levels of human capital with one or more of the groups that had more

nurse manager experience. This indicates that human capital specific to the nurse manager is acquired through experience in the role.

Human capital also significantly differed by years of experience in the current nurse manager position on the following CNMCI scales: human knowledge (p = .019), conceptual knowledge (p = .001), leadership knowledge (p = .003) financial knowledge (p = .013), total knowledge (p = .004), human skill (p = .030), leadership skill (p = .030), financial skill (p = .020), and total skill (p = .015). Post hoc testing for CNMCI scales for which there was a significant difference in human capital revealed in general that those with less than 3 years of experience in the current nurse manager role reported less human capital than one or more of the groups with more experience in the current role.

Human capital also significantly differed by hospital setting for all 12 CNMCI scales. Post hoc testing revealed that nurse managers in suburban hospitals reported significantly lower human capital means on all CNMCI scales than those in rural or urban environments. No statistical difference in nurse manager human capital was observed by any of the following individual or organizational characteristics: age, formal education level, specialty certification, hospital teaching status, hospital bed size, unit acuity, or number of FTEs managed in this sample of nurse managers.

Social Capital

Table 3-3 displays the differences in social capital by individual and organizational characteristics. Social capital significantly differed by years of experience in the current nurse manager position for the internal trust, solidarity, and collective action subscale (p = .010). Post hoc testing revealed that those with 10 or more years in

the current nurse manger position reported higher levels of internal trust, solidarity, and collective action than those with less than 3 years in the current position.

Social capital significantly differed by unit type for the social cohesion with coworkers subscale ($p = .027$), with procedural units reporting lower social cohesion with coworkers than those in emergency departments. Social capital significantly differed by hospital bed size for the external trust and empowerment scale ($p = .027$) with nurse managers in hospitals of less than 100 beds reporting more external trust and empowerment than those in hospitals with 100-199 beds. Finally, social capital significantly differed by hospital setting for the external trust and empowerment scale ($p = .007$) and the social capital (SCON) total scale ($p = .024$). Post hoc testing revealed that nurse managers in suburban hospitals reported lower levels of social capital on both subscales than those in rural hospitals.

No statistical difference in nurse manager social capital means was observed by any of the following individual or organizational characteristics: age, formal education level, specialty certification, years of registered nurse experience, years of nurse manager experience, number of FTE managed, unit acuity, or hospital teaching status.

Relationship between Human Capital and Social Capital

The relationships between human capital (CNMCI) and social capital (SCON) scales are presented in Table 3-4. The human capital (CNMCI) scales had the strongest and the greatest number of moderate ($r > .30$) to strong ($r > .50$) positive relationships between the social capital scales of external trust and empowerment and total social capital scales. In general human capital (CNMCI) scales demonstrated weak ($r < .30$) to moderate ($r < .50$) positive relationships between the social capital (SCON) scales of

internal trust, solidarity, and collective action and participation and affiliation. Human capital (CNMCI) scales had only a few weak ($r < .30$) positive correlations between the social cohesion with coworkers and the conflict and solidarity scales.

Relationships with Nurse Manager Turnover Intent and Job Satisfaction

Human capital (CNMCI) and social capital (SCON) relationships with nurse manager turnover intent and job satisfaction are presented in Table 3-5. There were few significant correlations between human capital (CNMCI) scales and turnover intent and job satisfaction, with the majority of significant correlations being weak negative ($r > -.30$) or weak positive ($r < .30$). Only the leadership skill scale demonstrated a moderate positive correlation with job satisfaction ($r = .30$).

Social capital (SCON) scales in general demonstrated stronger relationships than human capital (CNMCI) scales with turnover intent and job satisfaction. The total social capital (SCON) scale and the external trust and empowerment scales demonstrated significant moderate negative relationships ($-.50 < r < -.30$) with turnover intent and strong significant positive correlations with job satisfaction ($r > .50$). Internal trust and solidarity also had a significant moderate positive relationship with job satisfaction ($r = .50$). All significant relationships between social capital (SCON) scales and turnover intent and job satisfaction were significant at the $p < .01$ level.

Discussion

To our knowledge, this is the first known study measuring both human capital and social capital specific to nurse managers. Use of the CNMCI to measure human capital specific to nurse managers and the SCON to measure social capital specific to the complex nursing work environment allowed for more meaningful comparison of the

relationship between human capital and social capital in nurse managers. The major findings of this study are as follows: a) nurse manager human capital varied primarily by experience in the nurse manager role, b) nurse manager social capital varied by organizational characteristics such as hospital size, setting, and unit type, c) there is a positive relationship between nurse manager human capital and social capital, and d) while certain types of human capital have some relationship with nurse manager turnover intent and job satisfaction, social capital had a stronger relationships with nurse manager turnover intent and job satisfaction.

The first major finding is that experience as a nurse manager may be the primary means through which nurse managers acquire human capital specific to their role. Human capital varied by experience as a registered nurse only for the financial knowledge scale in this study. This supports the literature that clinical experience alone may not adequately prepare nurses to assume nurse manager roles (Heller et al., 2004; Thompson & Fairchild, 2013; Titzer et al., 2014). Human capital varied significantly by years of experience in the nurse manager role for most CNMCI scales which indicates generally that their managerial knowledge and skill was increasing over time. This finding supports previous studies that found that nurse managers may enter their roles underprepared and that development of nurse manager knowledge and skills are developed over time through experiential learning (Cathcart & Greenspan, 2013; Cathcart, Greenspan, & Quin, 2010). Providing nurses aspiring to management positions and novice nurse managers experiential learning opportunities such as mentoring or nurse manager residency programs may enhance specific human capital development (Mackoff, Glassman, & Budin, 2013; Titzer et al., 2014).

Human capital varied significantly by years of experience in the current nurse manager position, but for fewer of the human capital (CNMCI) scale scores. This may be because many of the nurse managers already had previous nurse manager experience. For example, of the 28 nurse managers reporting that they had less than three years of experience on their current unit, 11 (40%) reported more than 3 years of experience as a nurse manager. This finding is congruent with management literature in other disciplines which has outlined that human capital specific to a role, once acquired, may be transferrable to other settings (Somaya et al., 2008).

Human capital varied significantly by hospital setting for most of the human capital (CNMCI) subscales in this study. Suburban nurse managers reported significantly less human capital then those in rural hospitals. However, this result should be interpreted with caution as this may have been confounded with years of experience as a nurse manager. Out of the 23 suburban nurse manager participants, 12 (52.1%) reported less than 3 years of experience in the nurse manager role. Further research is suggested to understand the importance of the hospital setting in regards to nurse manager human capital.

Social capital varied significantly by years of experience in the current nurse manager role for the internal trust, solidarity, and collective action scale with nurse managers with more than 10 years in their current role reporting higher levels than those with less than 3 years in their current role. This social capital scale is interpreted as the feeling of trust, togetherness, and cooperation within a closely bonded team. Internal trust and solidarity may be built through patterns of interactions over time. Nurse managers who are more experienced with a team will have a greater understanding of

team abilities and patterns of interactions leading to increased feelings of trust, solidarity, and collective action.

The findings of this study also indicate that organizational characteristics influence development of social capital in nurse managers. The social capital subscale of social cohesion with coworkers significantly differed by unit type, with emergency departments reporting significantly higher levels of social cohesion than procedural areas. This indicates that the work environment influences social capital. Because of differences in work flow, unit types develop distinct patterns of interaction and cultural norms of behavior which may affect social cohesion. In emergency departments, patient care is often team based and requires frequent interaction among multiple team members, while in procedural areas there is often more separation of team members into separate procedural suites with less opportunity for interaction with a larger group.

The social capital scale of external trust and empowerment is interpreted as trust in those external to the work unit such as senior administration and associated feelings of organizational empowerment. Social capital levels on this subscale varied significantly by hospital bed size and by hospital setting, with smaller rural hospitals generally reporting higher levels of external trust and empowerment. Social capital also varied significantly on the total SCON scale by hospital setting with rural nurse managers reporting higher total SCON totals. This indicates that nurse managers in either smaller hospitals or rural settings may feel more empowered and have more connection with external stakeholders. Similarly, in another study of urban and rural hospitals, differences in work environments such as unit size and work complexity impacted the nursing work environment (Baernholdt & Mark, 2009). Research in other fields has

demonstrated that organizational characteristics may influence the development of social capital through impact on the work environment (Ellinger et al., 2011; Grootaert & Van Bastelaer, 2002). Smaller hospitals in rural settings may provide increased opportunity for nurse managers to interact with external parties such as senior administrators. The community setting in which nurse managers are located may have also influenced these findings. It is not unlikely that those working in smaller communities may have shared social values and may be more likely to have personal connections with external parties such as senior administrators leading to increased feelings of external trust and empowerment.

Another major finding in this study demonstrates a positive significant relationship between human capital and social capital in nurse managers. Research in other fields has demonstrated similar findings, specifically that social capital has a significant positive relationship with human capital, and that organizational empowerment practices significantly increase the value of human capital (Asiaei & Jusoh, 2015; Cabello-Medina et al., 2011). Other studies have suggested that investment in social capital may enhance the value of human capital and increase knowledge exchange in the organization which may ultimately positively impact outcomes (Chang et al., 2012; Choi, 2016; I. Hsu & Sabherwal, 2011). Knowledge-based organizations hire individuals based on the quality of their human capital, but this essential resource must be accessed, exchanged, and synthesized to produce value. In the absence of social capital, human capital in an organization may be unused and/or underutilized as there is not a mechanism of exchange. Intentional investment in social capital that creates network

links based on trust, shared goals, cooperation, communication, and empowerment will likely increase access to and exchange of valuable human capital reserves.

