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The Effects of Empowerment on Role Competency and Patient Safety Competency for Newly Graduated Nurse Practitioners

Elsie Duff
The University of Western Ontario

Supervisor
Dr. Mary-Anne Andrusyszyn
The University of Western Ontario

Joint Supervisor
Dr. Mickey Kerr
The University of Western Ontario

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Astract

Introduction: Role competence and patient safety (PS) competence among healthcare professionals are rapidly developing issues due to increasing patient acuity and complexity in the healthcare system. Upon graduation, nurse practitioners (NPs) provide autonomous healthcare for populations with complex health needs, thus role and PS competence is imperative. In Canada, few studies have examined NP education and role development specific to NP role competence and PS competencies. This study addresses this gap in the research examining educational experiences of new NP graduates.

Aim: The aim of this study is to test a hypothesized model of the relationships between educational structural empowerment, psychological empowerment, NP role competence, and PS competence among newly practicing NPs. Educational structural empowerment, partially mediated by psychological empowerment was hypothesized to positively influence the development of NPs' role competence and their competence to safely engage in health care work.

Methods: The sample was drawn from newly graduated NPs from across Canada, accessed through twenty professional nurse registering bodies and associations. A theoretical model of educational structural empowerment mediated by psychological empowerment on NP role competence and PS competence was developed and tested. The study survey included socio-demographic questions, the Conditions of Learning Effectiveness Questionnaire, the Psychological Empowerment Scale, the NP Competence Survey, and the Health Processional Education in PS Survey. The study's comprehensive analytic framework included descriptive statistics analyses, exploratory factor analysis, confirmatory factor analyses and structural equation modeling.

Results: One hundred and ninety Canadian educated NPs who completed their studies in the preceding 2-year time period responded. The study model tested the effect of educational structural empowerment on NP role competence and PS competence partially mediated by PE. PE partially mediated the positive relationship for educational SE and PS competence, yet no mediation effect occurred for educational SE and NP role competence.

Conclusions: Nurse educators need to consider educational structural empowerment strategies as NPs' positive perceptions of role competence have the potential to influence greater levels of PS competence. Further, identifying factors and self-perceptions important for competence in an education program offers insights that can address NP role and PS educational needs prior to healthcare professionals beginning to practice.

Keywords: Empowerment, nurse practitioner, advanced practice, patient safety, competence, scope of practice, Kanter, Spreitzer, Strong Model, structural equation modeling

Dedication

For Murray & Lynn; Lana;

John, Megs & Danny.

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1   Chapter One: Introduction

Worldwide, one person in every 300 experiences harm as a result of inadequate

healthcare practices (World Health Organization [WHO], 2015), while in Canada, the

number affected is estimated to be 185,000 acute care patients annually (Baker, 2004).

Additionally, half of patients discharged from hospital to primary health care providers

experience a patient safety (PS) error (e.g., communication discharge instructions for

primary care lacking or delayed, lack of access to patient record information, appropriate

care provider caring for a patient on discharge lacking; and follow-up appointment

instructions; Smith, 2014). PS errors are considered one of the leading causes of death

and injury in Australia, Europe, Sweden and the USA (Zineldin, Zineldin, & Vasicheva,

2014). PS incident reporting maybe erroneous as primary care physicians and nurses

believe that patients are more likely to be harmed by an infection acquired from a

healthcare setting (Canadian Institute for Health Information [CIHI], 2007) rather than

human error. Yet, in Canada, one of every 10 primary care patients is believed to

experience a medication error (CIHI, 2007). Furthermore, in ambulatory care, patients

rate their interactions with care providers highly, yet, they often do not receive a

recommended standard of care for monitoring chronic conditions, appropriate medication

management, or support for chronic conditions (CIHI, 2012).

Healthcare harm, such as PS error, is complicated by the lack of access to a

primary care provider (Statistics Canada, 2010), where populations with chronic disease

may experience problems with the appropriateness of care as a result of impeded access

to ambulatory care (CIHI, 2012). Given the increasing demand for primary health care

providers, the healthcare system needs to better utilize nurse practitioners (NPs), who can

provide access to essential services to address many complex health concerns

(Ellenbecker, 2010; Fiandt, Doeschot, Lanning, & Latzke, 2010; Stanik-Hutt et al., 2013) such as managing chronic disease.

Nurse practitioners are registered nurses (RN) with advanced practice graduate education, who hold the legal authority to diagnose, order and interpret diagnostic tests, prescribe pharmaceuticals, and perform specific procedures within their scope of practice (Canadian Nurses Association, 2010; DiCenso et al., 2010). In Canada, there is a growing number of NP care providers, with 10 per 100,000 population in 2013 across Canada (CIHI, 2015). In 2012, there were 1,134 students enrolled in NP education programs (Canadian Association of Schools of Nursing [CASN], 2012a).

To ensure the quality of students' preparation and the maintenance of regulatory standards, NP education programs utilize competency-based curricula to prepare new graduates to function independently as NPs upon graduation. Specific core NP competencies are used to guide and evaluate the NP curricula in Canada (CASN, 2012a). Competency-based nursing education curricula are required by regulatory bodies for program approval and entry to NP nursing practice (Canadian Council of Registered Nurse Regulators, 2012). In spite of the expectation that the educational experiences of new healthcare providers will prepare competent graduates, issues around application of PS standards and reporting remains a growing issue in Canada and internationally (WHO, 2011).

As NPs' scope of practice advances, questions about role competence occur (Ambrose & Tarlier, 2013), more so when related to PS concerns, such as prescribing medication. The expected role competence and PS competence in newly graduated NPs have not been studied in-depth despite their importance. Thus, one goal of this study is to

address a gap in the literature relating educational experiences and self-reported role and

PS competence of new NP graduates.

1.1 Background

Competence specific to nursing involves the ability to perform a nursing role or

task, to incorporate knowledge and skill into practice, and to develop expertise (Canadian

Nurses Association, 2010; Istomina et al., 2011; Levett-Jones, Gersbach, Arthur, &

Roche, 2011; Müller, 2013). NP role competencies include the specific knowledge,

skills, and personal attributes required for safe and ethical practice as an NP (Canadian

Nurses Association, 2010; Pohl et al., 2009). In addition to NP role competencies, PS

competencies include working in teams, communicating effectively, managing safety

risks, understanding human and environmental factors, and recognizing and responding

to adverse events (Ginsburg, Castel, Tregunno, & Norton, 2012). Thus, the examination

of how NPs enact PS and NP role-specific competencies is vital.

Development of competence in the workplace setting can be enabled through

structural and psychological empowering factors. At the organizational level, structural

empowerment (SE) is defined as access to opportunity, information, support, and

resources (Kanter, 1977). Access to these structural factors create supporting conditions

that positively influence nurses' work satisfaction, coworker satisfaction, happiness to

retire from the workplace, hospital support, and workload balance (Laschinger, Finegan,

Shamian, & Wilk, 2001). They also impact the ability to master a role (Kanter, 1977)

and be autonomous, confident, and competent, thus psychologically empowered (Stewart,

McNulty, Griffin, & Fitzpatrick, 2010). Those who hold positive perceptions of SE and

psychological empowerment (PE), demonstrate positive professional nursing practice

behaviours (Babenko-Mould, Iwasiw, Andrusyszyn, Laschinger, & Weston, 2012;

Kraimer, Seibert, & Liden, 1999; Livsey, 2009; Wagner et al., 2010). Psychological

empowerment is necessary for individual to feel a sense of control in relation to their job

(Spreitzer, 2008), for example in this study, working as a NP. Thus, it is important to

examine how education can influence the practice, quality and safety outcomes of new

healthcare graduates (Canadian Institute for Health Research, 2009; Weber et al., 2012)

who are expected to be ready to begin practice. In spite of this expectation, few studies

have examined self-perceptions of NP role or PS competence in these new practitioners

who have a broad range of independent role expectations.

1.2 Nurse Practitioner Role Competence

Nurse practitioner role competencies include the specific knowledge, skills, and

personal attributes required for safe and ethical practice (Canadian Nurses Association,

2010; Pohl et al., 2009). In this study, NP competencies are delineated using a

competency-based framework, the *Strong Model of Advanced Practice* (referred to as the

Strong Model; Ackerman, Norsen, Martin, Wiedrich, & Kitzman, 1996), which outlines

advanced practice nurses' autonomous role responsibilities such as: direct comprehensive

care, support of systems, education, research, and professional leadership. The *Strong*

Model was developed 20 years ago in accordance with established standards for advanced

practice, institutional job descriptions for NPs, and a position statement about the role for

the clinical nurse specialist (CNS;Mick & Ackerman, 2000). Today, the *Strong Model*

remains consistent with the Canadian Nurses Association's core NP competencies, thus is

a valuable framework to conceptualize competence, education, or regulation (Appendix

A).

Although there is significant literature that addresses baccalaureate nurse

competence there is limited empirical data on NP role competence, with few studies

specific to Canadian NPs. Since the revision of NP competencies in 2010 (Canadian Nurses Association, 2010), there has been increasing interest but limited research addressing NP competency. Additionally, researchers have not investigated the influence of NPs learning experiences with newly graduated NPs' perceived role and PS competence.

1.3 Patient Safety Competence

Patient safety refers to the reduction and mitigation of unsafe acts within the health care system, as well as the use of best practices shown to lead to optimal patient care outcomes (Ginsburg et al., 2012). In 2008, the Canadian Patient Safety Institute developed a competency framework guide to address the development of healthcare professionals' ability to enact patient care safely (Wong, 2014). PS values, attitudes, perceptions, competencies, and patterns of behavior are important for providing safe healthcare; yet, there is little empirical data examining how these competencies are developed in NPs. PS perspectives, captured as the perceptions of newly practicing NP providers (and not those of the organization), are important to study, as safe healthcare outcomes for patients are related to provider attitudes and competent behaviours (Groves, Meisenbach, & Scott-Cawiezell, 2011).

Common values, problem-solving, and shared language occur during educational experiences that socialize health professionals, such as NPs, to a role (Alber et al., 2009; Hall, 2005). The attitudes and beliefs developed during the NPs' formal educational period can affect the development of complex socio-cultural PS competence for working in teams, communicating effectively, managing safety risks, understanding human and environmental factors, and recognizing and responding to adverse events (Ginsburg et al., 2012). Providers' perceptions of their own PS competence are important for offering

insight related to the impact of PS in educational programs or to identify the behaviours and actions relevant for safe healthcare outcomes (Bressan et al., 2015; Ginsburg, Tregunno, & Norton, 2013). There is limited literature of PS of NPs. However, one study supports that collaborative relationships and PS are related among practicing NPs in acute care settings (Almost & Laschinger, 2002); yet, no studies were found that examine formal educational experiences and PS competence in newly practicing NPs in primary health care.

1.4 Structural Empowerment and Role Development

Nurse practitioner education programs are intended to provide the necessary structures that are important for knowledge and skill development and for role capability; yet, there are no studies investigating SE in the context of NP education. As a researcher from the field of business management who researched industrial organization, Kanter (1977, 1993) proposed that SE in work is enabled by affording employees the opportunity to develop knowledge and skill. In the past 15 years, significant SE research in nursing and the healthcare workplace has been conducted with limited studies of SE in nursing education (Wagner et al., 2010), and no studies were found that examined newly graduated NPs role competence.

Structurally empowering work conditions such as access to information, support, opportunity, and resources for learning and growth (Kanter, 1977, 1977, 2008) are known to positively influence nursing students' learning and psychological empowerment (PE) (Lethbridge, 2010; Siu, Laschinger, & Vingilis, 2005). Formal educational programs, orientation and training programs, forming connections with senior people, and having formal mentors provide opportunities for empowerment over time (Kanter, 1977). Particularly for NPs, these conditions also include trust and respect, open communication,

greater autonomy, shared responsibility for solving problems, decision-making to effectively accomplish work tasks, and PE (Stewart et al., 2010). These conditions are achieved by providing: information about job activities, support to maximize work effectiveness, resources to accomplish work, and networks within the environment that maximize abilities to accomplish work (Kanter, 1977). In other words, Kanter's work provides an effective lens through which to understand NP development of role and PS competence.

1.5 Psychological Empowerment and Role Development

Psychological empowerment (PE) is a psychosocial organizational management theory drawn from the fields of psychology, sociology, social work, and education to capture how employees' beliefs and experiences relate to competent work performance (Spreitzer, 2008). PE theory has been advanced in the past 20 years, whereby the focus has been on a set of psychological states or set of beliefs that allow individual's to feel a sense of control in relation to job attitudes and effective performance (Spreitzer, 2008). In nursing, an expanded empowerment model with SE and PE research has provided evidence that a relationship exists between SE and PE in studies examining nurses work and education settings (Chang, Shih, & Lin, 2010; Knol & van Linge, 2009; Laschinger et al., 2001; Lethbridge, Andrusyszyn, Iwasiw, Laschinger, & Fernando, 2011; Siu et al., 2005; Stewart et al., 2010; Wagner et al., 2010). PE as an antecedent, is an individual's psychological response or intrapersonal motivation for one's work (Spreitzer, 2008). It is proposed that upon completion of an NP program, perceptions of personal work motivation, role competence for NP practice, as well as PS competence should be evident among the newly practicing NPs. Therefore, it is expected that empowering educational experiences will positively influence newly graduated NPs'

perceptions about work competence.

In summary, while there has been increasing interest in competence of NPs and PS in healthcare, there is limited research addressing perceptions of newly practicing NPs regarding the ability to enact role and PS competence. Furthermore, researchers have yet to investigate the influence educational SE and PE have on newly graduated NPs' experience with role competence and PS competence. Additionally, no research studies were found that examined how learning environments influence newly graduated NPs perceived PE.

1.6 Purpose

The purpose of this study is to test a model proposing that educational SE, as mediated by PE, will increase NP role competence and PS competence in newly graduated NPs who completed Canadian NP programs during the preceding two years.

1.7 Study Objectives

There are links among the concepts of educational SE, PE, perception of NP role competence, and PS competence in the broad literature. However, no studies that concurrently examine the interrelationships between and among these four constructs were located. Therefore, the aim of this research study is to examine factors related to NP competence as outlined by the following objectives: To determine the (a) the direct impact of structurally empowering learning conditions on newly practicing NPs' PE, NP role competence, and PS competence; (b) the indirect impact of SE on NPs' role competence and PS competence as partially mediated by PE; and (c) the relationship between NPs' role competence and PS competence. The hypothesized model for this study is addressed in further detail in Chapter 2.

1.8 Summary

The NP scope of practice is expanding, making it imperative to better understand how factors within their educational programs enable the development of NP role and PS competence. This study is the first to link empowerment theory of educational SE and PE with NP role competence and PS competence in new healthcare providers. In this study, nursing educational empowerment structures – such as information for knowledge that helps solve patient care problems, support to pursue learning needs, opportunities to learn new skills, and resources to help with learning needs (Siu et al., 2005) are examined from the context of learning conditions that influence the development of competence in newly-practicing NPs. With a foundation in empowerment theory, this study has the potential to identify factors relevant to the development of NP role competence and PS competence. Therefore, explicating newly graduated NPs' perspectives of empowerment and their perceived competence to provide high quality and safe care upon completion of their educational programs will provide valuable information for educators and healthcare leaders to refine existing NP curricula. The study findings will contribute to the growing body of knowledge regarding effective NP learning environments in nursing with a link to PE and role competence. Thus, this study makes an original contribution to the growing body of knowledge regarding factors that contribute to the development of NP role competence and PS competence.

1.9 Overview of the Dissertation

The study context, theoretical underpinnings, conceptual relationships, and potential contributions to knowledge have been briefly outlined in this introductory chapter. The focus of Chapter 2 is to address the theoretical and conceptual underpinnings of the study with an examination of the relevant literature pertaining to the

relationships between factors and concepts that frame this study. In Chapter 3, the methods used to conduct the study are described. Participant recruitment, ethical considerations, consent, data collection, indicator selection, indicator psychometric characteristics, and construct measurement for structural equation modeling (SEM) are discussed in detail. The results of descriptive analyses, tests of the NP role measure, and the results from the testing of the study's proposed model using SEM techniques are reported in Chapter 4. In Chapter 5, insights relating to the study findings, and their implications are discussed and recommendations for future studies are addressed.

2   Chapter Two: Literature Review

An examination of NP role competence is relevant for health services, employers, educators, and regulators in order to identify factors important for NP work. As the complexity of primary care health services has increased (Abbott, Dadabhoy, Dalphinis, Hill, & Smith, 2007), the responsibilities of health professionals have also increased, resulting in professional regulatory authorities intensifying competency and education requirements (Müller, 2013). Further, research is limited on the relationship between job characteristics and PS (Lievens & Vlerick, 2014). Although NP and PS research is abundant, the focus is on organizational systems, care settings, barriers or facilitators, and curricular initiatives. There is limited understanding of specific structural components in an education program of what might enhance or deter development of competence in the NP role and/or safe practices. To investigate these possible support structures, several existing theories will be examined to develop support for an *a priori* model.

In this chapter, the conceptual underpinnings for NP role and PS competence as outcomes of learning will be discussed. The use of Kanter's (1977) theory of SE in nursing education, which has been demonstrated to support and predict nursing education phenomenon, will be examined. Also presented is a separate theory, PE, that has been associated with the development of competent NP behaviours (Stewart et al., 2010), and as a mediating mechanism in baccalaureate nurses' learning (Lethbridge, 2010; Siu et al., 2005) and work environments (Laschinger et al., 2001) when associated with SE. Thus, the unique relationships among educational SE, PE, role and PS competence for NPs will be discussed, as no previous research studies have examined these four concepts together. The chapter concludes with a presentation of the hypotheses that guide this study.

Literature search strategy. The papers examined for this review were collected through computer and manual searches, journal and database content alerts, following Rosabeth Kanter's social media accounts and utilizing automated electronic related article tools in specific journals and electronic databases to obtain timely relevant articles of interest of the four study concepts. The sources include the Canada Thesis Portal, Cumulative Index to Nursing and Allied Health Literature, ProQuest Dissertations and Theses: Full Text, PsycINFO, Scopus, professional nursing websites (i.e., Canadian Nurses Association, CASN, and Sigma Theta Tau International), the Western University's' Library Catalogue, Twitter and Facebook. Journal searches included The Journal for Advanced Practice Nursing, Journal of the American Association of Nurse Practitioners, The Journal for Nurse Practitioners, The Nurse Practitioner, The Canadian Journal of Nursing Leadership, Journal of Nursing Education, and The Journal of Patient Safety. The key words used to conduct searches included: SE, empowerment, Kanter, Spreitzer, PE, nurse, advanced practice, NP, competence, scope of practice, autonomy, *Strong Model*, PS, PS culture, PS climate, adverse event, healthcare error, and quality care. Manual searches of selected articles reference lists were undertaken for articles that may have been missed due to the keywords used. Despite this extensive search, no studies were located specifically examining the relationship between empowerment and role competence or PS in newly graduated NPs. The review begins with a discussion of the theoretical literature and conceptual definitions, followed by a review of studies reported in the empiric literature that examined the major study concepts.

The theories used to support specification of the hypothesized study model focused the literature review and are considered in this chapter. The premise is that the development of role competence may be explained, at least in part, by existing

sociobehavioural theories. The theories and concepts presented are as follows, SE (i.e., opportunity, support, information, resources); PE (i.e., impact, meaning, self-determination/autonomy, and competence), NP role competence (i.e., *Strong Model* - direct comprehensive care, support of systems, education, research, and professional leadership domains), and PS (i.e., working in teams, communicating effectively, managing safety risks, understanding human and environmental factors, recognizing and responding to adverse events, and culture of safety).

2.1 Theoretical Review

Structural empowerment. Kanter's (1977) theory is a framework to understand structures needed for growth and learning that result in empowerment, that is, a perception about one's work that has been shown to positively influence work effectiveness. Access to empowerment structures facilitates learning a work role (Kanter, 1977). In her theory of Structural Power in Organizations, Kanter (1977) establishes that organizational structures, such as access to opportunity, support, resources, and information influences engagement in autonomous work behaviours and competence (Kanter, 1993, 1977, 2008), necessary for performing a role, such as that of an NP. For instance, opportunity can result in access to learning and growth, which in turn influences the development of competence (Kanter, 1977). Kanter's theory has been extended to learning environments, whereby students with access to educational empowerment structures (e.g.; gain new skills, perform tasks using new skills, gain problem solving help, or time to accomplish learning goals; Siu et al., 2005) develop autonomous work performance (Kanter, 1977). Kanter's theory of SE is a framework that is also applied to understand structures in learning environments that predict the development of competence in a student role (Siu et al., 2005). For example, educational SE opportunity

is similar to the original SE in that it measures learning new skills or completing activities that include tasks to use new skills (Siu et al., 2005). One method to appraise work performance is through competence assessment, which in turn can assist in developing human talent for work (Kanter, 1977). Thus, educational SE with self-perception ratings of specific NP competencies can potentially be a means to appraise role competence. Currently there are no studies of educational SE linked with self-perceptions of NP role competence. The constructs of opportunity, support, information, and resources of the SE theory are presented next.