A final major finding in this study was support for the negative relationship between social capital and nurse manager turnover intent and the positive relationship between social capital and nurse manager job satisfaction. Specifically, external trust and empowerment and total social capital scales had moderate to strong significant negative relationships with turnover intent and moderate to strong positive relationships with job satisfaction. This finding was similar to that of other studies with registered nurses which also found that external trust and empowerment had significant negative effects on turnover intent and significant positive effects on job satisfaction (Sheingold & Sheingold, 2013; Shin & Lee, 2016). Interventional efforts in healthcare organizations that focus on increasing external trust and organizational empowerment in nurse managers such as shared decision making and interaction with senior administrators may be critical for retention efforts and longevity of nurse managers.

Human capital and social capital did not vary significantly by formal educational level or professional certification. All Participants in this study held a minimum of a Bachelor degree with equal numbers of participants having acquired a Bachelor or Master's degree, and 2 nurse managers (3%) reporting a Doctorate degree. The participants did not indicate the type of Master's degree (nursing administration, MBA, public health or unrelated field). The results may have been affected by the types of degrees held or curricula in institutions from which the degrees were obtained in this sample. Further research with nurse managers of diverse educational backgrounds to study the effect of educational level on human capital and social capital is suggested.

Participants in this study were also not asked which professional certification they had acquired and it is possible that the certifications held by participants may include clinical knowledge and skill foci rather than nursing leadership certifications which would be more likely to certify management knowledge or skill.

Limitations

This study has several limitations. In this healthcare system there were multiple titles for nurse managers so it is possible that some individuals meeting inclusion criteria were not invited to participate. Although the sample included diverse hospital settings, sizes, and unit types, it was confined to a relatively small sample of 64 nurse managers within one 15 hospital system. Since social capital may vary by subculture of the environment in which it takes place, limiting the sample to one healthcare organization may have limited the results. Finally, multiple comparisons in the data analyses may have increased the likelihood of a Type-I error.

Conclusions

This study provides a foundation to describe human capital, social capital, and how these two concepts are related in the nurse manager population and is the first known study with a sample of nurse managers measuring both human capital and social capital. Human capital specific to nurse managers may be built over time through experience in the role and not through formal education alone. Nurse manager human capital is positively related to social capital. Social capital is developed over time and may be affected by organizational characteristics. Social capital has a negative relationship with nurse manager turnover and a positive relationship with job satisfaction. Further research is suggested using a large sample of nurse managers in multiple

healthcare settings in order to further describe human capital and social capital with associated relationships. Further research is necessary to determine the effects of organizational characteristics on social capital and human capital. Finally, further research is necessary to further describe the relationship between nurse manager social capital and human capital and how these related concepts influence the nursing work environment, organizational outcomes, and patient outcomes.

Implications for Nursing Management

Nurse manager human capital is a specific subset of knowledge, skills, and experience which are requisite to success in the role. While educational programs provide a foundation for human capital formation, they may not adequately prepare nurse managers for the specific knowledge and skills necessary to the role. Nursing administrators should consider targeted development interventions aimed at increasing nurse manager knowledge and skill in areas of lower mean scores on the CNMCI to accelerate nurse manager human capital development. Organizational investments in nurse manager human capital may also demonstrate positive effects on social capital.

Nurse managers must lead others to achieve organizational outcomes through the network of influential relationships formed through social capital. Nurse manager development should not be focused solely on individual human capital, but should also include effective development of collective social capital through targeted educational interventions, organizational role design, and organizational policy. Social capital in general, and in particular external trust and empowerment of nurse managers are important aspects to consider in organizational structure and nurse manager role design. Nursing administrators should consider targeted interventions that allow nurse managers

the opportunity to have more frequent purposeful interactions with senior administrators and others external to their units coupled with shared decision rights in order to increase external trust and empowerment. Intentional development of social capital may prevent human capital losses through nurse manager turnover and may increase nurse manager job satisfaction.

Table 3-1.
Individual Nurse Manager (NM) and Organizational Characteristics (n = 64)

Age	***n***	**%**
25-34	10	15.6
35-44	24	37.5
45-54	17	26.6
≥ 55	13	20.3

Formal Education	***n***	**%**
Bachelor	31	48.4%
Master	31	48.4%
Doctorate	2	3.1%

Specialty Certification	***n***	**%**
Not Certified	26	40.6%
Certified	38	59.4%

RN Experience (Years)	***n***	**%**
0-9	14	21.9%
10-19	19	29.7%
≥ 20	31	48.4%

NM Experience (Years)	***n***	**%**
0-2	17	27.0%
3-4	13	20.6%
5-9	13	20.6%
≥ 10	20	31.7%

NM Experience in Current Unit (Years)	***n***	**%**
0-2	28	43.8%
3-4	15	23.4%
5-9	7	10.9%
≥ 10	14	21.9%

FTE Managed	***n***	**%**
< 25	5	7.8%
25-49	17	26.6%
50-74	24	37.5%
75-99	13	20.3%
≥ 100	5	7.8%

Hospital Setting	***n***	**%**
Rural	9	14.1%
Suburban	23	35.9%
Urban	32	50.0%

Hospital Teaching Status	***n***	**%**
Non-Teaching	14	21.9%
Teaching	50	78.1%

Hospital Bed Size	***n***	**%**
0-99	12	18.8%
100-199	9	14.1%
200-299	6	9.4%
≥300	37	57.8%

Unit Type	***n***	**%**
Emergency Department	5	8.1%
Procedural	3	4.8%
Perioperative	7	11.3%
Inpatient	47	75.8%

Unit Acuity	***n***	**%**
Outpatient or Observation	6	9.7%
Med Surg	32	51.6%
Progressive	5	8.1%
ICU	19	30.6%

Table 3-2.
Differences in Human Capital (CNMCI) by Individual Nurse Manager or Organizational Characteristics (n = 64)

	KNOWLEDGE					
	Technical	Human	Conceptual	Leadership	Financial	Total
RN Experience (Years)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
0-9 [a]	2.91(.42)	2.87(.47)	2.42(.59)	2.75(.53)	1.94(.78)	2.65(.45)
10-19 [b]	2.75(.45)	2.85(.53)	2.56(.56)	2.83(.51)	2.36(.78)	2.71(.49)
≥ 20 [c]	2.98(.37)	3.15(.48)	2.64(.53)	3.08(.44)	2.52(.58)	2.94(.40)
df	-	-	-	-	2,61	-
F	-	-	-	-	2.91	-
p	ns	ns	ns	ns	.036	ns
Tukey HSD [1]	-	-	-	-	a < c	-

	SKILL					
	Technical	Human	Conceptual	Leadership	Financial	Total
RN Experience (Years)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
0-9 [a]	2.67(.41)	2.82(.51)	2.18(.60)	2.72(,43)	2.05(.97)	2.57(.45)
10-19 [b]	2.77(.47)	2.81(.63)	2.44(.61)	2.85(.55)	2.38(.77)	2.70(.53)
≥ 20 [c]	2.80(.42)	3.05(.52)	2.53(.57)	2.98(.54)	2.57(.64)	2.84(.48)
df	-	-	-	-	-	-
F	-	-	-	-	-	-
p	ns	ns	ns	ns	ns	ns
Tukey HSD [1]	-	-	-	-	-	-

Table continues

	KNOWLEDGE					
	Technical	Human	Conceptual	Leadership	Financial	Total
NM Experience (Years)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
0-2 [a]	2.70(.32)	2.62(.48)	2.10(.45)	2.53(.48)	1.55(.42)	2.39(.35)
3-4 [b]	2.96(.42)	2.98(.43)	2.76(.56)	2.91(.41)	2.54(.64)	2.86(.41)
5-9 [c]	2.86(.57)	3.07(.50)	2.68(.48)	3.05(.45)	2.74(.67)	2.92(.47)
≥ 10 [d]	3.04(.31)	3.29(.40)	2.79(.44)	3.22(.37)	2.66(.44)	3.06(.32)
df	3,28.6	3,59	3,59	3,59	3,59	3,59
F	3.66	7.05	7.80	8.37	17.70	10.33
p	.024	<.001	<.001	<.001	<.001	<.001
Tukey HSD [1]	-	a < c,d	a < b,c,d	a < c,d	a < b,c,d	a < b,c,d
Games Howell [2]	a < d	-	-	-	-	-

	SKILL					
	Technical	Human	Conceptual	Leadership	Financial	Total
NM Experience (Years)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
0-2 [a]	2.56(.40)	2.58(.55)	2.01(.32)	2.60(.55)	1.68(.57)	2.38(.41)
3-4 [b]	2.83(.36)	2.88(.49)	2.55(.57)	2.88(.46)	2.57(.69)	2.78(.44)
5-9 [c]	2.83(.49)	3.12(.54)	2.54(.74)	2.98(.45)	2.69(.86)	2.88(.50)
≥ 10 [d]	2.88(.38)	3.18(.42)	2.64(.55)	3.12(.47)	2.74(.53)	2.97(.40)
df	-	3,59	3,28.3	3,58	3,59	3,59
F	-	5.23	7.93	3.55	9.80	6.23
p	ns	.003	.001	.020	<.001	.001
Tukey HSD [1]	-	a < c,d	-	a < d	a < b,c,d	a < c,d
Games Howell [2]			a < b,d			

Table continues

	KNOWLEDGE					
	Technical	Human	Conceptual	Leadership	Financial	Total
Current NM Position Experience (Years)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
0-2 [a]	2.78(.40)	2.79(.54)	2.28(.57)	2.72(.55)	2.00(.78)	2.59(.48)
3-4 [b]	2.87(.47)	3.03(.34)	2.72(.39)	2.89(.33)	2.46(.40)	2.84(.31)
5-9 [c]	3.15(.42)	3.16(.60)	2.91(.51)	3.31(.42)	2.92(.76)	3.13(.47)
≥ 10 [d]	3.04(.28)	3.30(.37)	2.81(.41)	3.21(.30)	2.64(.45)	3.06(.28)
df	-	3,21.3	3,60	3,22.4	3,21.6	3,21.7
F	-	4.14	6.00	6.27	4.52	5.91
p	ns	.019	.001	.003	.013	.004
Tukey HSD [1]	-	-	a < b,c,d	-	-	-
Games Howell [2]	-	a < d	-	a < c,d; b < d	a < b,c,d	a < c,d