Structural empowerment constructs and definitions. Several constructs are used in Kanter's (1977, 1993, 2008) theory to define SE and these have been applied to work and educational learning environments. SE opportunity, for instance, shapes behavior and attitudes toward a job when one has the ability to use a range of skills and knowledge in a job, learn new skills, and accomplish learning goals (Kanter, 1977). When one does not perceive opportunities for growth and learning in the workplace, self-esteem, job competence, and work commitment are lowered (Kanter, 1977). In contrast, when employees have higher perceptions of opportunity for growth and development, this can lead to higher self-esteem and greater competence in their work (Kanter, 1977). Thus, health care professionals, including nurses and NPs' perceptions of learning and development in an education program may influence their perceptions of role competence.

The SE learning construct of support refers to access to feedback or advice from established networks or sponsors (Kanter, 1977), such as educators commenting on well-performed tasks, or offering helpful problem solving advice (Siu et al., 2005). The construct of information, relates to knowledge or access to system information that

contributes to career success (Kanter, 1977); for example, nursing students' formal knowledge that helps to solve patient care problems (Siu et al., 2005). Resources include access to means that allow one to accomplish a task (Kanter, 1977), such as teacher availability to assist with learning (Siu et al., 2005). The conditions of SE are vital for the development of professional nursing practice and are the dimensions to measure the educational SE concept in this study. However, to date, no studies of educational SE and NPs were found.

Critique. Limitations of the social-structural empowerment theory include the organizationally-centric perspective, where an explanation of the individual perspective is absent (Spreitzer, 2008). According to Kanter (1977), SE stems from organizational structures and not from personal attributes. These structures are fundamentally consistent with principles for education and learning, that is, structures to learn and grow explain one's response to work to get the job done. For example, the degree of access to structures such as knowledge, information, and support develop work behaviours (Kanter, 1977). Given that work activities are developed as a result of opportunity, support, information, and resources, it is plausible that these SE dimensions explain the work behaviours for the NP role as a result of a formal education program. Theoretically, Kanter's (1977) theory offers support to understand that information, opportunity, support, and resource factors contribute to learning effectiveness for NP work activities.

Psychological empowerment. Spreitzer (2008), defines PE as an individual's sense of control in one's work, or intrinsic motivation required for a job. Theorists conceptualize PE as a relational concept of personal motivation that influences attitudes and behaviours for a work role (Conger & Kanungo, 1988; Spreitzer, 2008; Thomas & Velthouse, 1990). Additionally, PE is believed to mediate SE and work engagement (i.e.,

managerial effectiveness, employee effectiveness, employee productivity, newcomer role performance, or to perform effectively; Spreitzer, 2008). The result is that empowered employees are considered competent, effective and productive at their job, who display innovative behavior, and make decisions that fit within their scope of practice and work domain (Spreitzer, 2008; Thomas & Velthouse, 1990). Thus, PE is important for intrapersonal motivation to fulfill one's work role.

Psychological empowerment constructs and definitions. As a sense of orientation to work, PE is a belief state whereby impact, meaning, self-determination, and competence collectively contribute to intrinsic feelings of control in relation to work (Spreitzer, 2008). For example, as NPs acquire meaning and as they gain confidence, self-determination, and competence in role capabilities, a significant impact on the NP role should be evident. Meaning refers to the fit between individuals' work roles and their beliefs, values, and behaviors, or the importance an individual places on his or her work (Spreitzer, 1995a). Self-determination reflects autonomy in initiation and continuation of work behaviours and processes and is measured by perceptions of determining how to do a job or deciding about how to do work, for example, making decisions about work methods, pace, and effort (Spreitzer, 1995b). Confidence refers to one's belief in his or her capability to perform activities and skills, or the capacity to successfully undertake work roles (Spreitzer, 1995b), measured by perceptions of mastering job skills. Impact is the perception of the degree of control one holds within her or his work environment (Spreitzer, 1995b). Together, the four PE cognitions are viewed as a whole to create an active orientation and sense of control to one's work role. Thus, one might infer that the measurable dimensions of PE could result in competent

attitudes and behaviours for NP work, yet there are no studies of newly graduated NPs to support this premise.

Critique. PE has origins with job enrichment theory, yet it is limited as an individually-centric orientation to one's work role (Spreitzer, 2008). PE theory originated in organizational business, but it has also been used in nursing research to examine work and learning. Although PE can explain intrinsic feelings related to work role competence, the relation to role specific NP or PS competence has not been studied. PE was selected as a construct in this study because PE has been shown to be an important factor for nurses' work and education. Further, this study may help to better understand relationships of competence and PE in new healthcare providers, such as NPs.

2.2 Competencies

Competencies are used as a mechanism to evaluate nursing programs and students (CASN, 2012a). In the context of health care professionals, competencies are itemized aspects or components needed to fulfill a role (King & Anderson, 2012). They are linked to specific tasks of grouped categories or delineated domains. In the proposed study, two different competencies are discussed, NP role competencies as a means to define NP work (Canadian Nurses Association, 2010) and PS competencies which apply to a broad range of healthcare professionals (Ginsburg et al., 2013). The competency-based advanced practice nursing frameworks, as these pertain to NP role competence, will be discussed in the following section. Literature pertaining to the NP role and PS competence will also be addressed.

Competency-based advanced practice nursing frameworks. As standards grow worldwide, there are a considerable number of competency-based frameworks that identify common traits in advanced practice nursing (Sastre-Fullana, De Pedro-Gómez,

Bennasar-Veny, Serrano-Gallardo, & Morales-Asencio, 2014) to decrease role ambiguity and define competencies for NPs. For example, Brykczynski (1989) examined clinical NP practice to identify common domains and competencies (e.g. diagnostic/patient monitoring functions, administering/monitoring therapeutic intervention and regimes, teaching/coaching functions). This early foundational work assisted with refinement of the advanced practice nurse role, yet today, the Brykczynski model does not capture the full scope of practice for NPs. Another example is the Schuler (Shuler & Davis, 1993a) framework, with a focus on clinical encounters to diagnose, prescribe and treat disease (Calnan, Robinson Vollman, & Martin-Misener, 2005). The Schuler model was innovative when developed in the late 1980s in illuminating a wholistic nursing wellness and joint decision processes versus a medical model for NP practice (Shuler & Davis, 1993a, 1993b; Shuler & Huebscher, 1998); however, expected research and leadership domains of NP practice are absent in this model. Advanced nursing practice models range from detailed clinical practice models focused on clinical services (Brykczynski, 1989; Shuler & Huebscher, 1998) to somewhat abstract conceptualizations that attempt to capture the evolving scope of NP (Brown, 1998).

In the 1990s, the *Strong Model* was developed to delineate advanced nursing roles in accordance with standards for advanced practice and job descriptions for NPs and clinical nurse specialists (CNS; Mick & Ackerman, 2000). Since the inception of the *Strong Model,* continued development to delineate advanced practice nurse competencies has occurred (Chang, Gardner, Duffield, & Ramis, 2010; Doerksen, 2010; Elliott & Walden, 2014; Gardner, Chang, Duffield, & Doubrovsky, 2013; Maloney, 2005), and this model is viewed as a useful framework to clarify advanced nurse roles. This model has also been used in Canadian health care settings for advanced practice role delineation

(Doerksen, 2010; Health Sciences Centre Winnipeg, n.d.; LeGrow, Hubley, &

McAllister, 2010; Mackenzie Health, n.d.; Maloney, 2005; Micevski et al., 2004).

Competency-based education. Competency-based conceptual models have been

developed to provide consistency for nurse regulation and education (Stanley, Werner, &

Apple, 2009; Wearing, Black, & Kline, 2010), where the goal of both is to ensure

provision of competent care. Competency-based education is used to provide standards

for health professionals to measure their own competence in education, to inform

curricula, and for employment job descriptions and performance assessment (O'Connell,

Gardner, & Coyer, 2014). Competency-based nursing models are used to support

professional practice often with a schematic description of a theory or system that depicts

nursing practice (Elliott & Walden, 2014). In Canada, the NP core competency

framework was developed in collaboration with nurse regulators and NPs from across

Canada to inform regulation and education processes (Canadian Nurses Association,

2010). The *Strong Model* (Figure 1; Ackerman, Norsen, et al., 1996) is one competency-

based framework with dimensions common across countries and in Canada. In addition

to encompassing international competency dimensions (Sastre-Fullana et al., 2014), a

content analysis of the *Strong Model* supports that the domains of practice subsume

Canadian NP competencies (<u>Appendix A</u>).

Nurse practitioner competencies and definitions. NP role competencies are the

capabilities required for NP's practice as advanced practice nurses. The competencies

include direct comprehensive care, support of systems, education, research, and

professional leadership, all of which enhance role clarity and expected practice

performance. Empowerment, collaboration, and scholarship are concepts that underpin

NP practice (Canadian Nurses Association, 2010) and are operational throughout each

role function in the *Strong Model* (Ackerman et al., 1996). The *Strong Model* suitably

conceptualizes hallmarks of NP practice in Canada, such as the domains of clinical

practice, collaboration, research, and leadership (Canadian Nurses Association, 2010).
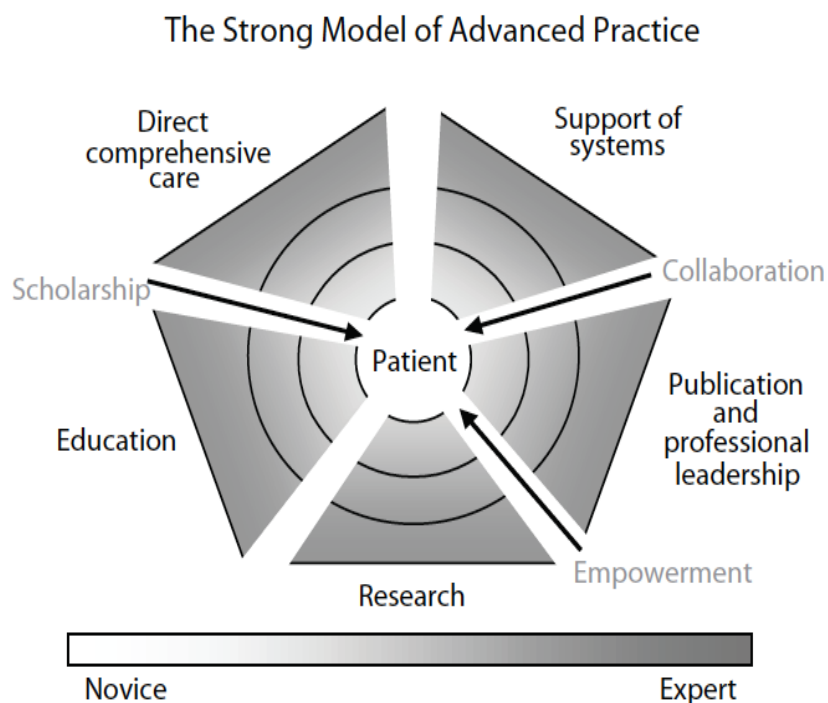
Figure 1 Competency-based framework delineating advanced practice, originally
described in the literature by King and Ackerman (1995) to clarify the role of NPs as
advanced practice nurses. The concepts important for role activities were advanced by
(Ackerman et al., 1996, p. 69) with role development based on Benner's Novice to Expert
continuum to identify nurses at different levels of skill acquisition.

The NP direct comprehensive care domain contains activities carried out on

behalf of the individual client's specific needs, which include a range of assessments and

interventions performed by advanced practice nurses, including NPs, such as: conducting

and documenting a patient history and exam, making a diagnosis, or initiating diagnostic

tests (Mick & Ackerman, 2002). The support of systems domain activities include

projects or presentations, quality improvement initiatives, establishing and evaluating

standards of practice, and promoting advanced practice nursing (Ackerman et al., 1996).

The education domain is used broadly to address formal and informal teaching activities

with other caregivers, students, and clients related to health and illness (Ackerman et al., 1996; A. Chang et al., 2010) – an example that fits into the education domain is patient and family teaching. In Canada and in the *Strong Model*, the research domain requires investigating and contributing to evidence-based practice as fundamental to direct patient care (Canadian Nurses Association, 2010). This domain, for example, includes participating in committees that investigate and monitor patient care practices in order to improve quality care. The professional leadership domain includes promotion and dissemination of nursing and healthcare knowledge beyond the individual practice setting (Ackerman et al., 1996; Canadian Nurses Association, 2010). Serving as a resource committee member or consultant to the institution or community is an example of the professional leadership domain (Ackerman et al., 1996). A content analysis of the Canadian Nurses Association core NP competencies and the *Strong Model* domains of advanced practice illustrate the common core competencies between the domains and dimensions of NP practice (Appendix A).

Empowerment is central to the *Strong Model* and is consistent with a flattened organizational structure to allow individuals to make independent autonomous decisions within a defined scope of practice to ensure patients receive expert and timely care (Ackerman et al., 1996). Empowerment represents information, beliefs, values, and judgments with confidence (Ackerman et al., 1996). Scholarship is constant inquiry that requires clinical confidence to promote investigation and evaluation (Ackerman et al., 1996). Collaboration reflects the unique skills and abilities (cooperation, assertiveness, responsibility, communication, autonomy, and coordination) of diverse disciplines that contribute to excellent patient care and not merely a sole care provider (Ackerman et al., 1996), for example teamwork. The unifying concepts are important role functions for all

domains of advance practice.

Critique. Nursing conceptual models are sets of general ideas that provide perspectives on the concepts and empirical indicators derived from practice phenomena to reflect reality (Benner, 2000), such as advanced practice nurse concepts in the *Strong Model*, derived from observations of NP practice (Ackerman et al., 1996). The conceptualization and development of advanced practice nursing is characterized by the use of competencies and nursing knowledge (Sastre-Fullana et al., 2014), as in the *Strong Model* that identifies NP role competencies. These core competencies are also established in the Canadian Nurses Association NP competency framework. Uniformity between nursing conceptualizations and practice provide theory structure and refinement as nursing observations of direct clinical practice, collaboration, research, and leadership concepts are tested. The refinement of nursing theory is important, as criticism that NP education and the role are developed on principles similar to those of medicine exist (Browne & Tarlier, 2008; Chikotas, 2009; Rashotte, 2005). Examining the NP role, framed in the *Strong Model*, will add to a body of literature to differentiate nursing from medicine while advancing nursing theory for the development of the NP role. A study framed within a nursing conceptual model that corresponds to legislative, educational, and NP role competencies is needed.

Patient safety competence. The fourth concept for this study is PS competence, or the actions, attitudes, and behaviours that demonstrate best safe care practices across health disciplines to reduce unsafe acts within the healthcare system (Ginsburg et al., 2012). International and national studies in aviation and nuclear power have helped to inform and better understand PS in the healthcare system (Modak, Sexton, Lux, Helmreich, & Thomas, 2007; Sexton, Thomas, & Helmreich, 2000). Errors in systems,

particularly provider attitudes about safety and interpersonal interactions (i.e., human factors), can aid in identifying strengths and weaknesses in healthcare systems (Sexton et al., 2000). There is evidence that education can influence PS behaviors and attitudes, such as adverse event reporting (Ausserhofer et al., 2013), that in turn affect system PS. However, it is known that under-reporting in primary care occurs (Kingston-Riechers et al., 2011), with limited knowledge about NPs' competence in PS. Frequently, health professional education programs focus on entry-to-practice regulatory competencies (Kendel, 2014), whereas a study of newly graduated NPs self-perceptions of PS competence may shed light on the reporting of adverse events for NPs or in learning principles of PS competence.

Patient safety competency definitions. PS perceptions are captured through care provider attitudes, making use of the six key constructs: working in teams, communicating effectively, managing safety risks, understanding human and environmental factors, recognizing and responding to adverse events, and culture of safety (Ginsburg et al., 2012). These best practice constructs are important for NPs who collaborate and consult with diverse disciplines to advance excellent patient care. The working in teams constructs includes activities of collaboration with other healthcare professions, where perceptions of power differences, conflicts, debriefs after adverse events, and engagement with patients are central to team functions (Ginsburg et al., 2012). Activities surrounding communicating effectively include clarity and consistency of communication with patients, effective communication with other healthcare providers, and effective verbal and nonverbal communication to prevent adverse events (Ginsburg et al., 2012). The domain involved with managing safety risks recognizes situations where safety problems arise, identifies and implements safety solutions, and

anticipates and manages risk situations (Ginsburg et al., 2012). Of importance to this study, with educational SE as an antecedent, is that confidence grows when one can recognize what can go wrong and thus consider alternatives for mitigation (Kanter, 2014), such as indicated by the PS factor recognizing and responding to adverse events.

Next, the understanding human and environmental factors constructs addresses fatigue, safe application of technology, workflow ergonomics, and resources (Ginsburg et al., 2012). The recognizing and responding to adverse events constructs measures the ability to recognize adverse events or close calls, reducing harm and risk, disclosing adverse events, and participating in analysis, reflective practice, and planning to prevent reoccurrence (Ginsburg et al., 2012). Culture of safety addresses attitudes related to the health system, such as asking questions, and speaking-up (Ginsburg et al., 2012). These constructs reflect a Canadian perspective that encompass worldwide best practice competencies from international professional bodies and the WHO's PS frameworks for the purpose of measuring health practitioners self-perceptions of safe patient practices (Bressan et al., 2015; Ginsburg et al., 2013). One goal of identifying PS competencies is to ensure health professionals are proficient (Wong, 2014), thus, this study will add to literature in examining perceptions of newly graduated NPs competence in PS.

Critique. Competence and confidence in the advanced practice nurse role is a result of formal education programs (Jones, 2005), where education programs provide critical experiential opportunities for learning, acquiring knowledge, skill, autonomy, and socialization necessary for mastery of professional roles (Alber et al., 2009; Brykczynski, 2012). Health professional's beliefs are entrenched within the culture of learning and professional socialization, where opportunities for learners to apply knowledge leads to greater levels of confidence. The examination of PS competence self-perceptions in

students is important, as it is unlikely that students will apply PS competencies if the teacher or clinical mentors are not applying the competencies (Kendel, 2014).

The notion of competence is important, not only to determine if practitioners perform their tasks, but also to determine if similarities or differences exist among attitudes that contrast with behaviors or skills for PS in health professional graduates. Thus, addressing newly practicing NPs' perceptions of competence is essential to provide information to decision makers for planning curriculum to address gaps between what is occurring and what the larger system assumes is happening. Identifying gaps in the development of role competence and best PS practices will inform educators, practitioners, or researchers on where to focus their attention.

2.3 Literature Review

Based on the empiric literature, the relationship between empowerment and competence is addressed. The literature search associated with the SE and PE constructs generated numerous empirical studies associated with education, nurses or healthcare but few studies of NPs or PS competence together and none in a population of newly graduated NPs. The literature examining empowerment antecedents, mediators and outcomes is presented first, followed by the literature related to NP role competence and PS competence.

Psychological empowerment as a mediator. In predictive models, the positive effect SE has on outcomes can be explained, at least in part by PE acting as a mediator. The mediator model helps explain how and why external contingencies, such as SE, lead to behaviour outcomes (Baron & Kenny, 1986). There is substantial literature to suggest that relationships exist with SE when PE is a mediator for outcomes important in nursing (i.e., burnout, job satisfaction, organizational commitment, work attitudes (L. Chang et

al., 2010; Hochwälder, 2007; Knol & van Linge, 2009; Laschinger et al., 2001) and healthcare (i.e., patient satisfaction (Bonias, Bartram, Leggat, & Stanton, 2010). Additionally, PE as an antecedent is appropriate for a study of new healthcare providers, given the concept has been previously linked to newcomer role performance, role clarity, competence, orientation to a work role, innovative behavior, and for decision-making abilities that fit within a scope of practice and work domain (Spreitzer, 1996, 2008). Thus, structures such as information, support, resource, or opportunity maybe important for the development of competence; yet, feelings, such as, confidence or self-determination may act as a mediator in the development of competence.

Structural empowerment and psychological empowerment. The individual reaction to SE results in higher levels of PE in NPs (Stewart et al., 2010), undergraduate nursing students (Lethbridge et al., 2011; Siu et al., 2005) and RNs (Knol & van Linge, 2009; Wagner et al., 2010). Furthermore, lower levels of PE are related to role ambiguity (Spreitzer, 1996), where role clarity – such as delineated job tasks or competencies – relates to higher SE and PE (Kanter, 1977; Spreitzer, 2008). As role clarity is established, and one has greater belief in his or her capability (intrinsic motivation), feelings of confidence in the capacity to do work increases (Spreitzer, 1995a), where positive work attitudes relate to positive work and newcomer role performance (Spreitzer, 2008). Thus, for new graduate NPs, role competencies are important for role clarity, positive work performance, and confident attitudes. Moreover, the examination of possible linkages between these variables is useful to better understand the theoretical link and directionality of the relationships between SE and PE, which has not been examined previously in newly graduated NPs.

Structural empowerment, psychological empowerment and nursing education. Since 2005, educational SE research has been of interest to theorize a direct antecedent relationship of the dependent variable, that result in positive outcomes for educating student nurses. For instance, Siu (2005) measured how educational SE (i.e., information, support, opportunity, resources, and power) affected conventional lecture learning (CLL; n=67), problem based learning (PBL; n=41), and PE (i.e., meaning, confidence, autonomy, and impact) in fourth year baccalaureate nursing students. PBL is an education strategy where small groups of students work as a collective in self-directed learning, whereas, CLL is teacher-centred with limited student participation in learning (Siu et al., 2005). Siu (2005) found that students in the PBL program had significantly higher perceptions of educational SE in their learning environments than did students in the CLL program. The CLL group, which possessed greater access to time and human resources for learning, experienced greater PE. In the PBL group, educational SE was significantly related to all dimensions of PE subscales, except confidence, and related most strongly to meaning in student learning (r = 0.60, p<0.001), in addition to demonstrating a strong relation to self-determination (r= 0.46, p<0.001). Educational SE and PE related positively in both groups of nursing students for PBL (r=.58, p<0.01) and CLL (r=.40, p<0.001; Siu et al., 2005). PBL students demonstrated greater clinical problem-solving abilities, learning effectiveness, increased student motivation, confidence, self-directed learning, and significantly greater problem-solving abilities than students in a CLL program (Siu et al., 2005). Siu et al. (2005) found that educational SE enhanced successful learning and increased students' motivation, confidence and self-direction for learning. This suggests that, the link between positive perceptions of

educational SE and PE in learning environments may motivate learning, such as learning the role of an NP.

Educational SE is also the antecedent theory that Livsey (2009) used in a study to examine 243 nursing students' caring self-efficacy (i.e., ability to express or develop caring) and professional nursing practice behaviours (i.e., high, middle, and low levels of professional clinical autonomy) in clinical practice environments. Students' perceptions of educational SE in the clinical learning environment, mediated by caring self-efficacy, impacted professional nursing practice behaviours (Livsey, 2009). The concept of caring self-efficacy was found to be an important precursor to professional practice autonomy (Livsey, 2009), an important behaviour for an NP. There was a direct relationship between student perceptions of educational SE in the clinical learning environment, and self-reported professional nursing practice behaviors. Thus, educational SE may be an important antecedent for the development of NPs professional practice competence.

Lethbridge (2010) conducted a nonexperimental predictive study of the positive relationship between educational SE, as an antecedent, to reflective thinking, mediated by PE, for 510 third-year nursing students in the classroom and practice environments over a one year time period. In this study, students' perception of educational SE had significant direct positive path to PE *in the classroom* ($b = 0.07$, p<0.05) and *practice learning environments* ($b = 0.02$, p<0.05). Lethbridge not only found positive relationships of educational SE and PE but students who experienced greater access to educational SE experienced greater changes in PE over time that led to higher scores in the outcome, reflective learning. Thus, it is possible that newly practicing NPs who experience positive educational SE will hold higher perceptions of PE that may also result in higher levels of NP role and PS competence.

In a cross-sectional survey, Babenko-Mould et al. (2012) tested a model of educational SE experiences and nursing students' self-efficacy (SSE) for professional practice (i.e., enhancing meaningfulness of work, encouraging participation in decision making, expressing confidence in high performance, facilitating goal accomplishment) and providing autonomy from bureaucratic constraints and professional practice (i.e., nurses' behaviours necessitated *due to* bureaucratic structure and its constraints, and nurses' behaviours *hindered by* bureaucratic structure and its constraints). SSE is consistent with the dimensions of PE used in the current study, for example meaning, self-determination, confidence, and impact. Concurrently, she examined 46 clinical teachers' and 293 nursing students' perceptions of empowering behaviours. In testing the effect of educational SE (teacher and student) on students' perceived SSE and professional practice, there was a statistically significant direct effect on SSE for professional practice (students' perceived teacher SE, ß=0.266, $p < 0.001$) and on SSE for professional practice (students perceived SE, ß=0.402, $p < 0.001$), thus, where SE increased so did SSE for professional practice. Educational SE teacher behaviours (SETB; including enhancing meaningfulness of work, encouraging participation in decision making, expressing confidence in high performance, facilitating goal accomplishment, providing autonomy from bureaucratic constraints), had a positive indirect effect (ß=0.176, $p < 0.001$) on SSE for professional nursing practice through students' perceived educational SE. Although the clinical teacher sample size was small, the relationships for educational SE in students and clinical teachers influenced SSE and professional practice. These studies suggest that clinical problem solving, professional nursing practice behaviors, and structurally empowering educational environments motivate nursing students to practice in accordance with professional standards, such as

competencies in this study.

Structural empowerment and patient safety. In a study of nursing unit safety culture, the effect of reporting errors from 158 nurses provides evidence of a relationship between nurses' error reporting and learning (Moodey, Pesut, & Harrington, 2006). Organizational learning (r=0.209; p<0.01); overall perceptions of safety (r=0.173; p<0.01); supervisor or manager safety actions and expectations (r=0.233; p<0.01), consistent error feedback and communication (r=0.349; p<0.01), and openness of communication (r=0.270; p<0.01; positively correlated to nurses error reporting (Moody, Pesut, & Harrington, 2006). Similarly, adverse event reporting for 1630 hospital RNs' was linked to PS using the safety organizing scale that measures items such as talking about mistakes and learning from them (Ausserhofer et al., 2013). In addition, PS learning related to job characteristics is important for nurses when reporting adverse events, as knowledge-related job characteristics mediate the relationship between safety compliance and participation (Moody et al., 2006). For example, in a study of 152 nurses, Lievens and Vlerick (2014) found that the more knowledge-related job characteristics that were reported, the more nurses participated in safe performance measures (β=0.33, p<0.001). The 54 item safety compliance scale used by Lievens and Vlerick included items such as: organizational learning, error feedback and communication, overall perceptions of safety, openness of communication, frequency of event reporting, and teamwork across units. To support the relationships further, when PS culture was a predictor variable in multilevel modeling of 1405 hospital nurses, the education level of nurses was significantly related to adverse event reporting (Kirwan, Matthews, & Scott, 2013). The research findings from these large nursing studies, suggest that SE is important to develop PS given that learning and knowledge were

important for adverse event reporting, in turn increasing safety compliance. Additionally, nurses' knowledge of their job and their education level influenced engagement in PS.

Structurally empowering environments are important as PS was linked to SE in a study of 101 RNs' perceptions of a hospital safety grade and 14 aspects of PS culture – for example, reporting events, communication, perceptions of safety, and teamwork (Armellino, Quinn Griffin, & Fitzpatrick, 2010). Higher total SE scores correlated to higher hospital safety grade scores, and lower SE scores correlated with a lower hospital safety grade (Armellino et al., 2010). More specifically, SE correlated with higher correlations for overall perception of safety ($r=0.32$, $p<0.05$), organizational learning and continuous improvement ($r=0.34$, $p<0.01$), teamwork within units ($r=0.35$, $p< 0.05$), communication openness ($r=0.28$, $p<0.01$), feedback and communication about error ($r=0.41$, $p<0.001$), and teamwork across units ($r=0.24$, $p<0.05$; Armellino et al., 2010). Armellino et al. (2010) found that a correlation with the number of PS events reported had relevance with a non-punitive response to error ($r=0.35$, $p<0.001$). The result from this study suggests PS may have a dependent relationship on SE, which requires further investigation.

Similarly, in a sample of 40 nurses, Armstrong and Laschinger (2006) found that magnet hospital characteristics (i.e., nursing participation in hospital affairs, nursing foundations for quality of care, nurse manager ability, leadership, support of nurses, staffing and resource adequacy, and the degree of collegial nurse/physician relationships) were associated with structurally empowering work environments which improved nurses' perception of PS climate (i.e., teamwork, safety climate, perception of management, job satisfaction, working conditions, and stress recognition; $r=0.60$; $p<.0001$). PS climate was most strongly and significantly related to access to support

(r=0.51, p< 0.01), informal power (r=0.43, p< 0.01), and opportunity (r=0.45, p<0.01; Armstrong & Laschinger, 2006). Similarly, in a larger study of 153 acute care RNs, a link was reported connecting PS culture activities with SE, magnet hospital characteristics, and PS (i.e., learning from mistakes, listening to concerns, and reporting safety concerns; Armstrong, Laschinger, & Wong, 2009). PS related strongly to support (r=0.56; p<0.0001) and formal power (r=0.54; p<0.0001), with a weaker relationship to opportunity (r=0.22; p<0.003; Armstrong et al., 2009). Evidence from studies of nurses therefore suggests that SE and PS are linked, and for the purpose of this study, suggests that education plays an essential role in the relation to or development of PS competence.

Structural empowerment, psychological empowerment, and nurse practitioner role. Stewart (2010) demonstrated the relationship of SE and PE in 74 NPs respondents using the conditions of work effectiveness questionnaire II and the psychological empowerment scale (PES). SE was significantly related to total PE scores (r=.24, p<0.05), and to PE impact (r=.33, p< 0.01) factor. Overall, PE was significantly related to SE support (r=.25, p<0.04) and opportunity (r=.25, p<0.03). The PE subscale impact was significantly related to SE opportunity (r=.31, p <0.01), and access to information (r=.36, p<0.01). Access to SE information and PE competence was significantly correlated (r=.25, p<0.04). Stewart's (2010) significant correlation findings between SE and PE in a small sample of NPs is the only study found focused on NPs, however, others have reported similar findings in studies of nursing students, suggesting further investigation using NP participants is warranted.

Psychological empowerment, mediation, and patient safety. In healthcare, positive relationships were found between PE and high performance work systems (i.e., employment security, selective hiring, extensive training, self-managed teams and

decentralized decision making, information sharing, transformational leadership, and

high-quality work) and perceptions of patient care quality (i.e., courtesy, helpfulness,

responsiveness and willingness to listen, the provision of information by staff,

communication among staff members, the perceptions of safety, privacy, and being

respected by patients) among 541 hospital employees (i.e., management and

administration, medical services, nursing, and clinical and non-clinical support services;

Bonias et al., 2010). The concept of high performance work systems aligns with

dimensions of SE in the current study (i.e., information sharing and training). The

dimension of patient care quality relates closely to dimensions of PS (i.e.,

communication, and perceptions of safety). PE was related to quality patient care

perceptions (ß=0.16, p<0.01), and PE as a mediator between high performance works

systems and quality of patient care, led to significantly higher perceptions of quality

patient care (ß=0.19, p<0.01). Meaning (ß=0.21, p<0.01), competence (ß=0.12, p<0.05),

and autonomy (ß=0.22, p<0.01) were important for predicting higher levels quality of

patient care. Therefore, PE may be an important dimension to develop PS competence,

or to mediate the relationship between educational SE and PS.

Further, Knol and van Linge's (2010) study of SE, PE, and innovative behavior in

519 RNs demonstrated positive relationships among the study concepts where PE

mediates the relationship between SE and innovative behavior (i.e., recognition of

problems, generation of ideas, mobilization of support, and realization of ideas;

consistent with PS dimensions in this study). Similar to studies with nursing students

(Lethbridge, 2010; Siu et al., 2005) and NPs (Stewart et al., 2010), the effect of SE on PE

was positively (r=0.45, p<0.01). In Knol and van Linge's (2009) study, PE was also

important for a statistically significant relationship to innovative behaviour (r=0.53,

p<0.01), where impact was the most important sub-variable. Additionally, PE partially

mediated the relationship between the SE and innovative behavior, where with PE the

relationship became weaker; thus, PE is partly responsible for the influence of SE on

innovative behavior. Data from this study support the idea of a link between SE, PE as a

mediator and PS, where educational SE mediated by PE may increase PS. Moreover,

nurses with higher levels of PE showed more innovative behavior (i.e., recognition of

problems, mobilization of support, etc.) than those with lower levels of PE. In addition to

the previously discussed nursing education studies, Knol and van Linge's evidence

supports the mediation effect of PE in SE and innovative behaviour research with nurses.

Hochwalder's (2007) study of 1356 RNs and nursing assistants demonstrated that

PE mediated the relationship between the psychosocial work environment (i.e., demand,

control and social support) and burnout (i.e., emotional exhaustion, depersonalization,

and personal accomplishment). The mediating effect of PE was apparent for emotional

exhaustion, depersonalization and personal accomplishment where mediation was

especially apparent between the psychosocial work environment control dimension and

burnout. The current study provides support for the mediating role of PE in the

environment, that is, the learning environment. Evidence supports a positive mediating

affect for PE in nursing studies, with or without SE as an antecedent, which results in

positive learning outcomes or work behaviors.

These studies of nurses and nursing students in large and small samples together

provide evidence of a link between SE, PE, nursing work, and PS; yet, no previous

research exists on newly practicing NPs that attempts to link these concepts. PS research

within healthcare and nursing has been a priority since the Institute of Medicine report of

deaths and preventable healthcare error in 1999 (Kohn, Corrigan, Donaldson, & Eds.,

2000). To date, no studies were found that linked role competence and PS competence together in newly graduated NPs.

Nurse practitioner role studies. Recent studies of the NP role address practice autonomy. Bahadori and Fitzpatrick (2009) used the Dempster Practice Behaviour Scale (DPBS), a reliable scale with a reported Cronbach's alpha of 0.95, to measure the concepts of readiness, empowerment, actualization, and valuation with self-determination, autonomy, confidence, collaboration, decision making power, mastery of skill, and job activities measurement items. A study of 48 NP respondents with 3 months to 17 years of experience, rated levels for autonomy and independence in role competencies delineated by the *Strong Model*. Higher levels of autonomy (i.e., autonomy in practice, use knowledge and skill without restrictions, decision-making responsibility and accountability, and value of practice) relate to higher *Strong Model* measures of clinical decision-making, skill, and accountability (Bahadori & Fitzpatrick, 2009). As autonomy is a dimension of PE, PE may be important for NP role competence.

Similarly, Cajulis et al. (2007) measured autonomy with the DPBS using percentage scales to rate competence, skills, and mastery (67.1%), empowerment (55.7%), decision-making, responsibility, and accountability (87.2%), and self-respect, achievement, and satisfaction (80.8%) in 54 acute care NPs. Higher perceptions of role skill and mastery (67.1%), as well as empowerment (55.7%) were related to higher levels of NP autonomy (Cajulis et al., 2007). Comparably, in constrained decision-making environments, autonomy was lower for NPs (ß=-0.169, p< 0.05; (Ulrich, Soeken, & Miller, 2003). Ulrich et al. (2003) reported that NPs from managed care settings who reported higher ethical concern (i.e. idealism: moral principles, norms, laws, avoiding harm to others and realism: actions based on the situation, circumstances, and individuals

involved) scores were likely to report lower perceived autonomy in practice (r =- 0.174, p<0.01) using the DPBS scale. Thus, autonomy is a key dimension of PE and overall SE that may in turn affect the NP role.

In a more recent study, Poghosyan, Boyd, and Knutson (2014), surveyed 278 primary care NPs work from New York State, using the Nurse Practitioner Primary Care Organizational Climate Questionnaire (NP-PCOCQ; reported Cronbach's alpha= 0.87 to 0.95). The purpose of the measure is to evaluate the degree to which organizational characteristics (i.e., patient panel size, administrative and patient visit allocated time, and outcome measures of care) impact NP work (i.e., autonomy and independence of practice and teamwork). A significant relationship with NPs who perceived autonomy and independent practice was positively association to teamwork (r=0.67, p <.01), indicating NPs who freely apply knowledge within the NP scope of practice effectively collaborate with physician colleagues. That is, NPs do not need restrictive policies or supervising physicians to monitor NP scope practice for every patient detail. NPs who practice in rural areas, or held higher education, such as a doctorate of nursing practice, had slightly higher perceived levels of autonomy, independent practice, and teamwork. Thus, NP self-perceptions of autonomous practice impacts teamwork, specifically in relation to those in restricted practice, for example when an NP practices without a specific assigned patient panel as might be seen in a collaborative physician-NP practice. This is important, as effective teamwork is an integral dimension of PS to improve care outcomes.

Patient safety in nurses and nursing students. In a workplace study of 57 hospital nurses, AbuAlRub and Alhijaa (2014) measured safety culture (i.e., frequency of event reporting; overall perceptions of safety; supervisor/manager expectations and

actions promoting safety; organizational learning-continuous improvement; teamwork within hospital units; communication openness; feedback and communication about error; non-punitive response to error; staffing; management support for patient safety; teamwork across hospital units; and hands off and transitions) and hospital data for adverse events, acquired pressure ulcers, and patients' falls. Employees were required to complete an education program consisting of seven online modules that addressed PS content that included an introduction to PS, fundamentals of PS, human factor and safety, teamwork and communication, root cause and system analysis, communicating with patients after adverse events, and an introduction to the culture of safety. The participants' frequency of event reporting (54.2; 64.3. $p < 0.05$) and non-punitive response to errors (16.9; 26.2. $p < 0.05$) significantly improved in a post-test evaluation of the education program (AbuAlRub et al., 2014). Education as an antecedent is important for the development of PS, where examining self perceptions in newly practicing NPs, who are also RNs, may offer insight of PS competence between what is happening and what maybe assumed is occurring.

Furthermore, in a study of 714 bachelor of nursing students from a university setting in Ontario, confidence in learning PS in the classroom and clinical education setting over time was examined (Lukewich et al., 2015). Using the health professionals education in patient safety (H-PEPSS) questionnaire, students' reported that learning about PS and comfort in speaking up was lower than other dimensions of PS. Year two and year four respondents felt that clinical aspects of PS (i.e., working in teams, communicating effectively, managing safety risks, understanding human and environmental factors, and recognizing and responding to adverse events) were well covered in their program, yet approximately half of the respondents felt PS issues were

dealt with inconsistently by preceptors in the clinical setting. Furthermore, in clinical

settings, only 25 to 40% felt discussions of adverse events focused on system-related

issues, in contrast to, discussions focused on the individual most responsible for the

event, suggestive of a culture of blame. Lukewich et al.'s (2015) study demonstrates that

nursing student's self-reported confidence in learning about PS in the clinical setting

tended to decline with progression through the academic program, a finding similar to

that reported in a study of recent health professional graduates (Ginsburg et al., 2013).

Similarly, using the Italian version of the H-PEPSS, Stevanin et al. (2015)

examined 573 university nursing students' perceptions of PS knowledge, competence,

and experiences of adverse events. Alarmingly, more than one third of the student

respondents reported having experienced an adverse event or a close call during their

clinical training, more frequently in the second and third-year of the program. The

incidence of adverse events/close calls was approaching 0.5 events/1000 hours of clinical

learning. This finding is significant, as there is limited research of adverse event

occurrences among health professional students, with most occurrences reported in acute

care hospital setting employees. As found in the Lukewich et al. (2015), and Ginsburg et

al. (2013) studies, PS changed across time with first-year students reporting higher PS

knowledge and competence than students in the second-year, where about half of the

students surveyed perceived internship environments as unsafe and were less confident

about the sociocultural aspects of PS. The lack of confidence in the sociocultural aspects

of PS (i.e., culture, teamwork, communication, managing risk and understanding human

factors) has been found lacking in studies of health professionals (Ginsburg et al., 2013).

The findings from these related studies provide support to investigate PS competence in

newly graduated NPs, as no studies have addressed factors related to PS in these

healthcare providers.

Lastly, Doyle et al. (2015) studied 255 medical students and 141 postgraduate trainees perceptions of PS using the H-PEPSS to measure self-perceptions of PS competence. Similar to the Ginsburg et al. (2013), Lukewich et al.'s (2015), and Stevanin et al. (2015) studies, Doyle et al. (2015) found that medical students and postgraduate trainees were less confident in sociocultural aspects of PS (i.e., teamwork, managing safety risk and culture of safety) and that confidence in most aspects of PS competence decreased over time. A majority of respondents reported difficulty questioning the decisions or actions of those with more authority and approximately two-thirds of medical students and one-third of postgraduate trainees did not feel they could approach someone engaging in unsafe patient care (Doyle et al., 2015). Worth noting, senior year students spend the majority of their time in the clinical setting where confidence in teamwork and cultural aspects of safety are more strongly influenced by the PS culture in those clinical settings. Similar to Lukewich et al. (2015) the clinical setting and preceptors may affect students' self-reported PS competence. Further, more than 40% of medical students and 60% of postgraduate trainees reported that discussion of adverse events takes a system rather than a blame focus. That is, upon graduation and immersion in the healthcare system setting, higher numbers of graduates identify that adverse event reporting takes a system focus such as identifying vulnerabilities in the healthcare setting that affect PS. Thus, PS competence changes over time in healthcare students and upon working in the healthcare system.

Learning environments help develop desired attitudes about PS in students. Yet, students' and nurses' skills and confidence in managing safety risk (i.e., error-reporting and disclosure and understanding human and environmental factors related to risk) have

been found to be lacking, especially in new health professional graduates (Doyle et al.,

2015; Ginsburg et al., 2013; Lukewich et al., 2015; Stevanin et al., 2015). Thus, both the

attitudes and knowledge for PS competence are important to examine because upon

completing an NP education program, one (i.e.; knowledge) may occur, while the other

does not (i.e., attitude).