	SKILL					
	Technical	Human	Conceptual	Leadership	Financial	Total
Current NM Position Experience (Years)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
0-2 [a]	2.63(.42)	2.75(.57)	2.23(.58)	2.74(.57)	2.07(.85)	2.55(.52)
3-4 [b]	2.72(.48)	2.87(.53)	2.50(.56)	2.79(.49)	2.60(.57)	2.72(.46)
5-9 [c]	3.06(.28)	3.15(.49)	2.61(.69)	3.08(.32)	2.73(.91)	2.98(.38)
≥ 10 [d]	2.93(.34)	3.24(.43)	2.65(.55)	3.21(.41)	2.69(.47)	3.01(.37)
df	3,60	3,60	-	3,60	3,60	3,60
F	3.14	3.20	-	3.18	3.55	3.76
p	.030	.030	ns	.030	.020	.015
Tukey HSD [1]	ns	a < d	-	a < d	a < d	a < d
Games Howell [2]	-	-	-	-	-	-

Table continues

	KNOWLEDGE					
	Technical	Human	Conceptual	Leadership	Financial	Total
Hospital Setting	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Urban[a]	3.00(.37)	3.11(.50)	2.66(.57)	2.99(.49)	2.55(.78)	2.92(.47)
Suburban[b]	2.69(.42)	2.76(.44)	2.32(.49)	2.69(.44)	2.02(.59)	2.56(.37)
Rural[c]	3.06(.31)	3.20(.49)	2.85(.35)	3.33(.31)	2.46(.42)	3.06(.32)
df	2,61	2,61	2,61	2,61	2,61	2,61
F	5.36	4.53	4.44	7.02	4.30	6.64
p	.007	.015	.016	.002	.018	.002
Tukey HSD[1]	b < a,c	b < a,c	b < a,c	b < a,c	b < a	b < a,c

	SKILL					
	Technical	Human	Conceptual	Leadership	Financial	Total
Hospital Setting	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)	M(SD)
Urban[a]	2.79(.39)	3.06(.56)	2.48(.65)	2.92(.57)	2.58(.81)	2.82(.51)
Suburban[b]	2.58(.43)	2.64(.45)	2.19(.48)	2.69(.43)	2.00(.68)	2.49(.40)
Rural[c]	3.11(.31)	3.20(.51)	2.85(.39)	3.27(.39)	2.78(.29)	3.09(.34)
df	2,61	2,61	2,26.3	2,60	2,36.5	2,61
F	5.95	5.84	7.98	4.47	10.15	6.71
p	.004	.005	.002	.016	<.001	.002
Tukey HSD[1]	b < c	b < a,c	-	b < c	b < a,c	b < a,c
Games-Howell[2]	-	-	b < c	-	-	-

ns = not significant ($p \geq .05$)

[1] Tukey HSD post hoc tests were calculated when assumptions of the Levene test were not violated, significance set at $p < .05$ level.

[2] Games Howell post hoc tests were calculated when assumptions of the Levene test were violated, significance set at $p < .05$ level.

Table 3-3.
Differences in Social Capital (SCON) by Individual Nurse Manager or Organizational Characteristics (n = 64)

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Current NM Position Experience (Years)	0-2 [a]	3.62(.55)	4.05(.36)	3.15(1.22)	3.84(.46)	3.04(.46)	3.54(.40)
	3-4 [b]	3.95(.53)	4.18(.33)	2.76(.94)	3.97(.56)	3.18(.50)	3.68(.33)
	5-9 [c]	3.82(.30)	4.11(.27)	2.95(1.31)	4.02(.34)	3.48(.22)	3.71(.13)
	≥ 10 [d]	4.00(.42)	4.41(.22)	2.74(1.16)	3.63(.63)	3.27(.58)	3.71(.26)
	df	-	3,60	-	-	-	-
	F	-	4.13	-	-	-	-
	p	ns	.010	ns	ns	ns	ns
	Tukey HSD [1]	-	a < d	-	-	-	-
		M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Unit Type	Inpatient [a]	3.83(.50)	4.21(.31)	2.99(1.13)	3.86(.55)	3.22(.48)	3.66(.32)
	Procedural [b]	3.64(.25)	4.00(.22)	1.89(.84)	3.83(.17)	2.83(.17)	3.45(.27)
	Perioperative [c]	3.90(.76)	3.88(.52)	2.52(.92)	3.69(.39)	3.10(.75)	3.53(.49)
	Emergency Department [d]	3.77(.42)	4.28(.31)	4.13(.96)	4.07(.49)	3.10(.35)	3.75(.28)
	df	-	-	3,58	-	-	-
	F	-	-	3.28	-	-	-
	p	ns	ns	.027	ns	ns	ns
	Tukey HSD [1]	-	-	b < d	-	-	-

Table continues

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
Hospital Bed Size	0-99 [a]	4.15(.41)	4.34(.32)	3.03(.74)	4.04(.59)	3.27(.61)	3.80(.24)
	100-199 [b]	3.54(.53)	4.00(.42)	2.70(1.03)	3.93(.61)	2.96(.35)	3.44(.42)
	200-299 [c]	3.67(.70)	4.32(.24)	2.61(1.58)	3.67(.58)	3.28(.20)	3.55(.39)
	≥ 300 [d]	3.78(.47)	4.13(.32)	3.04(1.22)	3.79(.46)	3.17(.51)	3.63(.33)
	df	3,60	-	-	-	-	-
	F	3.04	-	-	-	-	-
	p	.036	ns	ns	ns	ns	ns
	Tukey HSD [1]	a > b	-	-	-	-	-
Hospital Setting	Urban [a]	3.84(.45)	4.17(.32)	3.07(1.19)	3.76(.49)	3.20(.50)	3.67(.30)
	Suburban [b]	3.59(.57)	4.09(.35)	2.75(1.20)	3.87(.56)	3.07(.38)	3.50(.40)
	Rural [c]	4.21(.31)	4.35(.35)	3.00(.83)	4.09(.46)	3.34(.68)	3.84(.17)
	df	2,61	-	-	-	-	2,61
	F	5.46	-	-	-	-	3.98
	p	.007	ns	ns	ns	ns	.024
	Tukey HSD	b < c	-	-	-	-	b < c

ns = not significant

[1] Tukey HSD significance set at p<.05 level

Table 3-4.
Pearson Product-Moment Correlations for Human Capital (CMNCI) Scales with Social Capital (SCON) Scales

	SCON Subscales and Total Scale					
	External Trust & Empowerment	Internal trust, solidarity, & Collective Action	Social Cohesion with Coworkers	Participation and affiliation	Conflict and Solidarity	TOTAL SCON
Technical Knowledge	**.46****	.22	.11	**.38****	**.29***	**.51****
Human Knowledge	**.41****	**.26***	.09	**.27***	.20	**.42****
Conceptual Knowledge	**.27***	.22	.09	**.35****	.07	**.34****
Leadership Knowledge	**.43****	**.27***	.10	**.36****	.20	**.45****
Financial Knowledge	.22	**.28***	-.09	.14	.11	**.26***
Total Knowledge	**.42****	**.29***	.07	**.34****	.20	**.46****
Technical Skill	**.56****	**.37****	**.28***	**.50****	.14	**.60****
Human Skill	**.41****	**.26***	.09	**.27***	.20	**.42****
Conceptual Skill	**.54****	**.35****	.09	**.34****	.17	**.51****
Leadership Skill	**.60****	**.46****	.21	**.34****	**.27***	**.60****
Financial Skill	**.38****	**.27***	.03	.20	.15	**.40****
Total Skill	**.59****	**.43****	.19	**.36****	.23	**.59****

*Significant at the $p < .05$ level.
**Significant at the $p < .01$ level.
All tests are two-tailed.

Table 3-5.
Pearson Product-Moment Correlations for Human Capital (CNMCI) and Social Capital (SCON) with Nurse Manager Turnover Intent and Job Satisfaction

		Turnover intent (1 year)	Turnover intent (5 years)	Job Satisfaction
CNMCI Scales (Human Capital)	Technical Knowledge	**-.25***	-.23	.21
	Human Knowledge	.01	.01	.05
	Conceptual Knowledge	-.07	-.11	.06
	Leadership Knowledge	-.15	-.15	.22
	Financial Knowledge	.07	.02	.04
	Total Knowledge	-.09	-.10	.14
	Technical Skill	**-.26***	**-.27***	**.30***
	Human Skill	.01	.01	.05
	Conceptual Skill	-.13	-.18	.22
	Leadership Skill	-.09	-.11	**.30***
	Financial Skill	-.02	-.04	.05
	Total Skill	.01	-.02	.04
SCON Scales (Social Capital)	External Trust & Empowerment	**-.44****	**-.40****	**.67****
	Internal trust, Solidarity & Collective Action	-.19	-.21	**.50****
	Social Cohesion with Coworkers	-.22	-.20	.20
	Participation and affiliation	-.22	-.18	.33
	Conflict and Solidarity	-.14	-.09	.12
	TOTAL SCON	**-.42****	**-.36****	**.58****

*Significant at the $p < .05$ level.
**Significant at the $p < .01$ level.
All tests are two-tailed.

CHAPTER 4

This chapter presents the results of a quantitative descriptive cross sectional study measuring human capital, social capital, individual characteristics, and organizational characteristics of 1149 registered nurses working in a 15 hospital healthcare system in the Midwest.