2.4   Summary

In summary, it is clear that SE has an impact on nurses' professional practice

behaviours (i.e., role competency) and perception of PS competence. Further, there is

evidence to support that PE may mediate relations between SE and positive role

outcomes in nurses and nursing students (e.g., CLL, PBL, professional practice

behaviours, reflective thinking, work attitudes, satisfaction, and commitment). However,

there are limited studies of these concepts in new NP graduates, and none linking all four

of these important concepts. Given the need to develop competent safe healthcare

professionals, research focusing on components leading to empowerment and

development of competence in both role and PS areas in newly graduated NPs is timely.

A review of the existing theoretical and empirical literature provides initial support for

the objectives to determine: (a) the direct impact of structurally empowering learning

conditions on newly practicing NPs' PE, perception of NP role competence, and PS

competence; (b) the indirect impact of SE on NPs' role competence and PS competence

as partially mediated by PE; and (c) the relationship between NPs' role competence and

PS competence.

2.5 Hypothesized Study Model

The study hypotheses (H), therefore, are as follows:

H1, newly practicing NPs who are structurally empowered in their educational

environments report increased levels of PE.

H2, newly practicing NPs who are structurally empowered in their educational environments report increased levels of perception of NP role competence.

H3, newly practicing NPs who are structurally empowered in their educational environments report increased perceptions of PS competence.

H4, PE partially mediates the positive relationship between educational SE and perception of NP role competence.

H5, PE partially mediates the positive relationship between educational SE and perception of PS competence.

H6, newly practicing NPs who are competent in their role report increased levels of perception of PS competence (Figure 2).
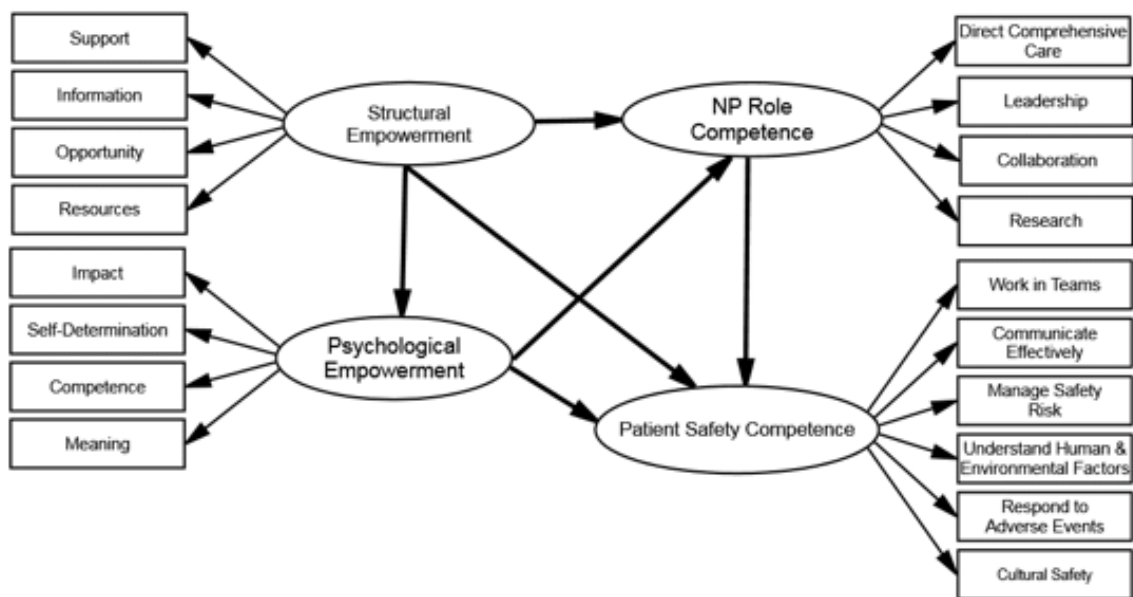
Figure 2 Hypothesized model being tested, the ellipse shape represents an unobserved latent variable, the rectangle shape represents second-order factor variables.

Model summary and gaps addressed. Based on the theories of SE (Kanter, 1977) and PE (Spreitzer, 1995a), the notion that conditions to learn a new skill (Kanter,

1977) lead to the development of confidence (Kanter, 1977; Spreitzer, 1995a) to accomplish autonomous work behaviours are antecedents for effective work roles, for example NP work. NP knowledge and skills delineated by nursing theorists and practice competencies are needed to guide education curricula, self-development, and practice. SE environments are a means that provide adequate conditions for learning competencies. In learning competencies, PE is important for internal motivation; for example, holding the belief in one's ability to do a job, or being in control of one's work (Spreitzer, 2008). Learning and motivation are important for the ability to accomplish specific professional tasks or NP competencies or PS competencies.

Professional role competencies are a means to identify learning needs and subsequently develop competence. Learning conditions cultivate beliefs that influence work capabilities and actions, which are defined by competencies, professional standards, or role tasks. As such, it is reasonable to investigate a hypothesized relationship between empowerment and competence. The development of role competence can be explained, at least in part, by learning experiences that result in one's ability to do a job, while simultaneously shaping attitudes and behaviours important for PS. Thus, research into role competence is important for healthcare quality assurance, as well as performance improvement. Results of investigating an integrated empowerment and competence model have the potential to provide information important to NP education providers, employers, and practicing NPs, while adding to our understanding of the links between empowerment, role development, and PS.

3   Chapter Three: Methods

In this chapter, the study design, data management, and analysis are described. The process for data management is addressed in relation to participant recruitment, consent, data collection, indicator selection, indicator psychometric characteristics and SEM. Ethical considerations are then reviewed. The chapter concludes with a summary of the methods used for the study.

3.1 Design

A non-experimental cross-sectional survey design was used to test the *a priori* hypothesized study model. The design was selected to determine the impact of educational SE mediated by PE factors on NP role competence and PS competence. SEM was used to examine the relationships between the study variables. SEM is an appropriate analysis technique for this study, as links among the constructs, educational SE and PE with perceptions of NP role competence and PS competence are theoretically reasonable. Evidence is available in the nursing research literature to support the plausible relationships. SEM is based on correlation and covariance matrices of variables, which are expected to have relationships with one another (Kääriäinen et al., 2011).

3.2 Study Sample and Size

The study includes a convenience sample of Canadian-educated NPs who completed an NP program during the preceding two years (Appendix I). An adequate sample size of newly practicing NPs in Canada for SEM was considered and confirmed as a method prior to data collection for the study. The required sample size anticipated for the study was based on SEM for the main statistical analysis. According to Kline

(2010), a minimum sample size (n = 200) is considered adequate for conducting SEM. In

Canada, a total of 680 students graduated as NPs in 2011 and 2012 (CASN, 2012b).

     Recruitment. All Canadian provincial nurse regulators and NP associations with

a cohort of eligible NP members were contacted for the purpose of recruiting participants

who completed primary care NP education programs in the preceding two years. To

account for a response rate of 30% to 50% (n = 204 to 340), which is typical of electronic

surveys (Kaplowitz, Hadlock, & Levine, 2004; Polit & Beck, 2016), all newly graduated

NPs in Canada were invited to participate to obtain an adequate sample size for this

study. Eligibility criteria included: (a) being a member of an NP association, or being

registered as an NP with the respective Canadian association or regulatory authority, (b)

having completed a primary care NP education program at a Canadian university during

the preceding two-year period, (c) having provided the Canadian association or

regulatory authorities, hereafter referred to collectively as agencies, with an address or

email address, and (d) having consented to participating in research studies with the

respective agency. Initial contact was made with each nursing agency to request policies

or procedures for research recruitment (Appendix C). A total of 20 eligible agencies

participated in recruitment of 680 potential respondents. Detailed records were kept for

all email or telephone communication dates, agency instructions, questions, and answers.

The 20 agencies were sent recruitment reminder notices at appropriate intervals (Figure

3). In some agencies, the request to recruit participants required application submissions

for approval by a board of directors, agency directors, or agency committees. Either the

agency sent the invitation directly to the eligible NPs due to confidentiality, or the

researcher sent the invitation to participants, depending upon the respective agency's

policy as it pertained to contacting eligible members for research. The invitation

included the link to the online survey, and a separate link to a prize incentive, as

explained in the informed consent instructions (Appendix D). Upon completion of

recruitment, data were exported to IBM® SPSS® software, version 23 (IBM® Corp.,

2015) program and AMOS® software, version 23 (IBM® Corp., 2015b) for data

analyses, and to test the study hypotheses.

```
                    ┌──────────────────────────────────┐
                    │   20 Eligible Nursing Agencies    │
                    │          (Appendix I)             │
                    │   n=680 potential participants    │
                    └──────────────────────────────────┘

        ┌──────────────────────────────┐
        │   3 recruitment strategies   │
        │     to nursing agencies      │
        └──────────────────────────────┘

┌──────────────────────┐  ┌──────────────────────┐  ┌──────────────────────────┐
│ 1. Email inviation, 2│  │ 2. Mail invitation, 2│  │ 3. Recruitment notices   │
│ reminder notices  to │  │ reminder notices to  │  │ posted with nursing      │
│     participant      │  │     participant      │  │ agency communication     │
│                      │  │                      │  │ tools to members         │
└──────────────────────┘  └──────────────────────┘  └──────────────────────────┘

                    ┌──────────────────────────────────┐
                    │  One point of entry to study      │
                    │  via html link to online          │
                    │           survey                  │
                    │     n=230 respondents             │
                    │     n=190 full responses          │
                    └──────────────────────────────────┘
```

Figure 3 Study recruitment strategies and phases flow chart.

The procedure to maximize response rates included a range of direct and indirect

recruitment strategies. An initial invitation and an informed consent letter with the notice

of prize incentives were sent to participants. All potential respondents received an

invitation, two reminder notices at one and two week intervals, an early incentive prize

(tablet computer), and a final incentive ($100; Appendix E) ballot for participants who

completed the survey, as strategies to increase the study response rate. Strategies

employed to increase response rates amongst NPs who may not receive an invitation

through a nursing agency included notices of the research project in agency newsletters,

webpages, and discussion boards (Appendix F).

3.3 Data Collection

All participants accessed the online survey page utilizing a web link included in

the emailed invitation. FluidSurveys® (2015), a secure online software program that

stores data on a protected server in Montreal, Canada afforded an online survey platform

to gather data. Participants' who met the inclusion criteria, and reviewed the online letter

of information (LOI), could click the 'next' button to begin the survey, therefore

indicating their implied consent to participate in the study. Participants could end the

survey at any time. The study data were exported from the software program for use with

Excel® Software (Microsoft Corporation, 2010), SPSS® Software for Windows

(Microsoft Corporation, 2010), and AMOS® (IBM® Corp., 2015b) upon completion of

data collection. To test the time required to complete the online survey, three NP pilot

participants completed the questions in approximately 15 minutes. The retrieved survey

data had no: (a) traceable links, (b) affiliation to nursing regulatory bodies, (c) affiliation

to nursing agencies, or (d) researcher-imposed tracking. The Manitoba Centre for

Nursing and Health Research (MCNHR) assisted with creating the online survey and

managed the incentive draws on behalf of the researcher.

3.4 Measures

The self-administered study survey that included 120 questions consisted of four

standardized, valid and reliable Likert-scale instruments for: (a) Conditions of Learning

Effectiveness Questionnaire (Siu et al., 2005), (b) the PES (Spreitzer, 1995b), (c) the

Modified-Strong-Advanced Practice Role Delineation tool (M-Strong-APRD; Chang,

Gardner, Duffield, & Ramis, 2011), (d) the H-PEPSS (Ginsburg et al., 2012), and (e) a

Table 1

Reported Results of Study Instruments Reliability

Instrument	Items per Subscale	Subscale	Cronbach's Alpha	Item Range
CLEQ – Educational Structural Empowerment			0.78–0.91	5 point scale
	7	Support	0.68-0.74	1 = none
	6	Information	0.70–0.73	3 = some
	5	Resources	0.60–0.76	5 = a lot
	6	Opportunity	0.75-0.76	
PES – Psychological Empowerment			0.62–0.84	7 point scale
	3	Impact	0.83	1 = very strongly disagree
	3	Meaning	0.81	4 = neutral
	3	Confidence	0.76	7 = very strongly agree
	3	Self-determination	0.85	
M-Strong-APRD – NP Role Competence			0.94	5 point scale
	16	Direct Care	0.95	0 = not at all
	9	Support of Systems	0.93	2 = some extent
	5	Education	0.83	4 = very great extent
	6	Research	0.90	
	6	Leadership	0.94	
	5	Domains of practice	0.83–0.95	
H-PEPSS – Patient Safety Competence			0.94	5 point scale
	3	Work in Teams	0.81	1=strongly disagree
	3	Communication	0.85	3 neutral/unsure
	3	Managing Safety Risks	0.85	5 = strongly agree
	2	Understand Factors	0.84	
	2	Recognize & respond to harm	0.81	
	3	Culture of safety	0.84	

Note. Results reported from a range of studies: CLEQ=Conditions for Learning Effectiveness Questionnaire (Babenko-Mould, Iwasiw, Andrusyszyn, Spence Laschinger, & Weston, 2012; Lethbridge, 2010; Siu et al., 2005), PES=Psychosocial Empowerment Survey (Kraimer et al., 1999; Lethbridge, 2010; Siu et al., 2005; Spreitzer, 1995b), M-Strong-APRD=modified Strong Advanced Practice Role Delineation tool (Chang et al., 2011), H-PEPSS=Health Professionals Education in Patient Safety (Bressan et al., 2015; Ginsburg et al., 2012).

sociodemographic questionnaire developed specifically for this study. The manifest variables in the study tools reflect the four theoretical concepts and 21 variables, and have demonstrated validity and reliability within nursing populations and nursing subjects (Table 1).

Educational structural empowerment survey. Instruments to measure SE include, the Conditions for Work Life Effectiveness (CWEQ; Chandler, 1986; Laschinger, 1996; Sabiston & Spence Laschinger, 1995) and CWEQ II (Laschinger et al., 2001), the CLEQ (Siu et al., 2005), the CWEQ II (clinical teacher; Babenko-Mould, 2010; Laschinger, n.d.), the CWEQ II ED (student; Babenko-Mould, 2010) and the CWEQ-ED (Lethbridge, 2010). In this study, the CLEQ (Siu et al., 2005) is used as the measure for the educational SE construct.

The SE measure has been modified for studies in nursing work environments (Cho et al., 2006; Laschinger et al., 2001; Laschinger, Sabiston, & Kutszcher, 1997; Laschinger & Havens, 1996; Wilson & Laschinger, 1994), and in nursing education studies (Babenko-Mould, Iwasiw, Andrusyszyn, Laschinger, et al., 2012; Jarvie, 2004; Lethbridge, 2010; Livsey, 2009; Sarmiento, Laschinger, & Iwasiw, 2004; Siu et al., 2005). Acceptable validity and reliability have been reported (Table 1). In addition to environmental conditions, the SE measures have demonstrated validity among differing study populations in nurses (L. Chang et al., 2010; Laschinger et al., 2001; Spence Laschinger, 2008), student nurses (Babenko-Mould, Iwasiw, Andrusyszyn, Laschinger, et al., 2012; Lethbridge, 2010; Livsey, 2009; Siu et al., 2005), new nurse graduates (Cho et al., 2006), and NPs (Almost & Laschinger, 2002; Stewart et al., 2010). The psychometric properties have been extensively tested for the past 15 years in nursing, and as a result of consistent reliability, researchers have reduced the CWEQ II SE measure to a 12 item

instrument for the dimensions of opportunity, support, information and resources (L Chang et al., 2010; Laschinger et al., 2001; Stewart et al., 2010). In this study, the 12-items CLEQ was used, thereby leaving out the two power dimensions (i.e. informal power and formal power).

Newly practicing NPs' perceptions of educational SE as applied to conditions for learning were measured using the CLEQ (Siu et al., 2005), originally developed by Chandler as the CWEQ (1986), modified to the CWEQ II by Laschinger et al. (2001), and adapted by Siu et al. (2005) for educational environments to measure nursing students' perceptions of educational SE and learning. Examples of items include "the chance to learn new skills", "formal knowledge that helps you to solve patient care problems", or "collaborating with teachers on learning activities". The instrument has 6 latent constructs to measure Kanter's (1977, 1993) concepts for organizational empowerment: access to support (7 items), access to opportunity (6 items), access to information (6 items), access to resources (5 items), informal power (4 items), and formal power (2 items), for a total of 30 items. The first three items for support, opportunity, information, and resources were sufficient to capture the latent concept and for SEM analysis in this study, similar to studies of work effectiveness (L. Chang et al., 2010; Laschinger et al., 2001; Stewart et al., 2010), thus informal and formal power were not included in the analysis. The items are rated on a five-point Likert scale ranging from 1 (none) to 5 (a lot) in order to measure dimensions of structural learning factors that are empowering (Appendix G). Higher scores indicate higher perceptions of learning empowerment factors. The global empowerment score validity check was not included as the instrument holds construct validity in nursing education with students and teachers. The instrument included instructions that were adapted to reflect experiences in NP

education. The measures are publicly available in Lethbridge et al. (2010) and permission to use the instrument was obtained from Dr. Laschinger (Laschinger, 2010).

Psychological empowerment survey. The concept of PE was measured using Spreitzer's (1995b) instrument for self-perceptions of four cognitions important for work competence. The 12-item questionnaire of four factor subscales, each with three items, measure impact, meaning, competence, and self-determination/autonomy; responses for the items range from 1 (very strongly disagree) to 7 (very strongly agree; Table 1). The four subscale measures have demonstrated internal reliability in nursing with Cronbach's alpha coefficients of 0.81 (meaning), 0.76 (competence), 0.85 (self-determination), and 0.83 (impact; Spreitzer, 1995b). Convergent and discriminant validity of the four PE dimensions was confirmed by second-order confirmatory factor analysis (CFA) in nursing work (Kraimer et al., 1999). The reliability is reported as: 0.62 to 0.74 (total; Spreitzer, 1995b), 0.84 with nurse educators (total; Johnson, 2009), and ranged from 0.79 to 0.85 for the subscales (Johnson, 2009; Table 1). In a sample of nurses, the four subscale measures reported Cronbach's alpha coefficients are: 0.81 (meaning), 0.76 (competence), 0.85 (self-determination), and 0.83 (impact; Kraimer et al., 1999).

The items were computed by taking the mean score of valid responses, resulting in a potential range of scores from 1 to 7, with higher scores indicating higher perceptions for PE. The term 'department' was changed to 'job' in the following 3 items: "My impact on what happens in my (department) job is large", "I have a great deal of control over what happens in my (department) job", and "I have significant influence over what happens in my (department) job". A higher score indicates higher perceptions of PE, for example: "I am confident about my ability to do my job", or "I am self-assured about my capabilities to perform my work activities". The beginning of the instrument comprised

the original survey instructions with no adaptation or revisions (Appendix G).

Permission to use the instrument was obtained from Dr. Spreitzer (Spreitzer, 2012).

Nurse practitioner role competence survey. NP practice skills and knowledge,

known in this study as role competence were measured using the M-Strong-APRD tool

(Chang et al., 2011). Originally the tool was developed in the USA with expert advanced

practice nurses (King & Ackerman, 1995), including a sample of primary and acute care

NPs and CNSs (Ackerman et al., 1996; Mick & Ackerman, 2000). The five factor *Strong*

Model (Ackerman et al., 1996) tool was advanced by experts in Australia based on

international definitions of advanced practice nursing (A. Chang et al., 2010). The M-

Strong-APRD tool was extensively tested using a 16-member panel of experts who

participated in a Delphi study to validate the content of the M-Strong-APRD tool (A.

Chang et al., 2010, 2011). A qualitative study of advanced practice nurses followed,

which supported the practice dimensions of the *Strong Model* for delineating the

advanced practice nurse role (A. Chang et al., 2010). Upon validation of the tool from

the Delphi and qualitative study, an exploratory factor analysis (EFA) study followed,

using a sample (n=658) of advanced practice nurses in Australia (Chang et al., 2011).

The M-Strong-APRD was a reliable tool in that sample of advanced practice nurses, with

an overall Cronbach's alpha coefficient of 0.94, and latent constructs of direct

comprehensive care α=0.95, support of systems α=0.93, education α=0.83, research

α=0.90, and publication and professional leadership α=0.94 (Chang et al., 2011). The

items in the 46-item M-Strong-APRD tool are measured using a 5-point Likert scale with

responses from 0 (not at all) to 4 (very great extent), where the higher score denotes

higher levels for role competence (Table 1). The scale scores were computed by taking

the mean score of valid responses, resulting in a potential range of scores from 0 to 4,

with higher scores indicating higher perceptions for NP role competencies. The instrument instructions were adapted to reflect perceptions of NP role competence. Permission for use of the M-Strong-APRD has been obtained from M. Ackerman and Dr. Chang (Ackerman, 2012; Chang, 2011).

The rationale for selecting the M-Strong-APRD tool is that the items delineate Canadian NP role activities needed for construct validity, for example "conduct and document patient history and physical examination", or "identify and initiate required diagnostic tests and procedures" from other measures (Appendix G & H). The tool was modified to include factor load recommendations from Chang et al. (2010; 2011) and from the Canadian NP role competencies in the following areas: a) to include the item "make a medical diagnosis within specialty scope of practice and practice guidelines". This was removed from the Australian study but is a standard practice requirement for NPs in Canada (Canadian Nurses Association, 2010); b) move the item "serve as educator to staff while performing direct care activities" to the direct clinical practice construct. Along with construct validity for delineating the NP role in Canada, the M-Strong-APRD measures are less abstract than other measures, and thus introduce less variability for measurement purposes (Spector, 2006), therefore contributing to a valid and reliable instrument of NP role competence.

Patient safety competence survey. Although several PS instruments have been developed (Colla, Bracken, Kinney, & Weeks, 2005; Ginsburg et al., 2012; Okuyama, Martowirono, & Bijnen, 2011), few have applicability to student learning. However, the H-PEPSS, that was developed at York University, Canada, as a measure of new health professionals' perspectives of their exposure to, and confidence in PS competencies (Bressan et al., 2015; Doyle et al., 2015; Ginsburg et al., 2012) is one such measure. The

tool is best suited for health practitioners who recently completed their education

program, with coefficient reliabilities ranging from 0.81 to 0.85 in a study of newly

practicing health professionals (Ginsburg et al., 2012, 2013). The H-PEPSS is a self-

reporting tool used to evaluate attitudes and knowledge that define the quality and safety

education for nurse competencies (Ginsburg et al., 2012, 2013). The H-PEPSS was

developed based on best practices of Canadian, international, and the WHOs, and

European PS competencies and frameworks (Bressan et al., 2015; Ginsburg et al., 2012).

The survey questions are designed to address PS confidence in what was learned

in the classroom and in the clinical setting, given that acculturation occurs differently in

the two environments (Doyle et al., 2015; Ginsburg et al., 2012). Thus, the items for the

H-PEPSS tool ask about confidence in knowledge and measure self-reported competence

in learning about six dimensions of provider perceptions of PS. The questionnaire was

originally pilot-tested in four health professional groups, and used in a study of 1,247

new graduates with less than two years of practice experience from medicine (n=437),

nursing (n=349), and pharmacy (n= 362) respondents in Canada (Ginsburg et al., 2013).

In Canada, the measure has also been used in samples of 255 undergraduate medical

students and 141 post graduate medical trainees (Doyle et al., 2015), two samples (n=714

and n=476) bachelor of science in nursing students (Lukewich et al., 2015; Duhn et al.,

2012). Results demonstrated differences among groups with no reported internal

consistency of the measure. The H-PEPSS instrument has been validated by CFA in a

group of bachelor degree Italian nursing students, upon conversion to Italian and back to

English (back conversion) by nurses translators fluent in both languages, with a reported

Cronbach's alpha of 0.938 in 447 classroom respondents and 0.942 in 440 clinical

training respondents (Bressan et al., 2015). The results of these large studies of health

professional graduates offer initial support that the H-PEPSS tool can be used in order to identify self-perceptions of PS in newly graduated NPs.

Permission to use the H-PEPSS was obtained from Dr. Ginsburg (2013), as the tool measures education program content and learning outcomes of PS competencies. Latent constructs are measured with six-factors and 16-items of health care provider (including nurses) PS competence, for example "recognizing routine situations in which safety problems may arise", "reducing harm by addressing immediate risks for patients and others involved", or "the importance of having a questioning attitude and speaking up when you see things that may be unsafe". The six factors are: working in teams with other health professionals (3 items); communicating effectively (3 items); managing safety risks (3 items); understanding human and environmental factors (2 items); recognizing and responding to adverse events (2 items); and culture of safety (3 items). A 5-point Likert scale, ranging from (strongly disagree) to (strongly agree), and includes a (neural/unsure) choice, is used in this tool (Appendix G). The scale scores are computed by taking the mean score of valid responses, with higher scores indicating higher perceptions of PS competencies. The instrument included introductory instructions with no adaptations from the original tool.

Sociodemographic variables. The sociodemographic questionnaire included the following characteristics: sex, province, NP education program, year of graduation, and year of NP registration. Years of practice as an RN are included as a variable that may have an effect on NP role competence (Benner, 1982).

3.5 Analyses

Data analysis was conducted in five phases, beginning with descriptive data. Prior to the analysis, all data were examined for missing values, normality assumptions,

and satisfactory levels of homoscedasticity where appropriate. Analysis of sociodemographic data, as well as study variables for descriptive statistics, including the frequency, mean and standard deviation, occurred upon meeting the assumptions of normal distribution and homogeneity of variance, using Excel® (Microsoft Corporation, 2010) and SPSS® Software (version 23.0) for Windows (IBM® Corp., 2015b). The first phase of the analysis, the sample characteristics of sex, age, years of RN experience, education program location and respondent province of registration were described. Second, an EFA was conducted on the NP role competence measure in order to determine: the factor structure, if item reduction was required, if observed variables loaded together as expected, were adequately correlated, met criteria for reliability and validity, and to reduce items for SEM analysis. In the third phase of the analysis, a CFA was conducted on the educational SE, PE, NP role competence and PS competence to create composite variables for SEM analysis. These variables were examined for goodness of fit and factor structure scores in AMOS® 23, using CFA. In the fourth phase, an assessment of construct validity and internal consistency of the variables was conducted after examining the relationship between latent variables for multicollinearity, followed by a CFA of the four composite variables. At the fifth SEM phase, educational SE and PE variables associated with the NP role competence and PS competence variables were examined in order to test the study hypotheses.

The purpose of this study was to test the hypothesized relationships of NP role competence, as delineated by the *Strong Model* (Ackerman et al., 1996), and PS competence (Ginsburg et al., 2012), using SEM. These relationships are hypothesized to have a well-specified dependency on educational SE (Kanter, 1977; Wagner et al., 2010) and PE (Spreitzer, 2008; Stewart et al., 2010; Wagner et al., 2010). SEM is a family of

related analysis procedures classified under a single label with the terms covariance

structure analysis, covariance structure modeling, or analysis of covariance structures

(Kline, 2010). SEM analysis is used to understand patterns of covariance among

observed variables and to explain as much of the variable variance as possible using a

path model (Kline, 2010). SEM can be used to study the relationships between factors or

theoretical concepts (Kline, 2010), such as proposed in this study to relate educational SE

and PE with NP role competence and PS competence.

To test relationships between the factors in this study using SEM analysis several

measurement methods are necessary, including EFA, which is generally considered a

member of the SEM family (Kline, 2010) for identifying underlying dimensions of the

concept of interest, and for data reduction. The technique groups many variables into a

smaller number of factors in order to explore inter-correlations (Munro, 2005). Based on

theory, for example, the *Strong Model* conceptualization of advanced practice nursing,

EFA is a method used to reduce or simplify a set of data in order to easily describe and

account for as much variance as possible (Kline, 2010; Munro, 2005). For example, the

domain of direct comprehensive care in this measure has 16 items that maybe reduced to

a smaller number of items in order to reliably measure the factor. Additionally, EFA data

reduction may be needed for subsequent analyses (Munro, 2005) such as in this study, to

confirm a measurement model and SEM analyses. In the current study, four subjects to

one variable were used to reduce the NP role competence measure. Moreover, 100 to

200 subjects are an adequate sample size for EFA (Munro, 2005), with the final complete

representative participant sample of 190 for this study. The M-Strong advanced practice

instrument includes 42 items in total, to measure 5 factors, where EFA assists a

researcher to identify the minimal number of factors that account for the latent factors (Byrne, 2010), or in this study NP domains of practice.

Control variable. Years of RN experience were controlled for in order to isolate the unique effects on the study variables. NP participants can be considered advanced beginners (Alber et al., 2009; Benner, 2004) with regard to entry to practice, yet as RNs may hold substantial experience as a nurse. For these purposes, "advanced beginners" are defined as nurses who possess less than two years in practice (Benner, 2004; Markowitsch, Luomi-Messerer, Becker, & Spöttl, 2008), and who gain experience in real situations (Dreyfus, 2004), such as newly practicing NPs. However, gaining experience in a role does not permit the same expertise in a related field of tasks; for example, a nurse who does a very good job in an intensive care role may find it difficult to meet the requirements of a job in general surgery (Benner, 2004; Dreyfus, 2004) or a RN who commences a job as an NP. Of interest is that RN experience is consistently not a statistically significant factor for NP role competence or autonomy in studies of NPs (Alber et al., 2009; Bahadori & Fitzpatrick, 2009; Barnes, 2015; Cajulis et al., 2007; Thibodeau & Hawkins, 1994). Conclusions from these studies corroborate the finding that there is no statistically significant relationship between age, years of work as a RN, or years of work as a NP in measuring the role autonomy in a sample of 54 acute care NPs (Cajulis et al., 2007) or 482 primary care NPs (Bahadori & Fitzpatrick, 2009). In psychiatric mental health NPs, an examination between prior nursing experience and perceptions of competence in new graduates demonstrated that nursing experience was not significantly related to perception of competence (Alber et al., 2009). Finally, the relationship between NP role transition (i.e., developing comfort and building competence in the role, understanding of the role by others, and collegial support) and

prior RN (0 to 38 years, M=13.8 years) experience was nonsignificant (Barnes, 2015). Based on these findings, therefore, all NPs within two years of graduation were eligible to participate in this study, regardless of their RN years of experience.

3.6 Confirmatory Factor Analyses Methods

Subsequent testing of the NP role competence measure using AMOS® 23.0 (IBM® Corp., 2015a) software confirmed the theoretical expectations of the NP competence measurement tool for subsequent SEM analysis. CFA is a special application of SEM, which allows for more precise testing of the EFA factor structure, to confirm the factor structure, based on theory (Munro, 2005; Ullman, 2006).

The CFA model of the NP role competence tool was assessed for goodness-of-fit index (GFI) model indicators. Generally, if a majority of the indicators indicate a good fit, there is probably a good fit (Munro, 2005; Ullman, 2006) where an acceptable standard is to report four model fit indicators as best practice (Hu & Bentler, 1999) where fit indices and thresholds are reported in Table 5 and 9. The chi-square statistic is sensitive to model sample size, where model test statistics provide invaluable information for data discrepancies and theoretically sound models; thus, a significant model test statistic should be reported with more specific diagnostic indices (Kenny & McCoach, 2003). The root means square error of approximation (RMSEA) is scaled as a badness of fit index, where a value of zero indicates best fit, yet is also sensitive to degrees of freedom and sample size (Kline, 2010). The comparative fit index (CFI) ranges from 0 to 1, where closer to 1 indicates a best fit (Kline, 2010). The standardized root mean square (SRMR) is based on covariance residuals, differences between observed and predicted covariances, where 0 indicates perfect model fit (Kline, 2010). The SRMR is the overall difference between the observed and predicted correlations (Kline, 2010), where equal to

or less than 0.08 is acceptable (Hu & Bentler, 1999). All of the CFA and SEM models built in this study were adjusted in consideration of the theoretical underpinnings, and the above fit indices.

3.7 Structural Equation Modeling Analysis Methods

Existing theories and literature relevant to empowerment and competence were reviewed to support an *a priori* model. The predictive theory-based model developed for the study was tested using SEM with CFA. SEM analysis is a series of processes to examine the predicted relationships, first with CFA to explore the relationships in the measurement model. Next, the focus of SEM is to estimate the possibility of relationships among variables, test theoretical propositions, and examine the link and directionality of significant relationships (Schreiber, Nora, Stage, Barlow, & King, 2006). In model testing, use of latent factor variables necessitate the demonstration of sound theoretical and psychometric properties (Little, Cunningham, Shahar, & Widaman, 2002), which were examined in chapter two and in this chapter. Specifically, the examination of factors that explain role competence extends existing theories of educational empowerment (Kanter, 1977; Siu et al., 2005), PE (Spreitzer, 1995a), a conceptualization of advanced practice – *The Strong Model* (Ackerman et al., 1996), and PS competence.

The analysis was performed using Excel® (Microsoft Corporation, 2010), SPSS® 23.0 (IBM® Corp., 2015), and AMOS® 23.0 (IBM® Corp., 2015) software. The descriptive statistics for the sociodemographic and study variables and Cronbach's alpha reliabilities of the four main tools were analyzed prior to the main SEM analysis.

3.8 Informed Consent and Ethics

The Western University Research Ethic Board reviewed and approved this study of participant data collection using an electronic survey. Consent for this study was obtained using a two-stage process. First, 20 nursing agencies in Canada received informed consent materials and requests to recruit participants. Next, participants who agreed to participate in research were invited through the respective agencies' communication channels, or by the researchers, to access the online survey. Participants viewed the informed consent materials via either an agency invitation, online, or both before participating in data collection. As explained in a LOI, there was no risk or harm associated with participating in the study with implied consent upon completion and submission of the survey.

3.9 Summary of Study Methods

A convenience sample of newly graduated NP from across Canada were recruited to participate in a study to test a theoretical model of empowerment and NP role competence and PS competence. Upon ethical review and approval, data were collected using an electronic survey comprised of instruments with established psychometric properties to test a measurement model using SEM. The data were examined and analyzed in phases: data normality, psychometric properties of educational SE, PE, NP role competence, and PS competence composite variables and goodness of fit, measurement model fit, and SEM analysis. The CLEQ (Siu et al., 2005), PES (Spreitzer, 1995b), M-Strong-APRD tool (Chang et al., 2011), and the H-PEPSS (Ginsburg et al., 2012) tools were used to collect data on the study concepts. SEM is an appropriate analysis tool for this study as the relationships between the constructs (i.e., educational SE and PE with NP role competence and PS competence) are theoretically reasonable,

and evidence is available in the nursing research literature to support the proposed

relationships. In Chapter 4, results from an EFA and a CFA of the M-Strong-APRD are

reported. Additionally, results of the composite variables CFA with goodness of fit

indicators are reported, a CFA model fit, and a summary of the hypotheses with SEM

analysis.

Structural equation modeling analyses using maximum likelihood (ML)

estimation is distinguished from other standard statistical techniques used to test theories

of *a priori* hypotheses. A SEM analysis is used to test the expected relationships between

latent variable correlation and covariance matrixes, while estimating error variance

parameters (Kline, 2010) in order to determine and analyze relationships between

theoretical concepts. The SEM specification phase is based on the theoretical framework

and model justification of the latent constructs and the psychometric properties for the

measures.

Research which helps to better understand the interrelationships between the

development of NP role competence and NPs' perceptions of PS competence is essential

to evolve NP education and to graduate NPs who are prepared to practice as competent,

autonomous health care providers. SEM enables the examination of these relationships as

the constructs of NP role competence and PS competence are hypothesized to have a

dependent relationship with the theoretical constructs of SE and PE. SEM can be used to

study potentially casual relationships between factors or theoretical concepts (Byrne,

2005; Kääriäinen et al., 2011), as are proposed in this study.

4   Chapter Four: Findings

This study was designed to: (a) determine the impact of educational SE on newly practicing NPs' PE, NP role competence, and PS competence; (b) determine the impact of educational SE as partially mediated by PE on NPs' role competence, and PS competence; and (c) determine the relation of NPs' role competence to PS competence. Result of the five phases of the study analyses are presented in order of the study descriptive data, psychometric properties of the NP competence survey, composite variable analysis, model estimation, and SEM are reported below.

4.1 Data Integrity and Normality Assumptions

Data management involved several steps to check data integrity and test normality assumptions. Data from all subjects were screened for missing values, response patterns, problematic respondents, and unengaged respondents (for example, if three is the response for all indicators). Of the potential 680 respondents, 230 surveys were obtained. Forty surveys responses were excluded due to incomplete data or missing values of the measures (Creswell, 2012), resulting in a final complete representative participant sample of 190, a response rate of 28%. The SE resource item - availability of other people to help with your learning goals (i.e. other faculty, librarian, and community service) had one missing value, which was replaced by the median of the ordinal scale from the remaining sample responses. The H-PEPSS culture of the safety item, the nature of systems (e.g. aspects of the organization, management or the work environment, including policies, resources, communication, and other processes), and system failures and their role in adverse events) had 3 missing values. The missing values were replaced with the sample median given the ordinal variables are measured using a Likert scale.

All of the response scales are ordinal (Likert scale), with fewer than seven intervals; therefore, extreme outliers do not exist. The scales are short intervals of educational SE 1 to 5; PE 1 to 7; NP role competence 0 to 4; and PS competence 1 to 5. The survey variables were normally distributed. All of the study variables were based on Likert-type scales, there was no skewness, as all values were less than 3.0 (Kline, 2010); thus, the focus was on kurtosis. The test for kurtosis revealed that the PE meaning item, the work I do is important to me (kurtosis 8.7), my job activities are personally meaningful to me (kurtosis 5.1), and the work I do is meaningful to me (kurtosis 6.5) item(s) had a kurtosis value greater than 3.0, where values over 10.0 suggest a potential problem (Kline, 2010). The kurtosed indicators were retained and flagged for consideration in subsequent CFA and SEM analysis testing for this study. Although the values are not indicative of extreme departures from normality, ML was used in CFA and SEM where estimates of standard errors are robust against non-normality (Kline, 2010).

4.2 Phase 1: Descriptive Data

Sociodemographics. Data analysis included 190 (28% response rate) full responses from a population of 362 NP graduates in 2011, and 318 in 2012 (CASN, 2012b). In general, respondents reflected similar characteristics to other published Canadian NP studies, such as 24.6% response rate (Canadian Council of Registered Nurse Regulators, 2015), sex (6% male, 94% female; Spence, Agnew, & Fahey-Walsh, 2015), age (average age 44; LaMarche & Tullai-McGuinness, 2009), and years of RN experience (average 20 years; LaMarche & Tullai-McGuinness, 2009). The majority of newly practicing NP respondents were female (94%) between age 30 and 39 years, with 6 to 10 years of RN experience (42%; Table 2). The collected sociodemographic data

supported that the responses were from a suitable sample of newly graduated NPs from across Canada.

Table 2

Newly Practicing Nurse Practitioners Sex, Age, Years of RN Experience

	n	%	Min	Max	Mean (SD)
Sex (n=190)					
Male	11	6			
Female	179	94			
Age Group (n=190)			26	62	42 (10)
26 – 30 years	36	19			
31 – 35 years	70	37			
36 – 40 years	28	15			
41 – 45 years	18	9			
46 – 50 years	21	11			
51 – 55 years	17	9			
>55					
Years of RN experience (n=190)			2	42	19 (10)
0 – 5	19	10			
6 – 10	92	48			
11 – 15	29	15			
16 – 20	17	9			
21 – 25	13	7			
26 – 30	12	6			
>31	8	5			

The respondents were drawn from a range of NP education programs across Canada, with the majority from those in Ontario (34%) and Alberta (24%; Table 3). Most respondents were licensed as NPs in Ontario (43%; Table 3). No outliers in the sociodemographic data were identified, as older aged participants and those with significant years of RN experience met the inclusion criteria as newly practicing NPs.

Table 3

Provinces and Territory of NP Respondents Education Program and Registration

	Education program location		Province of NP registration	
Province (n=190)	n	%	n	%
Northwest Territories	<5	<5	<5	<5
British Columbia	15	8	21	11
Alberta	45	24	21	11
Saskatchewan	12	6	11	6
Manitoba	14	7	26	14
Ontario	65	34	81	43
New Brunswick	<5	<5	11	6
Nova Scotia	<5	<5	11	6
Prince Edward Island	<5	<5	<5	<5
Other (Unspecified)	30	16	<5	<5

Instrument descriptive statistics. Means, standard deviations, and reliabilities of the four study instruments CLEQ (Siu et al., 2005), PES (Spreitzer, 1995b), M-Strong survey (Chang et al., 2011), and H-PEPSS (Ginsburg et al., 2012) instrument are reported in Table 4. Scores for the study scales were obtained by summing and averaging items where higher scores reflect higher levels of concepts linked to the study variables.

Overall, respondents perceived support (M=3.42, SD=1.0), opportunity (M=3.65, SD=0.95), information (M=3.52, SD=0.96) and resources (M=3.52, SD=0.92) as moderately high learning experiences). PE scores from the respondents were, impact (M=5.11, SD=1.71), meaning (M=6.12, SD=0.97), self-determination (M=5.35, SD=1.87), and competence (M=4.80, SD=1.24. NP role tasks ranged in competence, from higher levels for direct clinical practice (M=2.91, SD=0.60), support of systems (M=2.04, SD=1.25), and education (M=2.01, SD=1.09) tasks, and lower for research (M=1.32, SD=1.18) and leadership (M=1.36, SD=1.29) domains. PS responses were lower for work in teams, manage safety risk, and understanding human and environmental factors compared to communicating effectively, recognize, respond and

disclose adverse events and culture of safety. In the present study, alpha reliabilities of

the scales ranged from 0.89 to 0.94, consistent with previous studies using the same study

tools (Table 1 & Table 4).