Background and Significance

Registered nurses play a vital role in the provision of healthcare and for healthcare outcomes nationally. Several forces affecting the profession may adversely impact the supply of qualified registered nurses in the workforce. The nursing workforce is aging with anticipated acceleration of retirements of more than 80,000 annually matched with unprecedented job growth rates of more than 11% annually through 2030 (Auerbach et al., 2015; The American Nurses Association, 2017). Healthcare reform, increases in chronic care management needs, an aging population, and a return to pre-recession nursing workforce levels are also greatly accelerating nursing job growth (Snavely, 2016). Many professional organizations have made recommendations to increase both the supply and educational levels of nurses nationally in order to improve healthcare outcomes (The American Nurses Association, 2017; The Institute of Medicine at the National Academies, 2011). Although nursing schools have nearly doubled the rates of enrollment in the last decade, the extraordinary retirement rates will remove a great amount of nursing knowledge and experience from the workforce (Auerbach, Buerhaus, & Staiger, 2017; Larson & Buerhaus, 2016).

Human capital has been defined as the acquired knowledge, skills, and experience of individuals which enable them to act in new ways which are economically valuable to

both the individual and to the organization (Nahapiet & Ghoshal, 1998). Nurses are knowledge workers who must access and synthesize a vast amount of information in providing patient care (Porter-O'Grady, 2003). The knowledge, skills, and experience of registered nurses are undeniably important to patient care and research has suggested that increased levels of nursing human capital acquired through formal education, professional development, and specialty certification is related to positive patient care outcomes (Aiken et al., 2011; Covell & Sidani, 2013; McHugh et al., 2013). Replacing the anticipated loss of nursing human capital in the nursing workforce will be a priority for all healthcare organizations nationally.

Despite the great focus in the literature on human capital of registered nurses, knowledge, skills, and experience do not act alone on the provision of outcomes. Human capital must be accessed and synthesized through the network of social relationships in an organization in order to produce outcomes (Daud & Yusoff, 2010; I. Hsu & Sabherwal, 2011). The concept accounting for this phenomenon is that of social capital, which may be defined as the groups, networks, norms, and trust that people have available to them for productive purposes. Social capital is conceptualized as having six related domains: 1) bonding, bridging, and linking networks, 2) trust and solidarity, 3) collective action and cooperation, 4) information and communication, 5) social cohesion and inclusion, and 6) empowerment and political action (Grootaert et al., 2004; Hofmeyer, 2013; Sheingold & Sheingold, 2013). Human capital is the knowledge, skills, and experience required to complete nursing work, while the network of relationships encompassed by social capital provides the conduit for delivery and exchange of human capital in an organization.

Social capital in the nursing workforce is emerging as an important concept that affects the nursing work environment and ultimately patient care outcomes. Prior studies of social capital in registered nurses have demonstrated that social capital may have positive effects on organizational engagement, patient focus, perceptions of quality of care, unit effectiveness, knowledge sharing behavior, patient safety, nurse emotional exhaustion, and nursing turnover (Chang et al., 2012; Ernstmann et al., 2012; C. Hsu et al., 2011; Kowalski et al., 2010; Laschinger et al., 2014; Sheingold & Sheingold, 2013; Shin & Lee, 2016). Few studies have explored how social capital may be influenced by the context of organizational characteristics or by the human capital attributes of nurses. Empirical support in other disciplines suggests that human capital and social capital may be may be interrelated concepts that are influenced by the organizational context in which they are used and may work together to produce organizational outcomes.

With nursing vacancy and turnover rates expected to continue to increase over the next decade, organizations will find themselves in an increasingly competitive market to attract and retain nurses to mitigate projected nursing human capital losses. Focusing solely on replacement of nurses with higher education levels (human capital) may be short sighted. It has been proposed that social capital may prevent human capital losses and may also increase utilization of human capital in the production of nursing outcomes (Baernholdt & Mark, 2009; Hofmeyer, 2013; Sheingold & Sheingold, 2013; Shin & Lee, 2016). Further understanding of social capital and how it is related to organizational characteristics and human capital attributes may have implications for management of the nursing workforce, healthcare policy, educational development, and organizational design.

Aims

The purpose of this study was to explore the concept of social capital in a sample of registered nurses. Specific aims were to: 1) explore and describe whether social capital reported by registered nurses varies by age, organizational characteristics including hospital teaching status, hospital size, hospital setting, unit type, and unit acuity, or by human capital attributes including education level, specialty certification, years of experience as a registered nurse, and years of experience in the current nursing unit, and 2) describe the bivariate relationships between social capital, registered nurse turnover intent, and job satisfaction.

Methods

Design, Sample, and Setting

A descriptive cross-sectional quantitative survey design was used in a large Midwestern healthcare system consisting of 15 hospitals ranging from small rural critical-access hospitals to large urban academic tertiary care hospitals. The conceptual model guiding this research study was the Gilbert Conceptual Model of Organizational Intellectual Capital which proposes that human capital and social capital are related concepts influenced by organizational characteristics which ultimately effect organizational outcomes. Inclusion criteria included: registered nurses employed full-time on an inpatient, procedural, perioperative, or emergency department setting at one of the system hospitals. Exclusion criteria included registered nurses who: a) were not employed directly by the healthcare system, b) worked in outpatient clinics, c) did not report directly to a nurse manager, or d) did not primarily function in a direct patient care role (less than 50% of the time).

The University Institutional Review Board granted approval as an exempt study prior to initiation. The purpose of the study, risks and benefits of participation, requirements of participation, and a link to a questionnaire was sent to all registered nurses who were believed to meet inclusion criteria. Completion of the survey was denoted as consent to participate. Potential participants also received a follow-up electronic message to participate at 2- and 4- weeks after initial contact to increase participation rates. Eligibility was confirmed through a series of screening questions at the start of the survey. Those who were eligible and completed the surveys had the option of entering a drawing for a $25 gift card as an incentive for participation. The online questionnaire was anonymous, confidential, and was administered through a secure server outside of the healthcare system network. A total of 6,190 potentially eligible nurse managers were surveyed of which 1.400 (22.6%) responses were returned. Upon secondary screening, 112 of the respondents were not eligible through positive responses to 1 or more of the exclusion criteria on the online survey. An additional 123 responses were incomplete. Therefore, a final sample of 1,149 registered nurses completed the study (18.6% of those originally surveyed). Table 4-1 describes the sample.

Measures and Instrumentation

Participants completed a set of questionnaires measuring age, organizational characteristics, human capital attributes, and social capital. Organizational characteristics included whether or not the RN worked in a float pool, hospital teaching status, hospital bed size, hospital setting, nursing unit type, and unit acuity level. Human capital attributes included formal education level and presence of specialty certification

(knowledge and skills), years of experience as a registered nurse, and years of experience in the current nursing unit (experience). Social capital was measured in this study by administering the Social Capital Outcomes for Nurses instrument (SCON). This reliable and valid instrument contains 44 items measured on a 5-point Likert scale (1= strongly disagree to 5= strongly agree) reflective of the 6 domains of the conceptual definition of social capital in the nursing work environment (Sheingold & Sheingold, 2013). The instrument was divided into 6 scales: 1) external trust and empowerment (12 items reflective of trust in senior executive and others outside of the work unit and empowerment over decisions), 2) internal trust, solidarity, and collective action (8 items reflective of trust in others within the work unit and feelings of togetherness), 3) social cohesion with co-workers (3 items reflective of social connections with coworkers), 4) participation and affiliation (6 items reflective of participation in work groups, projects, and professional organizations), 5) conflict and solidarity (6 items reflective of work environment conflict and feelings of togetherness), and 6) SCON total scale (44 items). In this study, all social capital subscales demonstrated adequate reliability (α-2 values ranged from .701 to .900).

Finally, participants were asked to complete 3 additional items related to turnover intent (2 items) and job satisfaction (1 item) Questions included: a) I plan to be working for this organization 1 year from now, b) I plan to be working for this organization 5 years from now, and c) Overall, I am satisfied with my job. These items were measured on a 5-point Likert scale and were coded so that higher scores indicated higher intent to turnover and higher job satisfaction.

Data Analysis

Data analyses were conducted using the Statistical Package for the Social Sciences (SPSS) Version 24.0. Descriptive statistics were analyzed for age, organizational characteristics, and human capital attributes. Guttman's Lambda-2 analysis was used for the SCON instrument scale scores because the data violated assumptions of normality (Callender & Osburn, 1979). Differences in social capital by organizational characteristics or by human capital attributes were examined through conducting independent samples t-tests or between subjects one-way ANOVA procedures. For the independent samples t-tests and ANOVA procedures, if assumptions of the Levene test were violated, interpretation of either the Welch-t or Welch-F test was completed to increase rigor and decrease likelihood of a Type-I error. If social capital varied significantly by an organizational characteristic or a human capital attribute measure, post hoc testing was completed using Tukey HSD procedures or if equality of variance was not assumed through Games-Howell procedures. Pearson's Product-Moment Correlation was used to explore the bivariate relationships between social capital (SCON) scales and registered nurse turnover intent and job satisfaction variables. Significance for all analyses was set at the $p < .05$ level.

Results

Sample

Table 4-1 describes the organizational characteristics and human capital attributes of the sample. More than half of the participants worked in a hospital with more than 300 beds (66%) and in an urban environment (58.8%). Participants were primarily registered nurses of inpatient units (69.6%). 60% of the participants were greater than 35 years of

age. Almost half (46.4%) had more than10 years of experience as a registered nurse. The majority of participants (78.4%) had acquired at least a Bachelor degree.

Social Capital and Organizational Characteristics

The differences in social capital by organizational characteristics are displayed in Table 4-2. Social capital significantly differed by hospital teaching status for the internal trust, solidarity, and collective action scale ($p = .021$). Those in non-academic hospitals reported higher levels of internal trust, solidarity, and collective action. Social capital also significantly differed by hospital setting for the following social capital (SCON) scales: external trust and empowerment ($p < .001$), internal trust, solidarity, and collective action ($p = .007$), participation and affiliation ($p = .030$), conflict and solidarity ($p = .009$), and SCON total ($p < .001$). Post hoc tests for each SCON scale for which there was a significant difference in social capital by hospital setting revealed that those in rural hospitals reported higher levels of social capital than those working in suburban and urban hospitals. Social capital significantly differed by hospital bed size for the external trust and empowerment subscale ($p = .002$). Post hoc testing revealed that registered nurses working in hospitals with less than 100 beds reported higher levels of external trust and empowerment than those in hospitals with more than 200 beds.

Social capital significantly differed by unit type for the following social capital (SCON) scales: internal trust, solidarity, and collective action ($p < .001$), conflict and solidarity ($p < .001$), and SCON total. Post hoc testing revealed in general that nurses in perioperative areas in general reported lower levels of social capital. Finally, social capital significantly differed by unit acuity level for the social cohesion with coworkers

scale (p = .010) with nurses in medical-surgical units reporting less social cohesion than those in intensive care units.

Social Capital by Registered Nurse Age and Human Capital Attributes

Table 4-3 displays the differences in social capital by registered nurse age and human capital attributes. Social capital significantly differed by registered nurse age for the following social capital (SCON) scales: external trust and empowerment (p = .004), participation and affiliation (p = .021), conflict and solidarity (p = .017), and SCON total (p = .001). Post hoc testing revealed that in general, those less than 25 years of age reported higher levels of social capital than their older counterparts.

Social capital varied significantly by nurse float pool status for the social cohesion with coworkers scale (p = .002) and the participation and affiliation scale (p < .001). Those who worked in a float pool reported less social capital. This indicates that nurses who work in a float pool may have less social cohesion with coworkers and experience less participation and affiliation in work groups and projects.

Social capital significantly differed by specialty certification for the following social capital (SCON) scales: social cohesion with coworkers (p < .001), participation and affiliation (p < .001), and SCON total (p = .001). Post hoc testing revealed that registered nurses who have acquired specialty certification reported higher levels of social capital. Social capital did not significantly differ by nurse education level.

Social capital significantly differed by years of nursing experience for the external trust and empowerment scale (p < .001) and the social cohesion with coworkers scale (p = .016). Post hoc testing revealed that nurses with less than 1 year of experience reported higher levels of external trust and empowerment than those with 5-19 years of

experience. Post hoc testing also revealed that those with 5-9 years of experience reported higher levels of social cohesion with coworkers than those with 20 or more years of experience. Finally, social capital significantly differed by years of experience on the current unit on the external trust and empowerment scale ($p = .011$) and the social cohesion with coworkers scale ($p = .040$). Post hoc testing revealed that those with less than 1 year of experience on the current unit reported higher levels of external trust and empowerment than those with 1-10 years of experience. Conversely, those with less than 1 year of experience reported less social cohesion with coworkers than those with 1-4 years of experience.

Relationships between Turnover Intent and Job Satisfaction

Table 4-4 presents the results of Pearson's Product-Moment correlations for the social capital (SCON) scales with registered nurse turnover intent and job satisfaction. The total social capital (SCON) scale and the external trust and empowerment scale demonstrated significant moderate negative relationships ($-.50 < r < -.30$) with turnover intent and strong significant positive correlations with job satisfaction ($r > .50$). The internal trust, solidarity, and collective action scale and the conflict and solidary scale also had significant moderate negative relationships with turnover intent and significant moderate positive relationships with job satisfaction ($.30 < r < .50$). The participation and affiliation scales were significantly but weakly correlated with both turnover intent and job satisfaction.

Discussion

To our knowledge, this is the largest study of social capital reported by registered nurses in diverse hospital settings and provides valuable insight into how social capital

may vary by organizational characteristics or by human capital attributes. The major findings of this study were: a) social capital varies by organizational characteristics, b) social capital varies by age and human capital attributes, and c) social capital has a negative relationship with nurse turnover intent and a positive relationship with job satisfaction.

Social capital varied by registered nurse age with those less than 25 years old reporting higher levels of social capital for three of the social capital scales: external trust and empowerment, conflict and solidarity, and total SCON. Several factors may influence this finding. Younger nurses with less life experience may enter the profession with higher levels of social capital, but may experience a decline in their social capital through experience with perceived negative events in an organization. For example, it is possible that nurses less than 25 years old may have less experience with workplace conflict and perceive that there is less conflict in an organization. Once in the work environment and more experience with conflict occurs, this may lead to declines in the social capital domain. Further research is necessary to study the influence of age on social capital. A longitudinal study design with mixed methods of registered nurse interviews combined with direct measurement of social capital is suggested to further understand the attrition of social capital by age.

The findings of this study support prior literature proposing that the organizational characteristics may impact social capital (Hofmeyer & Marck, 2008; Read, 2014; Sheingold & Sheingold, 2013). Nurses who reported working in a float pool reported less social cohesion with coworkers and participation and affiliation. This may be because float pool nurses do not have the opportunity for repetitive and frequent

interactions with other team members and may not have the opportunity to participate in unit level projects and initiatives. Float pool nurses often have exposure to knowledge and experience in diverse settings and experience a variety of best practices in an organization. Little research on float pool nurses has been completed, but in a published quality improvement initiative, involving float pool nurses in shared governance improved float nurse perceptions of empowerment, participation, and job satisfaction (Rainess, Archer, Hofmann, & Nottingham, 2015). Efforts to improve social capital networks for float pool nurses such as engagement in shared governance structures may link their diverse knowledge and skills to other nurses in the organization leading to increases in knowledge exchange.

Social capital also varied by hospital setting and bed size. Overall, nurses in rural hospitals reported higher social capital levels than suburban and urban environments on most social capital (SCON) subscales. In hospitals with less than 100 beds, nurses reported higher levels of external trust and empowerment than those in larger facilities. Similarly, in another study of urban and rural hospitals, differences in work environments such as unit size and work complexity impacted the nursing work environment (Baernholdt & Mark, 2009). In rural settings, hospital and unit sizes are typically smaller with fewer employees leading to more opportunity for nurses to interact with those internal and external to the work unit. The hospitals in rural environments also are more likely to serve smaller communities with shared social values. Registered nurses employed in rural settings are more likely to have shared values and personal connections with external parties outside of the workplace influencing higher levels of social capital.

Nurses in academic hospitals reported lower levels of internal trust, solidarity, and collective action than those in non-teaching hospitals. While this may be influenced by hospital size and setting, in academic hospitals there are typically more individuals in the environment such as students, residents, and instructors with whom nurses must interact and share information. This significantly adds to the number of social network ties the nurse must navigate. In addition, many of the individuals are in the environment on a rotational and temporary basis which may not allow for development of feelings of trust and solidarity.

Social capital also varied by unit type, providing further support for the proposition that organizational characteristics may influence social capital development. In general, nurses in perioperative units reported lower levels of social capital. Similarly, a prior study demonstrated that perioperative nurses reported significantly less work attractiveness in the perioperative environment which was influenced in part by the perioperative work environment and relationships (Björn, Lindberg, & Rissen, 2016). The perioperative environment is unique and nurses in this environment have different connections with intra-professional staff than nurses working in other nursing units. Eskola et al. (2016) note that perioperative nurses work long and unpredictable hours are often exposed to more conflict and found that nurse stress levels in the perioperative environment were impacted by workload, lack of communication and support, unclear treatment plans, work-social balance, and the work environment. Improvements in perioperative environments that may increase social capital include enhancing communication structures and evaluation of on-call burden that may decrease conflict. Nurses working in intensive care units also reported higher levels of social cohesion than

those on medical-surgical units, which may have been influenced by the closer-knit work environment. Intensive care environments have demonstrated the need for high collaboration among nurses because of the patient complexity and technological requirements which may influence increased social cohesion (Galletta, Portoghese, Coppola, Finco, & Campagna, 2016; Gosselin, Bourgault, & Lavoie, 2016).

Social capital varied by human capital attributes in this study. Social capital varied by specialty certification, with certified nurses reporting higher levels of social cohesion, participation and affiliation, and overall total social capital. This is an important finding as nurses who are certified may be more likely to participate in professional organizations and may be more engaged in work unit outcomes. Participation in groups and networks with others in similar roles outside of the primary work unit is considered linking social capital, which links individuals and provides access to knowledge outside of the organization (Chang et al., 2012; Choi, 2016; I. Hsu & Sabherwal, 2011). Organizations that encourage nursing professional certification and participation in professional groups create linking social capital networks which may allow for incorporation and assimilation of knowledge (such as professional organization standards) into the work environment.

Social capital varied by years of experience. Those with less than a year of nursing experience and those with less than a year of experience on their current unit reported higher levels of external trust and empowerment than those with moderate levels of experience. This finding was similar to a study of 432 nurses in South Korea and also may indicate that nurses who are new to the profession and/or are new to their unit may receive more interaction from senior administrators and those external to their unit

through participation in onboarding, nurse residency, or mentoring programs (Shin & Lee, 2016). These valuable programs may provide facilitated social capital networks leading to increased external trust and empowerment. Conversely, those with less than 1 year experience on the current unit reported less social cohesion with coworkers than those in the 1-4 year category, indicating that social cohesion with immediate coworkers is developed over the first year on a unit.