4.3 Phase 2: Psychometric Analysis of the Nurse Practitioner Competence Survey

An EFA of the NP role competence tool was a preliminary step to examine factor

loadings (Munro, 2005) to reduce factors for subsequent CFA and SEM analysis. The

EFA and CFA validity assessment of the NP role competence tool was undertaken to

examine the psychometric properties in the Canadian context. Previous use demonstrated

good psychometric results but this was with an Australian population of advanced

practice nurses that did not include NPs. EFA is an appropriate analysis (Ullman, 2006)

as the *Strong Model* advanced practice conceptual domains for NP role competence are

used to measure the role (Bahadori & Fitzpatrick, 2009) with limited available

psychometric analysis. CFA is typically performed using sample covariances to estimate

error and remove measurement error (versus EFA correlations) to determine the degree of

linear relationship of the measurement scale for a specific factor (Ullman, 2006). A CFA

was completed to further advance the psychometric analysis of the NP role competence

measure for subsequent SEM analysis. SEM relationships can then be examined, where

SEM is useful to test complex relationships to allow complete simultaneous testing of all

the relationships (Ullman, 2006).

Exploratory factor analysis item reduction. EFA with ML methods and

varimax rotation was used for data reduction and summarization of the construct validity

of the M-Strong APRD tool in Canadian NP respondents. Factor analysis was used to

determine unique variance among items, and correlation between factors, using SPSS®

23 software (IBM® Corp., 2015b). A Kaiser-Meyer-Olkin (KMO) measure,

Table 4

Manifests & Scales Statistics Prior to EFA and CFA Factor Reduction for SEM Analysis

Instrument	Items	Manifest	α	M (SD)	Min - Max
CLEQ (range 1 – 5)			0.94		
	7	Support	0.87	3.55 (0.97)	3.33-3.87
	6	Information	0.88	3.65 (0.95)	3.07-3.71
	5	Resources	0.76	3.52 (0.96)	3.30-3.91
	6	Opportunity	0.87	3.52 (0.92)	3.22-3.93
PES (range 1 - 7)			0.92		
	4	Impact	0.87	5.11 (1.71)	4.90-5.50
	4	Meaning	0.91	6.12 (0.97)	6.04-6.27
	4	Confidence	0.88	4.80 (1.24)	4.34-5.10
	4	Self-determination	0.92	5.35 (1.87)	5.26-5.51
M-Strong-APRD (range 0 - 4)			0.96		
	16	Direct Care	0.93	2.91 (0.60)	2.36-3.30
	9	Support of Systems	0.91	2.04 (1.25)	2.90-1.28
	5	Education	0.85	2.01 (1.09)	1.47-3.02
	6	Research	0.90	1.32 (1.18)	0.94-1.94
	6	Leadership	0.93	1.36 (1.29)	1.22-1.51
H-PEPSS (range 1 - 5)			0.94		
	3	Work in Teams	0.89	4.04 (0.79)	3.93-4.19
	3	Communicating	0.91	4.45 (0.44)	4.38-4.50
	3	Manage Safety Risk	0.90	4.08 (0.69)	3.98-4.21
	2	Understand Factors	0.92	3.96 (0.95)	3.87-4.04
	2	Recognize Harm	0.94	4.23 (0.70)	4.22-4.24
	3	Culture of safety	0.89	4.25 (0.65)	4.00-4.38

Note. α Cronbach's Alpha, Min minimum, Max maximum, CLEQ = Conditions for Learning Effectiveness Questionnaire (Siu et al., 2005), PES = Psychosocial Empowerment Survey (Spreitzer, 1995b), M-Strong-APRD = Modified Strong Advanced Practice Role Delineation tool (Chang et al., 2011), H-PEPSS = Health Professional Education in Patient Safety (Ginsburg et al., 2012).

and Bartlett's test of sphericity, was used to explore the degree of correlation between factors and variables, with a cutoff factor loading of 0.40. The data were deemed suitable for factor analysis, with a 0.90 KMO measure of sampling adequacy and Bartlett's test of sphericity (Bartlett, 1937), achieving statistical significance (p<.001). The communalities for each variable were sufficiently high, indicating that the chosen items were adequately correlated for factor analysis. Reduction analysis of the items and identified factors was then determined by several criteria.

The original *Strong Model* of advanced practice conceptual framework, the Canadian Nurses Association NP competency framework, KMO, statistical significance, communalities, variance explained, pattern matrix, and factor loading values (Byrne, 2010) were considered in item reduction. Some items were dropped during the EFA due to poor loadings – below 0.3 (Munro, 2005). In the direct comprehensive care domain, items were removed that demonstrated collinearity and had similarly worded items; for example, within the direct comprehensive care domain item, document appropriately on patient record was removed, as the item, conduct and document patient history and physical examination captured the measure for documentation. In the education domain, the item, provide appropriate patient and family education is redundant with the direct comprehensive care domain item, provide appropriate education (counseling) to patient and family. The support of systems domain item, advocate the role of the nurse is measured in the leadership domain with the item, represent a professional nursing image at institutional and community forums. In total, 24 items were retained from the original 42 items. All loadings were above the 0.40 threshold recommended by Hair et al. (2014) for sample sizes of less than 200 (most averaged 0.7), where lower levels of score reliability can be tolerated in latent variables, compared with observed variables, if the

sample size is sufficiently large (Kline, 2010). The total variance explained was 63%,

with 4 distinct factors (discriminant) to measure NP competence (convergent). The final

results supported 4 factors that were named in accordance with Canadian NP competence

concepts for direct comprehensive care, leadership, research, and collaboration for the NP

competence survey (NPCS), where the pattern matrix items from the education domain

were subsumed in direct comprehensive care and collaboration concepts.

Table 5

Goodness-of-fit Index Maximum Likelihood Model Evaluation NPCS Final CFA

Model	χ^2/df	p	SRMR	RMSEA	CFI
Ideal Threshold	1 – 3	ns	<.06 - <.08	.05 - .08	>0.90
NPCS CFA	1.64	***	.07	.05	.96
NPCS second order CFA	1.69	***	.07	.06	.95

Note: χ^2 = Chi-square; df = degrees of freedom; SRMR = standardized root mean square residual;
RMSEA = root mean square error of approximation; CFI = comparative fit index; ***p<0.001;
*p<0.05; CFA = confirmatory factor analysis, NP = nurse practitioner.

4.4 Phase 3: Composite Variable Analyses

Subsequent CFA to validate the measurement NP competence model did not

demonstrate strong psychometric properties for all factor structures; as such, the scale

was modified. The fit indices are reported in Table 5. Further specifications occurred

upon a review of factor loadings (regression weights) and modification indices of the

NPCS items. The specification revealed low loading of the direct comprehensive care

item serve as informal educator to staff while providing direct care activities, with a

similarly worded item, serve as a consultant to improving patient care and nursing

practice based on expertise area of specialization. Thus, the item was removed. In the

following re-specified model, the item coordinate interdisciplinary plan of care for

patients factor loaded low, and was removed, as the similarly worded item, collaborate

with other services to optimize patient's health status captured the factor. The leadership

item, represent nursing in institutional/community forums focused on the educational

needs of various populations was removed as the measure is captured in item, serve as a

consultant to individuals and groups within the professional communities and other

hospitals/ institutions. Items were removed individually from higher to lowest

modification indices, impact loading, and in consideration of the study's conceptual

model fit. Before deletion of any item, the content of the item was reviewed to ensure

that the measure was captured in the remaining 21-items. Three items were removed

with low factor-loading and consideration of the modification indices in order to

determine if there was an

Table 6

NPCS Reduced Factor Cronbach's Alpha Reliabilities

Instrument	Items	Domain	α	Mean(SD)	Min. – Max.
NPCS	21		0.92		
	9	Direct Comprehensive Care	0.90	2.89(0.73)	2.36 – 3. 26
	4	Collaboration	0.94	1.74(1.15)	1.62 – 1.84
	3	Research	0.82	1.53(1.11)	1.15 – 1.94
	5	Leadership	0.91	1.37(1.13)	1.22 – 1.51

Note. α Cronbach's Alpha.

opportunity to improve the model fit. Accordingly, three covaried error terms improved

the model fit. All path coefficients were significant for standardized and

unstandardized latent variables at p<0.001, and averaged over 0.70 for items loading on

a factor structure for dimensions of NP competence (Figure 4).
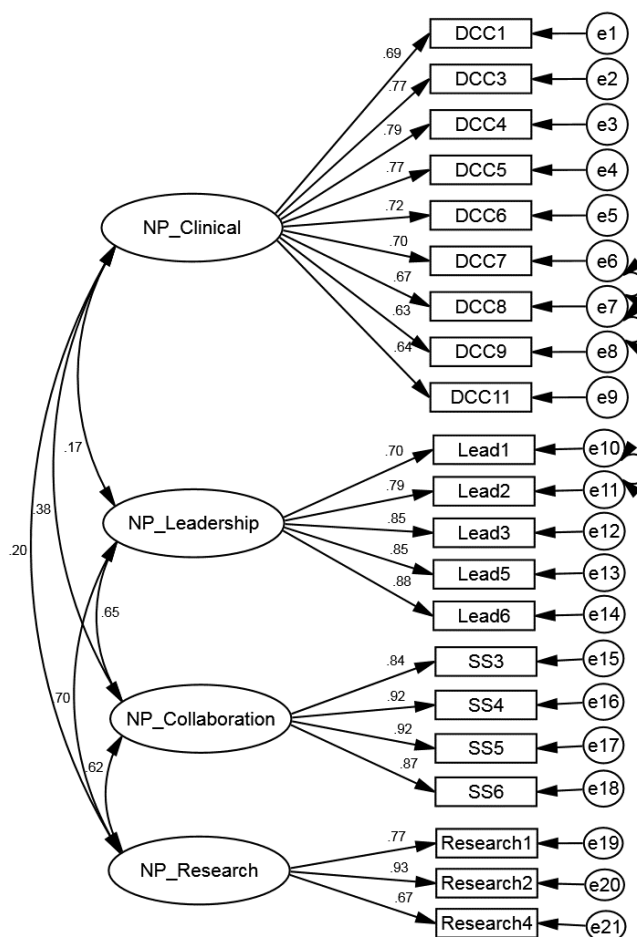
Figure 4 Nurse practitioner competence final factor structure of the NPCS among new graduate NPs, with correlations among four factors and standardized factor loadings. DCC = direct comprehensive care, Lead = leadership, SS = support of systems (collaboration), e=error.

To ascertain reliability and validity, estimates of average variance extracted (AVE) and maximum and average shared squared variance (MSV & ASV) were computed. The 4 factors (21 items) NPCS were significantly intercorrelated, although none were so highly correlated as to suggest multicollinearity. To test for convergent validity, the AVE was calculated. The AVE was above 0.50 for the factors, indicating that observed variables within a latent factor explain an acceptable component of variance (Hair, Black, Babin, & Anderson, 2010). To test for discriminant validity, the

square root of the AVE valued should be greater (on the diagonal in the matrix Table 7) when compared to all the inter-factor correlations. The composite reliability (CR) was computed for each factor. The CR is above the 0.70 minimum threshold, indicating the reliability of the four factors (Hair, Black, Babin, & Anderson, 2010). Evidence of discriminant validity is established when both MSV and ASV are less than AVE, indicating that the latent factor is explained by hypothesized observed variables, better than observed variables hypothesized to relate to another latent factor. No multicollinearity was found in the NPCS (Table 7).

Table 7

NPCS Construct Correlation Matrix (square root of the AVE on the diagonal)

	CR	AVE	MSV	ASV	1	2	3	4
1. Collaboration	0.94	0.80	0.43	0.32	0.89			
2. Direct Comprehensive Care	0.90	0.50	0.14	0.07	0.38	0.71		
3. Leadership	0.91	0.67	0.49	0.32	0.65	0.17	0.82	
4. Research	0.84	0.63	0.49	0.31	0.62	0.20	0.70	0.80

Note. CR = composite reliability; AVE = average variance extracted; MSV = maximum squared variance; ASV = average squared variance.

Nurse practitioner competence survey. The reduced 21 items, 4 factor NP competence measurement model (Tables 6 & 8) was used for subsequent composite variables, the measurement model, and SEM analysis. The EFA and CFA factor analytic models focus the extent to which observed variables are linked to the underlying latent factors, and the strength of the regression paths (Byrne, 2010). Thus, based on, the Canadian NP core competencies, the EFA and psychometric evidence from the CFA, the NPCS tool is a valid and reliable measure for the NP competence construct in this study.

Table 8

Nurse Practitioner Competence Survey Items

Direct Comprehensive Care

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1. DCC1 Conduct and document patient history and physical examination.

2. DCC3 Make a medical diagnosis within specialty scope of practice and practice guidelines.

3. DCC4 Identify and initiate required diagnostic tests and procedures.

4. DCC5 Gather and interpret assessment data to formulate plan of care.

5. DCC6 Perform specialty-specific care and procedures.

6. DCC7 Assess patient/family response to therapy and modify plan of care based on response.

7. DCC 8 Communicate plan of care and response to patient/family.

8. DCC9 Provide appropriate education (counseling) to patient & family.

9. DCC11 Serve as a consultant in improving patient care and nursing practice based on expertise in area of specialization.

Leadership

10. Lead1 Disseminate nursing knowledge through presentation or publication at local, regional, national and international levels.

11. Lead2 Serve as a resource or committee member in professional organizations.

12. Lead3 Serve as a consultant to individuals and groups within the professional/lay communities and other hospitals/institutions.

13. Lead5 Represent a professional nursing image at institutional and community forums.

14. Lead6 Collaborate with other healthcare professionals to provide leadership in shaping public policy on healthcare.

Collaboration

15. SS3 Participate in strategic planning for the service, department or hospital.

16. SS4 Provide direction for and participation in unit/service quality improvement programs.

17. SS5 Actively participate in the assessment, development, implementation, and evaluation of quality-improvement programs in collaboration with nursing leadership.

Table 8

Nurse Practitioner Competence Survey Items

18. SS6 Provide leadership in the development, implementation, and evaluation of standards of practice, policies and procedures.
    Research
19. Research1 Conduct clinical investigations.
20. Reserach2 Participate in investigations to monitor and improve quality of patients care practices.
21. Research3 Use research and integrate theory into practice and recommend policy changes based on research.

Note: Adapted from Ackerman et al., 1996, p. 71; Mick & Ackerman, 2000, p. 217, DCC = direct comprehensive care, Lead = leadership, SS = support of systems (collaboration).

4.5 Phase 4: Model Estimation

To establish model fit, predictive fit, comparative fit, or parsimonious fit, several indices are reported for each of the four main study constructs. The predictive fit model chi-square is a traditional overall fit index with which to measure the magnitude of discrepancy between the sample and fitted covariances. The model chi-square has a number of limitations, which affect the results, such as multivariate normality, normal distributed data, and sensitivity to sample size (Hooper, Coughlan, & Mullen, 2008).

The relative/normed chi-square (χ^2/df) is a statistic that minimizes the impact of sample size on the model Chi-square, where the recommended range is 2 to 3 (Hooper et al., 2008; Schreiber et al., 2006). For the comparative fit index (CFI), ≥ 0.90 to 0.95 (Byrne, 2010; Hooper et al., 2008; Schreiber et al., 2006) is considered an acceptable fit. All measurement models achieved the recommended levels of fit. The standardized root mean square residual (SRMR) ≤ 0.08 indices (Byrne, 2010; Hooper et al., 2008;

Schreiber et al., 2006) as acceptable for model fit. A root mean square error of

approximation (RMSEA) recommended range is ≤ 0.06 - ≤.08 (Hooper et al., 2008;

Schreiber et al., 2006). Again, all measurement models in this study, with a sample of

190, achieve these recommended values. Overall, the sample for the CFA models range

from adequate to robust fit. All parameter estimates for latent variable CFAs and second-

order CFAs were determined to be statistically significant (Byrne, 2010) as reported in

Table 5 and Table 9.

Structural empowerment CFA. Four dimension of the CLEQ (Siu et al., 2005)

- information, support, opportunity and resources – were selected by using ML with

promax rotation. Four factors for CLEQ (Siu et al., 2005) with 12 items were used, as

the constructs are more amenable for subsequent SEM analysis. Based on a CFA of the

CLEQ (Siu et al., 2005) construct using 12-items that measure the four core components

– information, support, opportunity and resources, three indicators per variable were a

good fit and had reliability for overall educational SE (Table 9). Subsequent second-order

CFA of educational SE adds additional support for the reliability of three indicators per

factor, with a good fit. The reduced educational SE CFA of three indicators per factor

were reliable (Figure 5), to sufficiently measure the educational SE construct in this

study. All path coefficients were significant for standardized and unstandardized latent

variables at p<0.001, and averaged over 0.60 for items loading on the corresponding

factor structure for educational SE. The modification indices revealed that no changes

were required. Thus, the four factor 12 item educational SE concept was accepted with a

good fit for subsequent second-order CFA composite variable development and SEM.

Psychological empowerment CFA. The PE CFA determined a satisfactory

model fit (Table 9) with all standardized and unstandardized path coefficients significant

at the p<0.001, and factor loadings averaged over 0.80 on a factor structure. Thus, the

four factor 12 item measure was used for further analysis. The modification indices were

reviewed, and no changes were considered for the PE constructs. Thus, PE composite

variables were used for subsequent SEM analysis.

        Patient safety competence CFA. The PS competence CFA determined that the

data adequately fit the model (Table 9). Significant (p<0.001) standardized and

unstandardized path coefficients loaded on the PS competence factors, with average

loading 0.80 on the corresponding PS factor. No item reduction or modifications were

needed for subsequent composite variables of PS and SEM analysis.
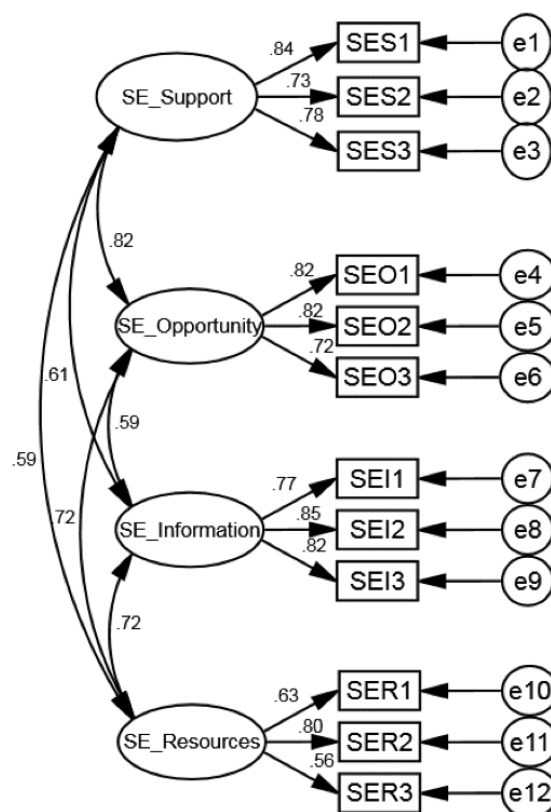
Figure 5 Educational structural empowerment factor structure of the four-factor CLEQ (Siu et al., 2005) among new graduate NPs, with correlations among scales and standardized factor loadings. SE =structural empowerment, SES= SE support, SEI=SE information, SEO=SE opportunity, and SER=SE resources, e=error.

Table 9

Goodness-of-fit Index Maximum Likelihood Model Evaluation

Model	χ^2/df	p	SRMR	RMSEA	CFI
Ideal Threshold	1 - 3	ns	<.06 - <.08	.05 - .08	>0.90
Educational SE CFA	1.55	*	.04	.05	.98
Educational SE Second-order CFA	1.87	***	.05	.07	.96
PE CFA	2.38	***	.06	.09	.97
PE Second-order CFA	2.37	***	.07	.09	.97
PS CFA	1.95	***	.02	.07	.97
PS Second order CFA	2.02	***	.03	.07	.96
1st Measurement Model CFA	2.47	***	.04	.09	.93
Final Measurement Model CFA	2.33	***	.04	.08	.94
1st SEM	2.36	***	.05	.09	.93
SEM no PE Mediation	1.84	***	.03	.07	.97
Final SEM	2.27	***	.04	.08	.94

Note. χ^2 = Chi-square; df = degrees of freedom; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index; ***p<0.001; *p<0.05; ns = not significant; SE = structural empowerment; CFA = confirmatory factor analysis; PE = psychological empowerment; PS = patient safety; SEM = structural equation model.

The measurement model loadings (educational SE, PE, NP competence, & PS competence) were above the recommended 4.0 threshold (J. F. Hair et al., 2014) both in the CFA and second order CFA composite variable models, with a sample size of 190, with most averaging 0.80 Cronbach's alphas values. Standardized factor loadings in measurement models should fall between 0 and 1, with higher values suggesting better indications of the observed variables for the latent variable (Hair, Hult, Ringle, & Sarstedt, 2014). The NP competence construct factor loadings for direct comprehensive care, collaboration, research, and leadership averaged 0.71; educational SE factor loadings average 0.84 for support, information, opportunity, and resources; PE factor loadings averaged 0.76, and PS factor loadings averaged 0.81. In this study, all

standardized loadings are in the 0.70 average range, signifying that the items are satisfactory indicators. Given that first order factors function as composite variables in a SEM, it is wise to check each level separately for evidence that identification was obtained (Byrne, 2010), as reported for this study in Table 9.