The findings also provide further empirical support for the relationship between social capital and nurse turnover and job satisfaction. Overall social capital, and in particular, external trust and empowerment had the strongest negative relationships with turnover intent and the strongest positive relationships with job satisfaction. Similarly, (Sheingold & Sheingold, 2013) noted that external trust and empowerment was the highest determinant of turnover intent and job satisfaction. Internal trust, solidarity, and collective action also had moderate relationships with turnover intent and job satisfaction of nurses. Unit based interventions to increase internal trust, solidarity and collective action are undeniably important in protecting against turnover and increasing job satisfaction. However, broader-based interventions including opportunity for nurses to interact with external parties such as senior administrators and share in the decision making process, especially with mid-career nurses may be vital to increase external trust and empowerment and in turn impact registered nurse turnover and job satisfaction.

Limitations

This study has several limitations. Although the sample included diverse hospital settings, sizes, and unit types, it was confined to 15 hospitals in one healthcare system which may limit generalizability of the results. Human capital measures for registered

nurses were by proxy through educational level, certification, and years of experience and may not encompass specific forms of knowledge, skills, and experience in the nursing environment important to social capital development. Finally, the multiple comparisons in the data analyses may have increased the likelihood of a Type I error.

Implications for Nurse Leaders

The nursing profession is at a pivotal point in history given the challenges of healthcare reform and the anticipated loss of nursing human capital in the workforce in the upcoming years. Rather than relying solely on mitigating human capital losses from healthcare organizations through replacement, targeted interventions to increase levels of social capital may positively affect the nursing work environment and in turn organizational outcomes. Nurse leaders need to carefully assess and influence practice environments that foster social capital formation not only within nursing units, but also environments that foster external trust and nurse empowerment among and outside of individual nursing units. While there has been much focus on unit based interventions and onboarding programs in order to improve practice environments and patient outcomes, nursing leaders must consider the social capital networks that develop throughout the organization and over the career trajectory of registered nurses.

Development of registered nurse human capital and social capital through financial support for involvement in professional organizations or achievement of specialty certifications should be considered to increase access to and utilization of diverse nursing knowledge in an organization and to increase nurse engagement in organizational outcomes. Inclusion of mid-career and float pool nurses in shared governance structures which increase exposure to senior administrators and allow for

participation in organizational decision making may also increase social capital and utilization of human capital leading to improved organizational outcomes. Although further research is necessary, interventions targeting social capital formation may help to mitigate further human capital losses through increased job satisfaction and retention of nurses as well as improve organizational and patient outcomes.

Conclusions

This study provides valuable insight into social capital in the nursing workforce and demonstrates the possible influence of social capital on registered nurse turnover intent and job satisfaction. Further research is necessary to further describe how organizational characteristics and human capital attributes impact social capital and ultimately patient outcomes. A larger sample inclusive of heterogeneous hospitals and healthcare systems nationally including more direct measurement of registered nurse human capital is suggested to further study these concepts and the relationship to organizational and patient outcomes.

Table 4-1.
Registered Nurse Age, Organizational Characteristics, and Human Capital Attributes

			Organizational Characteristics								
RN Age (Years)	***n***	**%**	**Hospital Bed Size**	***n***	**%**	**Hospital Teaching Status**	***n***	**%**	**Hospital Setting**	**n**	**%**
< 25	70	6.1%	0-99	192	16.9%	Teaching	987	86.3%	Urban	674	58.8%
25-34	383	33.5%	100-199	195	17.2%	Non-Teaching	157	13.7%	Suburban	407	35.5%
35-44	269	23.5%	200-299	228	20.1%				Rural	66	5.8%
45-54	228	19.9%	≥ 300	522	45.9%						
≥ 55	194	17.0%									
			Unit Type	***n***	**%**	**Unit Acuity Level**	***n***	**%**	**Float Pool Status**	***n***	**%**
			Inpatient	798	69.6%	Outpatient/Obs	161	14.2%	Non-Float Pool	1080	94.1%
			Outpatient/Obs	42	3.7%	Med Surg	458	40.3%	Float Pool	68	5.9%
			Procedural	48	4.2%	Progressive	144	12.7%			
			Periop	163	14.2%	ICU	373	32.8%			
			Emergency Department	96	8.4%						

			Human Capital Attributes								
Formal Education	***n***	**%**	**Professional Certification**	***n***	**%**	**RN Experience (Years)**	***n***	**%**	**Current unit Experience (Years)**	***n***	**%**
Diploma	22	1.9%	Not certified	628	54.9%	< 1	90	7.9%	< 1	198	17.3%
Associate	218	19.0%	Certified	515	45.1%	1-4	284	24.8%	1-4	428	37.3%
Bachelor	827	72.2%				5-9	240	21.0%	5-9	230	20.1%
Master	74	6.5%				10-19	224	19.6%	10-19	178	15.5%
Doctorate	5	0.4%				≥ 20	307	26.8%	≥ 20	113	9.9%

Table 4-2.
Social Capital (SCON) Scale Results by Organizational Characteristics with Statistically Significant Difference in Means

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Float Pool Status	Float Pool RN	3.23 (.66)	3.85 (.50)	2.59 (1.09)	3.02 (.61)	3.33 (.67)	3.26 (.40)
	Non Float Pool	3.26 (.60)	3.81(.49)	3.02 (1.12)	3.36 (.62)	3.22 (.56)	3.33 (.40)
	df	-	-	1138	1142	-	-
	t	-	-	3.03	4.43	-	-
	p	ns	ns	.002	< .001	ns	ns
Hospital Teaching Status	Teaching	3.25 (.61)	3.80 (.49)	3.00 (1.12)	3.34 (.62)	3.23 (.57)	3.33 (.39)
	Non-Teaching	3.33 (.60)	3.90 (.47)	2.96 (1.17)	3.32 (.66)	3.22 (.55)	3.35 (.40)
	df	-	1130	-	-	-	-
	t	-	2.31	-	-	-	-
	p	ns	.021	ns	ns	ns	ns
Hospital Setting	Rural [a]	3.59 (.62)	3.99 (.48)	3.03 (1.19)	3.53 (.67)	3.43 (.58)	3.52 (.44)
	Suburban [b]	3.28 (.62)	3.82 (.49)	2.89 (1.12)	3.31 (.61)	3.23 (.58)	3.32 (.40)
	Urban [c]	3.22 (.59)	3.79 (.49)	3.05 (1.11)	3.34 (.63)	3.21 (.56)	3.32 (.38)
	df	2,1132	2,1132	-	2,1140	2,1131	2,1129
	F	10.80	4.99	-	3.52	4.68	8.08
	p	<.001	.007	-	.030	.009	< .001
	Tukey HSD [1]	a > b,c	a > b,c	ns	a > b,c	a > b,c	a > b,c

Table continues

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Hospital Bed Size	0-99[a]	3.41(.60)	3.84(.52)	2.99(1.12)	3.41(.65)	3.29(.59)	3.40(.41)
	100-199[b]	3.27(.58)	3.79(.42)	2.96(1.07)	3.29(.58)	3.21(.55)	3.31(.37)
	200-299[c]	3.23(.64)	3.84(.51)	2.93(1.14)	3.34(.64)	3.19(.57)	3.31(.41)
	>300[d]	3.22(.60)	3.81(.49)	3.04(1.14)	3.34(.62)	3.24(.57)	3.32(.39)
	df	3,1124	-	-	-	-	-
	F	5.10	-	-	-	-	-
	p	.002	ns	ns	ns	ns	ns
	Tukey HSD[1]	a > c,d	-	-	-	-	-
Unit Type	Inpatient[a]	3.29 (.59)	3.87 (.47)	2.97 (1.12)	3.36 (.60)	3.27 (.55)	3.36 (.37)
	Outpatient/Obs[b]	3.36 (.57)	3.86 (.57)	2.71 (1.21)	3.08 (.78)	3.38 (.69)	3.32 (.47)
	Procedural[c]	3.18 (.51)	3.64 (.44)	2.96 (1.12)	3.18 (.61)	3.08 (.49)	3.22 (.35)
	Perioperative[d]	3.17 (.65)	3.64 (.50)	3.01 (1.10)	3.31 (.65)	3.07 (.62)	3.24 (.46)
	Emergency[e]	3.21 (.71)	3.74 (.51)	3.27 (1.11)	3.40 (.72)	3.14 (.57)	3.32 (.44)
	df	-	4,1130	-	-	4,1130	4,138.0
	F	-	9.93	-	-	6.56	3.78
	p	ns	<.001	ns	ns	<.001	.006
	Tukey HSD[1]	-	a > c,d	-	-	a,b > d	-
	Games-Howell[2]	-	-	-	-	-	a > d

Table continues

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Unit Acuity	Outpatient/Obs[a]	3.32 (.66)	3.76 (.53)	3.02 (1.20)	3.25 (.72)	3.22 (.65)	3.33 (.47)
	Med Surg[b]	3.29 (.61)	3.85 (.47)	2.90 (1.13)	3.32 (.62)	3.24 (.56)	3.34 (.39)
	Progressive[c]	3.31 (.54)	3.85 (.43)	2.86 (1.06)	3.40 (.59)	3.25 (.52)	3.34 (.35)
	ICU[d]	3.20 (.59)	3.79 (.51)	3.14 (1.08)	3.38 (.59)	3.21 (.57)	3.32 (.38)
	df	-	-	3,1124	-	-	-
	F	-	-	3.80	-	-	-
	p	ns	ns	.010	ns	ns	ns
	Tukey HSD[1]	-	-	b < d	-	-	-

ns = not significant ($p \geq .05$)

[1] Tukey HSD post hoc tests were calculated when assumptions of the Levene test were not violated, significance set at $p < .05$ level.

[2] Games Howell post hoc tests were calculated when assumptions of the Levene test were violated, significance set at $p < .05$ level.

Table 4-3.