4.6 Model Evaluation

In order to use the four latent variable model, with 18 constructs in SEM, composite variables were required. Thus, four second-order CFAs were undertaken and reported for the four latent variables. NP competence and PS competence factors with a dependence on educational SE and PE were confirmed in the measurement portion of the CFA using composite variables. The GFI for the measurement model and observed data are reported in Tables 5 and 9. For sample sizes of 150 cases, the CFA requires the following for analysis: indicators with good psychometric properties, each of which having high standardized loading factors (greater than 0.70). Additionally, CFA must have equally constrained unstandardized parameters for the indicator where parceling assumes the items are known to measure a single construct (Byrne, 2010), which was used in the CFA analysis for this study. The fit of the hypothesized model with the observed sample data was then tested for multicollinearity issues.

The study measures reliability estimates are above 0.70, which indicate an acceptable level of internal consistency (Kline, 2010). Additionally, the CR values for each of the latent constructs in the initial study variable CFAs, and second-order CFAs, average over 0.70 for the corresponding factor construct; in Table 10 the composite variable range is from 0.82 to 0.92, demonstrating convergent validity and internal consistency (Cronbach, 1951). Convergent and discriminant validity of the 4 factors

were supported, there was no multicollinearity. The correlations among the SEM

variables are reported in Appendix J.

Table 10

Post EFA & CFA Construct Correlations (square root of AVE on the diagonal)

	Mean	SD	CR	AVE	MSV	ASV	1	2	3	4
1. NP Competence	2.15	0.96	0.92	0.75	0.18	0.20	0.87			
2. PE	5.36	1.45	0.82	0.55	0.19	0.12	0.38	0.74		
3. PS	4.18	0.69	0.82	0.56	0.08	0.04	0.17	0.15	0.75	
4. Educational SE	3.51	0.95	0.92	0.65	0.19	0.15	0.42	0.44	0.28	0.81

Note. CR = composite reliability; AVE = average variance extracted; MSV = maximum shared squared variance; ASV= average shared squared variance; NP = nurse practitioner; PE = psychological empowerment; SE = structural empowerment; PS = patient safety.

Model Identification. CFA using ML estimation was used to establish the

reliability and validity of the construct measurements. The fit indices and cutoff

threshold used to estimate GFI for the measurement model is summarized in Table 9.

The fit indices supported a reasonable fitting model; examination of the indicators

standardized loadings, correlation residuals, and modification indices were then

considered (Kline, 2010). Theoretically reasonable modifications included covarying the

error terms for educational SE information and resources, resulting in an improved model

fit. On reiteration, educational SE resources and opportunity error terms were covaried.

A final CFA with PE impact and self-determination were covaried, which resulted in fit

indices for an acceptable fitting measurement model. The instruments adequately

represented the latent variables understudy, where the critical value for the GFI met the

thresholds previously discussed, indicating a sufficient model fit.

4.7 Phase 5: Testing the Study Model

The SEM analysis to examine scores that reflect relationships of the dependence

of NP competence, and PS competence on educational SE and PE, with GFI statistics for

the final measurement model is reported in Table 9. The fitted structural model

demonstrates adequate fit. In order to achieve good fit, error terms for PS competence

communicate effectively and manage safety risks were covaried to account for their

correlation, without adding theoretical complexity to the model, given its composite

variable structure. The parameter paths and estimates are reported in Table 11.

Table 11

Parameter Paths and Estimates

Path	Standardized Estimate	Unstandardized Estimate	p	Standard Error
SE →PE	.381	.414	***	.086
SE →NP role competence	.138	.140	(ns)	.088
PE →NP role competence	.097	.091	(ns)	.086
SE →PS competence	.277	.218	***	.060
PE → PS competence	.298	.215	***	.062
NP role → PS competence	.187	.144	*	.056

Note. p = p-value threshold; ***p<0.001; *p<0.01; ns = not significant; PE = psychological empowerment; SE = structural empowerment; NP = nurse practitioner; PS = patient safety.

4.8 Hypothesis Testing

The direct and indirect effects were analyzed for potential partial mediation.

Indirect effects were analyzed for establishing full mediation. The first step in mediation

analysis is to demonstrate that the exogenous variable affects the mediator variable. The

second step is to show that the exogenous variable affects the endogenous variable. The

final step is to show that the mediator variable affects the endogenous variable when the

exogenous variable is included in the equation. To test the hypotheses for mediation, the

Baron and Kenny (1986) method with and without the mediator were tested. A follow-up

mediation analysis of indirect effects with 2000 bias corrected bootstrapping resamples in

AMOS are reported in Table 12. The mediated and non-mediated models achieved

suitable fit between the model and the observed data (Table 9). The hypothesized

measurement and SEM is described graphically in Figure 6. All of the relationships were

positive, as hypothesized.

Table 12

Summary of Findings

Hypothesis	Standardized Direct Effect	Indirect	Result
Educational SE →PE	0.38***		Supported
NP competence → PS competence	0.19*		Supported
Educational SE →PE →NP competence	Direct w/o Med: 0.18** Direct w/ Med: 0.14 (ns)	0.10 (ns)	No mediation
Educational SE →PE → PS competence	Direct w/o Med: 0.39*** Direct w/ Med: 0.28***	0.30***	Partial mediation

Note. ***p<0.001, ** p<0.05, *p<0.01, (ns) not significant, SE structural empowerment, PE psychological empowerment, NP nurse practitioner, PS patient safety.

Five of six hypotheses are supported (Table 12). As hypothesized, in the

mediated model, the direct effect of educational SE on NP competence mediated by PE

were significant (ß=0.38, p< 0.001). The hypotheses for a direct effect of educational SE

mediated by PE on NP competence were significant prior to adding the mediator (ß=0.18,

p< 0.05), but after adding the mediator, the direct effect became nonsignificant. The

indirect effect was not significant, thus, no significant mediation occurred. The

hypothesis for the direct effect of educational SE mediated by PE on PS was significant

prior to adding the mediator (ß=0.39, p<0.001), and after adding the mediator (ß=0.28,

p<0.001), the indirect effect was positive and significant (ß=0.30, p<0.001). This

indicates that there is partial mediation. The direct effect of NP competence on PS

competence was significant (ß=0.19, p<0.01). The results are discussed in Chapter 5.
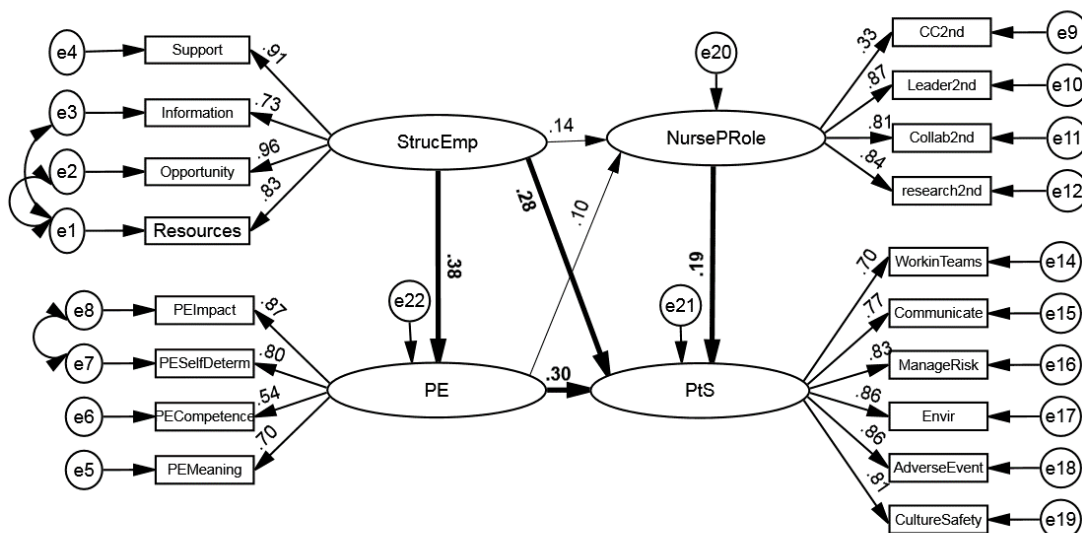
Figure 6 Structural model (the final model) with second-order factor standardized coefficients. StrucEmp=educational structural empowerment, PE=psychological empowerment, SelfDeterm=self-determination, P=practitioner, CC= clinical competence, 2nd=composite variable, Leader=leadership, Collab=collaboration, PtS=patient safety, Envir=environmental factors, e=error, fine lines indicate non-significant hypothesized pathways, all other pathways significant at 0.38, 0.28, 0.30 ***p<0.001, 0.19*p<0.01, χ^2/df =2.27; ***p<0.001; SRMR=0.04; RMSEA=0.08; CFI=0.98.

4.9 Summary of Findings

Based on the psychometric properties from the EFA and CFA of the NP

competence measure, the reduced 21-item measure was used for subsequent SEM testing

for this study. The instrument reliably measures four factors (i.e. direct comprehensive

care, collaboration, research, & leadership) of NP competence that can be used to identify

work capabilities or for NP education development needs. Additionally, the valid and

reliable four factor 12 items CLEQ (Siu et al., 2005) was used based on a CFA prior to

the development of composite variables for SEM analysis. The original PES (Spreitzer, 1995b) and H-PEPSS (Ginsburg et al., 2012) scales also demonstrated acceptable psychometric properties for SEM analysis, thus no modifications were needed for either of these in this study.

A model hypothesizing the effects of empowerment on newly practicing NPs competence was then tested using SEM. As discussed, model fit indices, parameter paths and estimates supported the majority of the hypothesized relationships, using the study variables (Figure 6). Educational SE in learning was found to have a significant influence on newly graduated NPs PE. NPs who reported higher educational SE reported higher levels of PS competence. NPs who perceived higher levels of NP competence were more likely to report higher levels of PS competence. PE partially mediated the positive relationship for educational SE and PS competence, yet no mediation effect occurred for educational SE and NP competence. The evidence supports the positive direct impact of educational SE on PS competence. In Chapter 5, insights relating to the hypotheses, and their implications, are described with a more detailed discussion of the final model and study results. Recommendations for future studies are also addressed.

5   Chapter Five Discussion

The present study is the first to examine the interrelationships among Kanter's Theory of Structural Power in Organizations (1977, 1993, 2008), Spreitzer's Psychological Empowerment conceptualization (1995a), NP competence as delineated in the *Strong Model* (Ackerman et al., 1996), and NP perceptions of PS competence, as these concepts relate to role competence and safe NP practice. A non-experimental design was used in a convenience sample of newly graduated Canadian NPs to test the hypothesized relationships among the four major study concepts. The intention was to generate evidence supporting the hypothesized relationships between education empowerment, PE, NP competence, and PS competence. Investigating the link between NP competence and PS competence in healthcare providers are a priority due to increasing patient acuity and complexity in the healthcare system. Given the importance of education in developing new healthcare practitioners' role and PS competence, this should be of interest to educators, nurses, and researchers.

5.1 Discussion of Findings

The discussion of the research findings begins by addressing the hypothesized relationships among the tested concepts using SEM, followed by an outline of the implications for education, nursing, and research, as well as the study's limitations. The hypothesized relationships between educational SE, PE, and competence for newly graduated NPs contributes to our understanding of empowerment in education and competence for newly graduated NPs. The hypothesized model provides information as to how nurse educators can influence educational SE in order to develop NP role and PS competence. As one obtains access to support, information, resources, and opportunities in an education environment, competence is affected. The study results provide partial

support for the hypothesized model suggesting the use of empowerment variables in nursing education, as described by Kanter (1977).

H1 Structural empowerment and psychological empowerment. This study is the first to determine the impact of educational SE on PE in newly practicing NPs. A direct (ß=0.38, p< 0.001) relationship between educational SE and PE (Table 12) was were evident. Consistent with previous studies, as discussed in Chapter 2, the relationship between educational SE and PE appears to be stable where participants responded to each educational SE item on a Likert scale. Of the educational SE dimensions, respondents reported opportunity, information, resources, and support, as moderately high learning experiences. Higher scores indicate increased perceptions of educational SE dimensions, for example, encouragement to pursue your own learning needs, active engagement in learning activities, chance to learn new skills, formal knowledge that helps one solve patient care problems, or time available to accomplish learning goals.

This study adds to using four dimensions of SE as measures for the latent educational SE concept similar to recent literature for SE in the work setting (L. Chang et al., 2010; Laschinger, Leiter, Day, & Gilin, 2009; Stewart et al., 2010). In the current study, there was a significant direct effect between educational SE and PE. Therefore, increased perceptions of educational SE were associated with the motivational potential of PE for work in the NP job. Given that educational institutions influence the development of nurses' professional practice behaviours (Babenko-Mould, Iwasiw, Andrusyszyn, Spence Laschinger, et al., 2012), and that PE is an important concept for individual autonomous professional practice behaviours (Livsey, 2009), educational SE together with PE may augment newly practicing NPs to engage in professional practice.

One aim of this study was to provide evidence about newly practicing NPs perceptions of empowerment in education environments. The results suggest that learning environments shape newly graduated NPs' perceptions of empowerment for learning and PE, similar to findings from studies of nursing students educational SE and PE (Lethbridge, 2010; Siu et al., 2005). The findings from these studies highlight the importance of examining and testing relationships between educational SE and PE with outcome variables that are important for nursing education, such as reflective thinking (Lethbridge et al., 2011) and problem-based or lecture learning (Siu et al., 2005). This study adds the dimension of NP competence and PS competence; additionally, the direct positive relationship of educational SE is important for professional nursing practice behaviours in nursing education (Babenko-Mould, Iwasiw, Andrusyszyn, Spence Laschinger, et al., 2012; Livsey, 2009). The current study further supports previous research examining the importance of educational SE in student learning, and the importance of creating structurally empowering learning experiences in nursing education to develop PE or professional practice behaviours.

H2 Structural empowerment and nurse practitioner role competence. The direct effect of educational SE on NP competence (ß =0.18, p<0.05) was positive and significant while the indirect effect was not statistically significant. As a result, greater changes in educational SE do not necessarily lead to significant indirect changes in NP competence, through changes in PE. Higher initial scores in the mid to moderate range for educational SE (range 3.0 – 3.7 on a scale of 5) and PE (range 4.8 – 5.4 on a scale of 7) as factors for job competence may have resulted in smaller changes for NP competence with less variance between scores, where the indirect path is not significant. Respondents scored dimensions of educational SE in the mid-to-high range, the

dimension of PE in a high range, and the NP competence dimensions in a mid to high range where a ceiling effect may have impacted a PE mediation effect, such as possibly clustering of high educational SE, PE, and NP competence scores that could have reduced correlations between scores (Polit & Beck, 2016).

The NPCS for this study had four subscales, including nine direct comprehensive care items, four collaboration items, three research items, and five leadership measures. Higher scores indicate higher perceptions of competence. Respondents perceived the NP competence dimensions of direct comprehensive care the highest; followed by collaboration, research, and leadership. Given that NP education programs in Canada require a minimum of 700 clinical practice hours (CASN, 2012a), in addition to theory courses, students may have less exposure to research or leadership domains of practice, which may explain the lower scores for research and leadership competency. As competencies mitigate role ambiguity and newcomer feelings of control over work (Spreitzer, 2008), the positive relationship evidence is important for NP competence, where newly graduated nurses' perceptions of competence are positive in SE learning environments. As positive self-perception of role performance is important for competence and role supplementation needs (Thibodeau & Hawkins, 1989), further investigation of NP competence is needed.

H3 Structural empowerment and patient safety competence. The hypothesis that SE learning environments positively relate to PS competence was supported. This study was the first to determine the impact of educational SE on PS competence in newly graduated NPs. There was a significant positive direct relationship between educational SE and PS, with evidence of an indirect effect of educational SE on PS competence through PE. These positive findings are consistent with previous studies of SE and PS in

nurses (Armellino et al., 2010; Armstrong & Laschinger, 2006; Armstrong et al., 2009; Knol & van Linge, 2009) where educational SE maybe an important predictor for PS in the nursing workforce and education. Respondents reported measurement scales for communication, harm reduction, and culture of safety higher than work in teams, managing safety risk, understanding human and environmental factors for dimensions of PS; reliability scores are reported in chapter four. The scores in a sample of Canadian newly graduated baccalaureate nurses, pharmacy, and medical students (Ginsburg et al., 2013) and baccalaureate nurses from Italy (Bressan et al., 2015) rated PS similarly. The newly graduated NPs in this study therefore consider their PS competence to be marginally higher than a comparative study in baccalaureate prepared nurses (Ginsburg et al., 2013). The self-reported perceptions of PS competence and confidence that influence PS is important to identify further educational needs for health professionals; for example, understanding human and environmental factors scored the lowest in newly graduated NPs. The investigation of newly graduated NPs is useful, as examining perceptions of PS competence at entry to practice provides an opportunity for upstream strategies with which to address PS competence. Identifying factors important for PS upon completion of an educational program offers insights that can address PS educational needs prior to healthcare professionals beginning to practice. The early identification of deficiencies for PS competence can thus lead to longer-term strategies and solutions that may impact PS in healthcare. Thus, introducing the PS concepts into NP curriculum is needed, and requires further study of PS in health professionals education programs.

Few studies have investigated how PS is incorporated in health education (Bressan et al., 2015; Ginsburg et al., 2013). As such, examining growth of PS factors in

providers professional education programs is valuable compared to measuring clinical

safety, such as (e.g., hand hygiene, medication administration, or monitoring the number

of adverse reports) on-site specific locations (e.g., acute care). Several studies have

demonstrated that education and learning are effective methods with which to advance PS

culture and competence (Brown, Williams, & Lynch, 2013; Ginsburg et al., 2013;

Kirwan et al., 2013; Lievens & Vlerick, 2014; Samedy, Quinn Griffin, Leask Capitulo, &

Fitzpatrick, 2012; Wetzel, Dow, & Mazmanian, 2011); yet, little is known from the

perspective of entry to practice education programs. Strategies that focus on system

aspects of safety have been effective in other industries, such as aviation and nuclear

power (Modak et al., 2007), and thus maybe useful to adopt in healthcare or health

professional education. As such, effective PS learning introduced early during formal

education programs of healthcare providers maybe beneficial. Accordingly, PS in

healthcare from the perspective of health professional students is important for nurse

educators and regulators to determine the need to integrate PS into the curricula. The

education SE direct and indirect paths to PE create changes in PS competence; these

findings were anticipated, and supported the hypothesis.

H4 and H5 Psychological empowerment mediates structural empowerment

relationship. This study adds to the body of literature concerning the theoretical and

empirical link of PE as a mediator for educational SE, and positive outcomes related to

nurses' education or practice. The results indicate that newly practicing NPs' education

SE resulted in higher levels of PE. The direct and indirect relationships between

educational SE and PE were evident in this study (Table 12). Consistent with the

previous research identified in Chapter 2, the positive relationship appears to be reliable.

Respondents perceived meaning as most important, followed by self-determination,

impact, and competence. The high level of PE suggests that newly practicing NPs find their work meaningful, with competence rated the lowest score of the four PE dimensions in this study. Competence is an important indicator for the ability to act empowered, and may be limited by the advance beginner stage (Benner, 1982) where the trajectory for perceiving one's self as competent develops and continues beyond the first two years of practice following an education program in NPs (Alber et al., 2009). Consistent with other NP studies (Alber et al., 2009), continuing competence development beyond graduation and the first two years of practice may be necessary.

The high level of PE experienced by newly graduated NPs in this study was similar to a study of NPs with significant years of NP practice (6 to over 15 years) Stewart et al., 2010). Participants' scores in this study are lower than those of studies of NPs with more years of experience, where the mean for the dimension of meaning was scored higher than self-determination, followed by competence and lowest impact (Stewart et al., 2010). As PE collectively contributes to intrinsic feelings of control in relation to work (Spreitzer, 1997), it is logical that NPs with more work experience, such as in Stewart et al.'s study, may also experience greater control in the role. Therefore, findings of the current study support previous research in NPs, where the work that is done is important to them, the job activities are personally meaningful, and where one possesses feelings of confidence in the ability to do a job, master the skills necessary for the job, decide how to go about doing work, or demonstrating autonomy in determining how to do a job. The importance of work is significant for new healthcare providers, as PE contributes to job satisfaction, positive work attitudes, positive work performance, and less job strain (Spreitzer, 2008).

The mediation effect of PE is consistent with other studies where PE mediates the positive relationship between SE and PS, as discussed in Chapter 2. Rather than structures or conditions in the environment, PE encompasses personal perceptions on the ability and confidence to complete tasks autonomously. In conclusion, PE has the potential to motivate or influence greater levels of PS competence. The results of this study add to the literature that links feeling empowered to acting empowered, and is the first to focus on newly graduated NPs. It is imperative to move forward with strategies to enhance newly graduated healthcare professionals' competence due to the ever-growing complicated health care system, addressing underserved populations health care needs, healthcare provider error, and complex client health care needs. The results of the current study provide support for the development of PS competence in NPs, and justifies further study for the relationship to role competence.