Social Capital (SCON) Scale Results by Human Capital Attributes with Statistically Significant Difference in Means

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
RN Age	< 25 [a]	3.44 (.44)	3.89 (.33)	3.10 (.97)	3.47 (.47)	3.34 (.44)	3.44 (.27)
	25-34 [b]	3.24 (.61)	3.84 (.48)	3.26 (1.15)	3.31 (.61)	3.28 (.61)	3.35 (.40)
	35-44 [c]	3.20 (.61)	3.77 (.51)	2.87 (1.11)	3.32 (.60)	3.21 (.56)	3.29 (.39)
	45-54 [d]	3.31 (.66)	3.83 (.48)	2.90 (1.05)	3.42 (.64)	3.23 (.53)	3.35 (.42)
	≥ 55 [e]	3.27 (.58)	3.80 (.52)	2.68 (1.10)	3.28 (.70)	3.13 (.60)	3.28 (.40)
	df	4,366.0	-	4,1131	4,363.8	4,364.3	4,370.7
	F	3.87	-	10.71	2.94	3.06	4.76
	p	.004	ns	< .001	.021	.017	.001
	Tukey HSD[1]	-	-	b > c,d,e	-	-	-
	Games-Howell [2]	a > b,c	-	-	ns	a,b > e	a > c,e
Specialty Certification	Not Certified	3.24 (.59)	3.81 (.46)	2.86 (1.12)	3.22 (.59)	3.25 (.57)	3.29 (.39)
	Certified	3.29 (.63)	3.82 (.52)	3.15 (1.11)	3.49 (.63)	3.21 (.57)	3.37 (.40)
	df	-	-	1124	1127	-	1127
	t	-	-	4.34	3.43	-	3.43
	p	ns	ns	< .001	< .001	ns	.001

Table continues

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
RN Experience (Years)	< 1 [a]	3.44(.50)	3.87(.36)	2.92(1.11)	3.43(.48)	3.33(.51)	3.42(.31)
	1-4 [b]	3.28(.61)	3.84(.49)	3.02(1.14)	3.36(.59)	3.25(.58)	3.35(.41)
	5-9 [c]	3.17(.56)	3.79(.50)	3.19(1.13)	3.28(.61)	3.23(.55)	3.30(.37)
	10-19 [d]	3.20(.63)	3.78(.48)	2.96(1.10)	3.36(.63)	3.24(.58)	3.31(.39)
	≥ 20 [e]	3.31(.65)	3.82(.52)	2.87(1.09)	3.33(.69)	3.18(.59)	3.33(.42)
	df	4,425.2	-	4,1132	-	-	-
	F	5.29	-	3.07	-	-	-
	p	< .001	ns	.016	ns	ns	ns
	Tukey HSD[1]	-	-	c > e	-	-	-
	Games-Howell [2]	a > c,d	-	-	-	-	-

Table continues

		External Trust & Empowerment	Internal Trust, Solidarity, & Collective Action	Social Cohesion with Coworkers	Participation & Affiliation	Conflict & Solidarity	SCON Total
		M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Experience On Current unit (Years)	< 1 [a]	3.38(.52)	3.85(.42)	2.81(1.04)	3.33(.54)	3.29(.54)	3.36(.35)
	1-4 [b]	3.24(.60)	3.80(.46)	3.08(1.12)	3.32(.64)	3.23(.58)	3.33(.40)
	5-9 [c]	3.21(.61)	3.80(.51)	3.07(1.18)	3.37(.62)	3.16(.57)	3.31(.40)
	10-19 [d]	3.23(.66)	3.80(.51)	2.94(1.11)	3.27(.69)	3.24(.57)	3.30(.41)
	≥ 20 [e]	3.32(.67)	3.86(.59)	2.91(1.15)	3.47(.57)	3.26(.60)	3.38(.43)
	df	4,424.2	-	4,1134	-	-	-
	F	3.32	-	2.51	-	-	-
	p	.011	ns	.040	ns	ns	ns
	Tukey HSD[1]	-	-	a < b	-	-	-
	Games-Howell [2]	a > b,c	-	-	-	-	-

ns = not significant ($p \geq .05$)

[1] Tukey HSD post hoc tests were calculated when assumptions of the Levene test were not violated, significance set at $p < .05$ level.

[2] Games Howell post hoc tests were calculated when assumptions of the Levene test were violated, significance set at $p < .05$ level.

Table 4-4.
Pearson Product-Moment Correlations for Social Capital (SCON) with Turnover Intent and Job Satisfaction

		Turnover intent (1 year)	Turnover intent (5 years)	Job Satisfaction
SCON Subscales and Total Scales (Social Capital)	External Trust & Empowerment	**-.44****	**-.45****	**.67****
	Internal trust, solidarity, & Collective Action	**-.38****	**-.33****	**.49****
	Social Cohesion with Coworkers	-.04	-.06	**.07***
	Participation and affiliation	**-.18****	**-.19****	**.28****
	Conflict and Solidarity	**-.31****	**-.28****	**.42****
	TOTAL SCON	**-.41****	**-.40****	**.59****

*Significant at the $p < .05$ level.
**Significant at the $p < .01$ level.

CHAPTER 5

The purpose of this dissertation was to explore and describe the social capital and human capital of nurse managers and of the registered nurses that they lead. Chapter 2 is an integrative review of the concepts of social capital and human capital inclusive of the concept of the organizational manager and the synthesis of a conceptual model guiding this dissertation and further research. Chapter 3 is a presentation of the results of the quantitative descriptive cross-sectional survey of a sample of nurse managers exploring human capital, social capital, individual characteristics of the nurse manager, and organizational characteristics. Chapter 4 is a presentation of the results of the quantitative descriptive cross-sectional survey of a sample of registered nurses exploring social capital, human capital attributes, and organizational characteristics. This chapter summarizes and synthesizes the key findings from the dissertation, discusses the strengths and limitations of this dissertation, discusses the implications for practice, and makes recommendations for future research.

Summary of Key Findings

Chapter 2

The purpose of chapter 2 was to explore the concepts of human capital and social capital as they relate to nursing leadership in healthcare organizations. Specific aims included: 1) to synthesize the literature related to human capital and social capital in leadership, 2) to refine the conceptual definitions of human capital and social capital with associated conceptual antecedents and consequences, and 3) to propose a synthesized conceptual model guiding further empirical research of social capital and human capital in nursing leadership. A systematic integrative review of leadership literature using

criteria informed by Whittemore and Knafl (2005) was completed for 37 articles published between 1995 and 2016 with focus on the management of social capital and human capital in organizations. This resulted in the synthesis of the Gilbert Conceptual Model of Organizational Intellectual Capital (Figure 2-1) which advances the propositions of human capital theory and social capital theory and is the first known model to conceptualize the direct and moderating effects that nurse leaders have on the human capital and social capital of the teams they lead. This model provides a foundation for the study of human capital, social capital, and the effects of nursing leadership in healthcare organizations.

Chapter 3

The purpose of chapter 3 was to explore the concepts of human capital and social capital in a sample of nurse managers. Specific aims included: 1) to explore and describe whether human capital and social capital reported by nurse managers varies by individual characteristics including age, education level, specialty certification, experience as a registered nurse, experience as a nurse manager, and experience in the current manager role, and by organizational characteristics including hospital teaching status, hospital bed size, hospital setting, unit type, unit acuity, and position scope, and 2) to explore the bivariate relationships between human capital, social capital, turnover intent, and job satisfaction reported by nurse managers.

The key findings of this study were as follows: 1) nurse manager human capital varied primarily by experience in the nurse manager role, 2) social capital of nurse managers varied by organizational characteristics such as hospital size, setting, and unit type, 3) there is a positive relationship between nurse manager human capital and social

capital, and 4) while certain types of human capital have a relationship with nurse manager turnover intent and job satisfaction, social capital had a stronger positive relationship with nurse manager turnover and job satisfaction. The results suggest that interventions based on experiential learning may help with the development of human capital specific to the nurse manager role and that investment in social capital may help to mitigate anticipated turnover in nurse managers and increase job satisfaction. Results also suggest that development of external trust and empowerment is a priority in the nurse manager population.

Chapter 4

The purpose of chapter 4 was to explore and describe the concept of social capital in a sample of registered nurses. Specific aims included: 1) to explore and describe whether social capital reported by registered nurses varies by age, organizational characteristics including hospital teaching status, hospital size, hospital setting, unit type, and unit acuity, and by human capital attributes including education level, specialty certification, years of experience as a registered nurse, and years of experience in the current nursing unit, and 3) to describe the bivariate relationships between social capital, registered nurse turnover intent, and job satisfaction.

The major findings of this study were: 1) social capital varies by organizational characteristics, 2) social capital varies by registered nurse age and human capital attributes, and 3) social capital has a negative relationship with registered nurse turnover intent and a positive relationship with registered nurse job satisfaction. These results provide new knowledge into the concept of social capital in registered nurses. Results suggest that targeted interventions to increase levels of social capital may positively

affect the nursing work environment and in turn organizational outcomes. Results suggest the need to carefully assess and influence practice environments that foster social capital formation not only within nursing units, but environments that also foster external trust and nurse empowerment among and outside of individual nursing units.

Synthesis of Key Findings

The Gilbert Conceptual Model of Organizational Intellectual Capital advances the propositions of human capital theory and social capital theory and conceptualizes the direct and moderating effects that nurse leaders have on human capital and social capital of the teams that they lead within the context of the healthcare organization in which human capital and social capital is formed and utilized. Portions of this model were tested in this dissertation by exploring social capital and human capital in nurse managers and registered nurses within the context of a heterogeneous group of hospitals and nursing units. Research findings support the Gilbert Conceptual Model of Organizational Intellectual Capital and provide an empirical foundation informing targeted interventions and further study of these related concepts in healthcare organizations.

There are four major findings from this dissertation. First, the specific human capital of nurse managers is gained primarily through experience in the nurse manager role. Second, there is a positive relationship between nurse manager human capital and social capital. Third, social capital of nurse managers and registered nurses is influenced by the context of the organization in which it is utilized. Finally, in both nurse managers and registered nurses, there is a negative relationship between social capital and turnover intent and a positive relationship between social capital and job satisfaction.

The complexities of healthcare reform have propelled many of the nation's healthcare organizations into an era of accelerated change marked by adaptation to new models of care, adoption of major organizational policy changes, and redesign of registered nurse and nurse manager roles. In addition, an anticipated shortage of qualified nurse managers and registered nurses coupled with an anticipated exodus of nursing human capital from the workforce through retirement is creating a crisis to recruit, develop, and retain nurse managers and registered nurses to fill critical vacancies nationally. Because of the influence of the organizational context on both human capital and social capital, the positive relationship between the two concepts, and the relationships between human capital, social capital, turnover intent, and job satisfaction, organizations should carefully consider policy changes and role redesign as they may produce unintended consequences through these relationships. Although further research is necessary, the findings of this dissertation provide guidance in the development of interventions targeting development of both human capital and social capital of nurse managers and registered nurses. These targeted interventions may assist in meeting the challenges facing healthcare organizations and ultimately improve outcomes.

Strengths of the Dissertation

This is the first known study measuring both human capital and social capital specific to nurse managers. Use of the CNMCI to measure human capital specific to nurse managers and the SCON to measure social capital specific to the complex nursing work environment allowed for more meaningful comparison through the examination of specific subsets of nurse manager knowledge and skills and the specific domains of social capital in nurse managers. This is also the largest known study of social capital reported

by registered nurses and is the first to examine how social capital in registered nurses may vary by organizational characteristics and by human capital attributes. This dissertation was also strengthened by the use of heterogeneous hospital types which allowed for richer analysis and increased generalizability of results.

Limitations of the Dissertation

This dissertation has several limitations. Although the sample included diverse hospital settings, size, and unit type, it was confined to one healthcare system consisting of 15 hospitals of various sizes and settings exclusive of outpatient settings which may limit generalizability of the results. Although this is the first known study of human capital and social capital specific to nurse managers, the sample was relatively small and was conducted within one healthcare system which may have limited generalizability to the wider nurse manager population. Human capital measures for registered nurses were also measured by proxy through the human capital attributes of education level, specialty certification, and years of experience and may not encompass specific forms of knowledge, skills, and experience in the nursing environment important to social capital development.

This dissertation was limited to a cross-sectional survey and does not account for how human capital and social capital of nurse managers and registered nurses may be influenced over time. Analyses were primarily through analysis of variance and through correlations. Although the results inform factors that may influence differences in means and directional relationships, they do not imply causality and should be interpreted with caution. In this study the nurse manager responses were not matched with the registered nurse responses on their units, so this study did not inform how one group may influence

the other group in terms of human capital and social capital. Finally, the multiple comparisons in the data analyses may have increased the likelihood of a Type I error.

Implications for Practice

This dissertation advances the science of human capital and social capital in the nursing profession by outlining the relationship between human capital and social capital, providing insight into the individual and organizational characteristics that influence human and social capital, and providing insight into how human capital and social capital are related to turnover intent and job satisfaction. The major findings of this dissertation may be used in several different ways by nurse managers and senior nursing leaders to inform organizational policy and procedure, targeted interventions for human capital and social capital development, and strategies to prevent human capital losses through nursing turnover and increased in job satisfaction of their nursing workforce.

Senior nursing leaders should not be solely reliant on individual formal educational programs to impart knowledge and skills necessary for success in the nurse manager role. In addition, targeted interventions should not focus solely on development of human capital of nurse managers but also on development of social capital, with specific focus on external trust and empowerment. For example, a targeted intervention of a longitudinal nurse manager development program including experiential and immersive activities with cohorts of nurse managers from different hospital settings and/or unit types could have the effect of accelerated human capital development and development of facilitated social capital networks. Organizational leaders should also consider interventions to develop external trust and empowerment in the nurse mangers in their organizations such as nurse manager mentoring programs where nurse managers

would have the opportunity to interact with those external to their units and senior leaders. This meaningful interface can build feelings of trust and empowerment in nurse managers. Broad based interventions with nurse managers such as the ones suggested here could increase access to and utilization of valuable human capital, increase nurse manager job satisfaction and retention, and ultimately influence positive organizational outcomes.

The findings of this dissertation may also be used to inform interventions to develop human capital and social capital of registered nurses. Nurse managers and senior nursing leaders should consider interventions that are broader than the unit level, develop human capital and social capital throughout the career of the nurse, includes nurses from diverse settings, and includes access to external professional organizations. Financial support for professional certification and involvement in professional organizations may increase nurse participation in hospital initiatives and provide access to information such as updated care standards that can be used to improve the practice environment. Enhancing a shared governance structure including involvement of nurses from various unit types, settings, and experience levels and opportunity for interaction with senior administration may increase external trust and empowerment. Investment in social capital of float pool nurses by ensuring inclusion in unit and hospital based initiatives to increase social cohesion and participation and affiliation may increase engagement of nurses with diverse knowledge and may provide a conduit for information sharing among multiple units. Nurse managers and senior nursing leaders should also consider mentoring nurses well beyond the first year in practice or the first year in the organization to prevent declines in social capital. Simultaneous development of the human capital and

social capital of registered nurses through interventions such as these could increase registered nurse job satisfaction, decrease nursing turnover rates, and lead to positive improvements in organizational and patient care outcomes.

Recommendations for Further Research

There are several recommendations for future research based on the results of this dissertation. The Gilbert Conceptual Model of Organizational Intellectual Capital that resulted from the integrative review in this dissertation provides a conceptual framework informing future research study design of social capital and human capital in the nursing work environment. Further research is necessary to test the propositions.

The first recommendation would be further research of human capital and social capital in heterogeneous settings on the national level with a larger sample of nurse managers and registered nurses inclusive of outpatient settings in order to further describe these concepts and increase generalizability. A second recommendation would be a longitudinal study of social capital following individual nurse managers and registered nurses over time in different nursing work environments to explore how social capital may develop and evolve over time. A third recommendation is exploration of nurse managers and the proposed direct and moderating effects that they have on the human capital and social capital of the teams that they lead. This may be accomplished through a nested research design matching the nurse manager to the human capital and social capital of the registered nurses on their units. A final recommendation would be adaptation of the SCON instrument to include other disciplines outside of nursing for study of intra-professional social capital in healthcare organizations. While study of the network of relationships among nurses is important, nurses must interact with a multitude

of healthcare professionals in the healthcare organization in order to produce outcomes. Including these individuals could inform broader organizational initiatives leading to improved organizational outcomes.

Conclusion

This dissertation contributes to the science by improving our understanding of the concepts of human capital and social capital in the complex and evolving nursing work environment. These findings provide insight into how social capital and human capital may be related and how these concepts may be related to turnover intent and job satisfaction in both nurse managers and registered nurses. The findings of this dissertation may be used by nurse leaders in healthcare organizations to inform targeted interventions to increase social capital and the utilization of the valuable nursing human capital in the organization and to help to mitigate the anticipated human capital losses in nurse managers and registered nurses that the profession is expected to experience in the upcoming years. These interventions may positively impact patient care and healthcare organizational outcomes.

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9/2017	Doctor of Philosophy, Nursing Science Indiana University Indianapolis, IN
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PROFESSIONAL EXPERIENCE

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2011 - 2015	Director of Nursing Operations Indiana University Health Methodist Hospitals Indianapolis, Indiana
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2006 - 2008	Assistant Nurse Manager The Ohio State University Medical Center Columbus, Ohio
2004 - 2007	Registered Nurse American Mobile Healthcare Various locations nationally
1999 - 2004	Registered Nurse The Ohio State University Medical Center Columbus, Ohio

LICENSURE AND CERTIFICATIONS

1999 - Present	Registered Nursing License, State of Ohio
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2015 - Present	Nursing Executive Advanced (NEA-BC)

PRESENTATIONS AND PUBLICATIONS

Gilbert, J. H., & Mignery, T. (2011, April). Creating and sustaining the universal bed model: Impact on quality, patient, and staff satisfaction. Paper presented at the American Organization of Nurse Executives Annual Meeting and Exposition.

Gilbert, J. H., Vermillion, B., & Chase, L. (2012). Stop the pain: Reinforcing a successful ergonomics program. Nursing Management, 43(7), 18-20.

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Gilbert, J. H., & Broome. M. E. (2015). Leadership in a complex world. Chapter 4. In M. C. Sitterding & M. E. Broome (Eds.), Information overload: Framework, tips, and tools to manage in complex healthcare environments. Silver Spring, MD: American Nurses Association Publications.

Gilbert, J. H. (2015, November). Social capital in nursing: The potential of influential relationships in enhancing patient and organizational outcomes. Paper presented at the Sigma Theta Tau 43rd Biennial Convention.

Hodges, K.T., & **Gilbert, J. H.** (2015). Rising above risk: Eliminating infant falls. Nursing Management, 46(12), 28-32.

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Gilbert, J. H., Chase, L. K., & Payne, J. (2016, April) Nurse Manager Competency Development through Organizational Based Interventions: State of the Science Review, Assessment through Instrumentation, and Research Study Results. Paper presented at the American Organization of Nurse Executives Annual Meeting and Exposition.

Gilbert, J. H., Von Ah, D., & Broome, M. E. (2017). Organizational intellectual capital and the role of the nurse manager. A proposed conceptual model. Nursing Outlook, In Press. doi:10.1016/j.outlook.2017.04.005.

PROFESSIONAL ORGANIZATIONS

American Organization of Nurse Executives
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