H6 Nurse practitioner role competence and patient safety competence. A direct relationship between NP competence and PS competence was positive and significant. The effect size suggests that as NP competence changes so too will PS competence in newly practicing NPs. Thus, NPs' positive perceptions of role competence have the potential to influence greater levels of PS competence. The results of the current study provide support for this integrated model of NP competence and PS competence for NPs, and warrants further study in healthcare graduates.

Additionally, the hypothesis that acting empowered would result in higher perceived levels of PS competence was supported, as the effect size for PS competence was significant and large. The large effect size suggests that educational environments that enable newly graduated NPs to feel more autonomous in determining how to do a job, ascribe meaning to the work's importance, possess competence in the ability to do

the job, and maintain control over what happens in a job, can use the behaviours to develop PS competence. Thus, PE that takes place at an intrapersonal level has the potential to motivate or influence outcomes of PS competence.

5.2 Implications for Nursing Education

Testing the relationship between NP competence, PS competence, and empowerment was helpful in order to advance nursing education science. The study was grounded in Kanter's Theory of Structural Power in Organizations (1977), Spreitzer's Psychological Empowerment (Spreitzer, 1995a) tenets, and the *Strong Model* (Ackerman et al., 1996) conceptualization for advanced practice, to provide a theory-driven research framework. Theoretically grounded research is necessary in order to advance knowledge about nursing education and professional practice, and thus the methods and design used in this study are advantageous for future research.

Nurse practitioner students who perceive access to educational empowerment structures achieved a sense of meaning in their job activities, competence in their job, autonomy for work, and control in their work. Several SE nursing education strategies proposed by Siu et al. (2005) assist educators in fostering empowerment environments, where the delivery of nursing education needs to be consider in NP education. For example, distributed learning opportunities or resources such as webinars, online videos, online simulations, or videotelephony rather than face-to-face conferences or education inservices may be advantageous for learners' educational SE. A hallmark of SE is work that allows for discretion, flexibility, and creativity (Kanter, 1993). Environments that possess a flexible online learning platform and use current technologies may enhance NP students' discretion, as well as their autonomy to make decisions related to access for support, opportunity, information, and resources in nursing education.

Nurse educators can directly impact students' perception of educational SE and PE using a variety of strategies. A key tenet for both SE and PE is role clarity; thus if students and educators use competencies to guide individual or group projects, role clarity can foster both SE and PE, in turn developing competence. Further, competencies used as an evaluation process assist newly licensed nurses to identified gaps in education for practice preparation, where gaps are more frequently associated with involvement in errors in the work setting and difficulties with client assignments (Smith & Crawford, 2003). In Canada, a useful competency framework to consider in developing core NP curriculum activities is the Nurse Practitioner Education in Canada National Framework of Guiding Principles and Essential Components (CASN, 2012a). Additionally, the patient safe education program available on the Patients Safety Institute of Canada or the WHO Patient Safety Curriculum Guide could be used for healthcare professionals' PS education. The resources to inform curriculum content may afford educators or students the opportunity to develop knowledge and skills, or teaching/learning strategies, to maximize educational SE, and the ability to develop specific competencies such as addressing the lower scores for research, leadership, and understanding human and environmental factors competencies in NP respondents.

To summarize, as professional practice behaviours in nurses are developed in educational programs so that NPs can function autonomously in practice, the theory and evidence that helps identify factors that impact learning, or predictors to develop competence, are needed. Overall support for educational SE and PE with this further testing adds to the literature for these concepts, and addresses the gap in developing competence in NPs. As perceptions of educational SE and PE relate to PS competence, nurse educators need to consider strategies to enhance NP competence and PS

competence. Integrating lessons or strategies that contribute to role clarity – for example, examining competencies and legislation (provincial nursing regulation and PS legislation) early in an education program – may provide a useful strategy with which to begin building new graduates' effectiveness in a role or PS upon graduation. If students have opportunities early in their academic studies to develop PS competence, it is possible they will feel more empowered as novice NPs to enact PS attitudes and behaviours during clinical practicums. Conditions of learning are essential for students' socialization, and for the development of common PS values (Ginsburg et al., 2013). As environmental conditions foster positive views regarding relevant factors for safe patient care delivery (Leonard & Frankel, 2010), educational empowerment research serves to identify factors important for preparing NP care providers for practice, where empowering education conditions are conducive to preparing safe competent providers.

5.3 Implications for Nursing Practice

The findings illuminate the importance of the quality of the education environment to newly practicing NPs development of role and PS competence. To address PS in healthcare, educational SE for PS needs to be part of education curricula in formal (post-secondary) or informal (organizational institution) settings. Education and learning embedded within healthcare professionals' education programs is important for improving PS competence, as students develop knowledge and skills to better prepared them for safe practice. Proactive PS competence preparation during educational programs prior to professional licensure for healthcare practice is needed given the PS harm statistics (Baker, 2004; Modak et al., 2007; Sexton et al., 2000; WHO, 2011). Further, organizational processes for making care safer must be reviewed, as often detailed adverse event report forms are submitted to direct supervisors, where if the

supervisor believed the report is a PS incident, a report is forwarded on with no reporting or feedback for learning occurring (Flemons & McRae, 2012; Kendel, 2014).

In the present study, NP and PS competence outcomes such as clinical care, collaboration, managing safety risk, or recognizing and responding to adverse events are improved through feedback, problem solving advice, learning, and information or knowledge. This, in turn, develops internal beliefs of confidence. A principle of SE is that investment in SE activities for NP or PS competence will foster effective workers, who can make speedy decisions and take advantage of innovation (Kanter, 1977, 1993). Effective job performance is not only beneficial to production, but also is the basis for safe health care in decision-making or innovative behavior resulting in PS (Knol & van Linge, 2009). In Canada, a culture of under reporting adverse events (e.g. missed or delayed diagnoses, medication management, prescribing) in primary health care occurs (Kingston-Riechers et al., 2011) with primary health care error reporting processes, follow-up, and analysis of adverse events lacking (CIHI, 2007). Enhancing PS education will therefore positively influence safety culture, and may lead to effectively managing safety risk, addressing errors, or reporting adverse events to improve PS in newly graduated healthcare professionals.

5.4 Implications for Research

Understanding the factors that contribute to NPs' empowerment will provide useful approaches for future research in nursing education. PE factors (i.e., meaningful work, confident in job abilities, self-assured in capabilities for work, or necessary skills for the job) that mediate the relationship between program effectiveness (i.e., information of formal knowledge that helps to solve patient care problems, support to problem solve, the opportunity to learn new skills, or resources of people to help with learning goals) are

important for developing competence. The current findings provide the foundation to formulate research questions regarding the impact of educational SE, mediated by PE, with positive relations for NP competence and PS competence.

The design, sample, and data collection procedures for this study are useful additions to knowledge on conducting national studies of nurses in Canada. The study itself could be replicated to obtain a higher response rate, or investigate reasons for lower perceptions of leadership and research domains of NP practice. In addition, a comparison study of formal education and NP transitions to the workforce may offer valuable insight into competence development. Examination of respondents who do not transition in the role, and their reasons, could also be a focus of future studies.

An important consideration for future research is to examine PS learning outcomes in nursing education curricula. Determining the PS learning outcomes in nursing education curricula could provide guidance for nursing education programs, and for nurse administrators in practice settings to identify PS education needs. For example, understanding students' current perceptions of PS concepts, as learning and beliefs held about incident reporting together affect effective PS culture practices (Lukewich et al., 2015; Wong, 2014). Ginsberg et al. (2013) suggest that learning environments develop desired attitudes about PS, which is evident in health provider students; yet, students' skills and confidence in managing safety risk have been found lacking. Further, role modeling messages from clinical staff strongly influence the impact on learning (Wong, 2014), for example, NP students who complete 700 clinical hours will be significantly influenced by preceptors who role model PS competence.

Patient safety is under-reported and understudied in ambulatory settings (Singer et al., 2015), with limited studies of adverse event experiences of healthcare professional

students in clinical learning. A study of NP students' adverse events or close call experiences during learning in practice settings is needed, given more than 700 clinical hours in ambulatory care settings are required in NP education programs. Thus, determining the extent to which PS competencies are embedded in nursing graduate curricula in the classroom and clinical environment with adverse event experiences may offer insight to augment PS development for educators or employers.

This study was of newly practicing NPs in the first 2 years of graduation. A longitudinal study which follows first and second year full-time students, and third and fourth year part-time students' perceptions of competence before graduation could be beneficial in that it would help to identify educational SE and competence perceptions over time. Specific factors could include the number of clinical hours, theory hours, mentorship by NP faculty, and program length or delivery methods such as face-to-face or distributed learning. This information could be collected and controlled for in the analysis for future studies. Alternatively, exploring competence and the transition in newly graduated NPs, through to five years of practice experience may aid in identifying factors important for role competence in the work setting. It is possible that length of time in the program or perceptions over time could affect educational SE or PE or self-perceptions of competence.

The results of the current study make a valuable contribution to the literature, as research about education and NPs is needed, specifically as it relates to new healthcare graduates (Canadian Institute for Health Research, 2009; Randolph et al., 2012). Kanter's (1977) and Spreitzer's (1995a) empowerment theories offer a method with which to explain empowerment factors that positively affect competence. It was revealed in the quantitative data that educational SE and PE relate to NP competence and PS

competence, where the identified relationships suggest that structures and personal beliefs are important in developing competence. Clearly, as PS and healthcare provider competence are rapidly developing concerns associated with increasing complexity in the healthcare system and in patients, education that is reinforced in the clinical setting is needed to establish and foster competence in NPs and for PS.

Psychometric properties of the nurse practitioner role competence survey. Given there are no published studies of NP role competence for Canadian NPs, an EFA and CFA were completed as part of this study, to proceed to SEM. Based on EFA and CFA results, the 42 item measure was reduced to a 4 latent construct, 21item measure, to distinguish convergent and discriminant validity consistent with conceptual underpinnings of Canadian NP competencies and the *Strong Model*. The final 21 items loaded on the 4 latent variables as conceptually expected, showing a good fit of the intended factor structure, which is consistent with a previous Australian study of advance practice nurses (Chang et al., 2011). The NP role competence scale for this study had 4 subscales, including 9 direct comprehensive care item, 4 collaboration item, 3 research item, 5 leadership item measures. The Likert scale ranged from 1 to 4. Higher scores indicate higher perceptions of competence. Each of the four NPCS – direct comprehensive care, collaboration, leadership, and research scales contribute to an overall construct of NP role competence.

Preliminary work supports the theoretical underpinnings of advanced practice and NP role domains for practice, and further testing is encouraged. The data fit the four latent constructs, suggesting an overall construct of NP role competence can be measured by these four dimensions, that each is different, yet contributes to an overall construct for NP competence. The strong internal consistency demonstrates initial reliability of the

NPCS with a Canadian population of newly graduated NPs. The psychometric properties

are promising and require further reliability testing. The NPCS is theoretically modeled

based on the *Strong Model* and provides a method to assess perceived role competence.

Limitations

Several limitations of this study must be considered when interpreting findings.

The questionnaires are self-reported perceptions related to empowerment and

competence, where social desirability bias contribute to overestimation or

underestimation of competence. However, long instruments tend to be more reliable

(Polit & Beck, 2016); thus, the survey length provides higher confidence for conclusions

and findings along with the sound psychometric properties of the study measures. In

order to mitigate the social desirability effect, the survey instructions indicated that there

was no right or wrong answer and that the responses were anonymous. Use of self-

reported data and the associated risk of common method bias may have occurred in this

study, although the study design method and psychometric tool properties may mitigate

method bias. Additionally, instructions indicated that the responses were anonymous and

grouped to mitigate social undesirability or consequences associated to the respondents

responses (Podsakoff, MacKenzie, & Podsakoff, 2012).

Another potential limitation of this study was the length of time required to

complete the survey. The combined instruments required approximately 15 minutes to

complete, and may have led to respondent fatigue or random answering. The cross-

sectional survey design for data collected during one time period is useful for describing

relationships, but also limits the ability to make causal inferences (Polit & Beck, 2016).

The convenience sampling limits the generalizability of the findings (Polit & Beck,

2016). The design is dependent upon recall of past events, and thus may contribute to

information and recall bias. The threats to validity from self-administered surveys include biases related to self-reported data (memory, select recall, responding to look favorable), as well as sample selection and size.

The convenience sample response rate was 28%, thus non-response representativeness may be an issue. Non-response bias may result from a lack of data from NPs who chose not to participate, where those who participated may have different perceived competence than responders. Generalization beyond the study participants is limited due to the sample of newly practicing NPs in Canada. However, a strength of this work was the convenience sample was reasonably large (n=190) and drawn from respondents across Canada, where the sample characteristics appeared to be similar to those found with other published NP demographics, as discussed in Chapter 4.

Other limitations in the study design include the scope of a national sample. Agency participation instructions were provided in writing, by email, and telephone to the 20 nursing organizations for distribution of the survey invites to members. It was not possible to guarantee that the instructions were followed for invitations and reminder notices. Data collection took place over approximately six months, where exposure to external events may have impacted respondents, such as an adverse event in the work setting. For example, NPs may have learned more about the role or PS through a work experience as a new graduate, although the instructions were to recall learning during formal NP education. The number of education clinical practice hours, simulated learning hours, distributed or distance learning, or theory hours was not known, and a variety of practice or theory components may have influenced responses. In future studies, additional sociodemographic characteristics could be collected and examined as possible control variables.

The results of the study must be considered in the context of the above-mentioned elements of caution; however, support of the *a priori* hypothesized model may mitigate the limitations to some extent. Further studies are needed to address the limitations discussed, and to validate this study's findings.

5.5 Summary

The aim of this study was to test a model linking four concepts thought to be important in nursing education for safe competent healthcare: educational SE, PE, NP competence, and PS competence in newly graduated NPs, from across Canada. In spite of the study's limitations, the results contribute to general knowledge of the associations of SE in nursing education in Canada, and to a growing call for research centred on the education of healthcare providers, particularly NPs. The findings support the theoretical premise of Kanter's (1977) and Spreitzer's (1995a) notion for development of competence in work, and offer some explanation as to how newly practicing NPs perceive role and PS competence. Professional role self-perceptions are fundamental to identifying gaps and areas for improvement, or to address role supplementation needs. Specific factors that provide educational SE and PE are useful for nursing educators, employers, expanding knowledge from previous research, and for new healthcare provider research beyond nursing. Likewise, studies of role and PS competence offer insight for educators and administrators who hire new graduate NPs. This is the first study to test PE mediation of educational SE on NP competence and PS competence, emphasizing the importance of creating SE learning experiences to develop competence in new healthcare providers.

This study's data support the hypothesis that empowering education conditions that motivate effective work also related positively to PS competence, further research is

needed to examine the relation to NP role competence. In addition, there are no studies to date addressing empowerment in education and its link to PE in newly graduated NPs with positive relations between NP competence and PS competence. Finally, the theory informed latent constructs of educational SE, PE, and PS competence were supported by data evidence. Continued use of the educational SE, PE, and the *Strong Model* conceptualization in nursing education research will assist in building a body of evidence toward understanding how empowerment education environments influence PE, and how this impacts the ability for NPs to engage in competent work behaviours. This study provides preliminary evidence for continuing to examine these concepts together to advance understanding of learning effectiveness of nursing education programs and perceptions of capabilities in nurses. The results of this study may be used to generate theory-informed strategies to further educate and continue to develop a safe healthcare workforce.

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Appendix A. Content Analysis Strong Model: Canadian NP Competencies

As part of this study, a comparative analysis of advanced practice and NP competencies was conducted. The initial step was to itemize the *Strong Model* domains of practice and job activities with the Canadian Nurses Association core NP competencies in the table below for comparison. The content analysis illustrated a suitable fit of the *Strong Model* domains of practice representation to the Canadian core NP competencies.

Strong Model Domains of Practice (Ackerman et al., 1996, p. 71)	Canadian Nurses Association (2010, p. 8) NP Competencies
Direct Comprehensive Care	
Conduct and document patient history and physical examination.	• Performs a focused health assessment and/or an advanced comprehensive health assessment, using and adapting assessment tools and techniques based on client needs and relevance to client stage of life. • Performs a complete or focused physical examination, and identifies and interprets normal and abnormal findings as appropriate to client presentation.
Assess psychosocial, cultural, and religious factors affecting patient needs.	• Performs a complete or focused health history appropriate to the client's situation, including physical, psychosocial, emotional, ethnic, cultural and spiritual dimensions of health. • Incorporates knowledge of diversity, cultural safety and determinants of health in the assessment, diagnosis and therapeutic management of clients and in the evaluation of outcomes. • Incorporates knowledge of developmental and life stages, pathophysiology, psychopathology, epidemiology, environmental exposure, infectious diseases, behavioural sciences, demographics and family processes when performing health assessments, making diagnoses and providing overall therapeutic management
Make a medical diagnosis within specialty scope of practice and practice guidelines.	• Synthesizes health assessment information using critical inquiry and clinical reasoning to diagnose health risks and states of health/illness. • Formulates differential diagnoses through the integration of client information and evidence-informed practice. • Diagnoses diseases, disorders, injuries and conditions, and identifies health needs, while

	considering the client's response to the health/illness experience.
Identify and initiate required diagnostic tests and procedures.	• Orders and/or performs screening and diagnostic investigations, interprets results using evidence-informed clinical reasoning and critical inquiry, and assumes responsibility for follow-up.
Gather and interpret assessment data to formulate plan of care.	• Prescribes pharmacotherapy based on the client's health history, disease, disorder, condition and stage of life, and individual circumstances. • Applies knowledge of pharmacotherapy and evidence-informed practice in prescribing, monitoring and dispensing drugs • Prescribes and/or dispenses drugs in accordance with provincial, territorial and/or federal standards and legislative requirements. • Uses an evidence-informed approach in the selection or consideration of complementary and alternative therapies, and considers the benefits and risks to clients' health and safety. • Assesses, identifies and critically analyzes information from a variety of sources to determine client and/or population trends and patterns that have health implications. • Incorporates knowledge of the clinical manifestations of normal health events, acute illness/ injuries, chronic diseases, comorbidities and emergency health needs, including the effects of multiple etiologies in the assessment, diagnosis and therapeutic management of clients and in the evaluation of outcomes.
Perform specialty-specific procedures.	• Initiates interventions for the purpose of stabilizing clients in emergent, urgent and life-threatening situations. • Performs invasive/non-invasive procedures for the clinical management and/or prevention of disease, injuries, disorders or conditions.
Assess patient or family response to therapy and modify plan of care on the basis of response.	• Explores therapeutic options, considering implications for clients through the integration of client information and evidence-informed practice. • Determines care options and initiates therapeutic interventions in collaboration with clients, while considering client perspectives, feasibility and best outcomes.

	• Collaborates with clients in monitoring their response to therapeutic interventions and in adjusting interventions, as needed. • Monitors, evaluates and revises the plan of care and therapeutic intervention based on current evidence-informed practice and on client goals, preferences, health status and outcomes.
Communicate plan of care and response to patient and family.	• Communicates with clients about health assessment findings and/or diagnosis, including outcomes and prognosis. • Creates an environment in which effective communication of diagnostic and therapeutic intervention can take place. • Counsels clients on medication therapy, benefits, potential side effects, interactions, importance of compliance and recommended follow-up. • Provides client diagnostic information and education that are relevant, theory-based and evidence-informed, using appropriate teaching/learning strategies.
Provide appropriate education to patient and family.	• Supports, educates, coaches and counsels clients regarding diagnoses, prognoses and self-management, including their personal responses to diseases, disorders, conditions, injuries, risk factors, lifestyle changes and therapeutic interventions. • Promotes client self-efficacy in navigating the health-care system and in identifying and accessing the necessary resources.
Document appropriately on patient record.	• Documents clinical data, assessment findings, diagnoses, plans of care, therapeutic interventions, client responses and clinical rationale in a timely and accurate manner.
Serve as a consultant in improving patient care and nursing practice on the basis of expertise in area of specialization.	• Advocates for clients in relation to therapeutic intervention, health-care access, the health-care system and policy decisions that affect health and quality of life. • Promotes safe client care by mitigating harm and addressing immediate risks for clients and others affected by adverse events and near misses.
Facilitate the process of ethical decision making in patient care.	• Demonstrates awareness of, and is mindful of, marketing strategies used to promote health products, medical devices, medications, alternative therapies and health programs.

	• Intervenes, as appropriate, when potential or actual problematic substance use and/or misuse of drugs, including complementary and alternative therapies, is identified. • Discloses the facts of adverse events to clients, and reports adverse events to appropriate authorities, in keeping with relevant legislation and organizational policies.
Coordinate interdisciplinary plan for care of patients.	• Coordinates and facilitates client care with other health-care providers, agencies and community resources.
Collaborate with other services to optimize patient's health status.	• Anticipates and diagnoses emergent, urgent and life-threatening situations.
Facilitate efficient movement of patient through healthcare system.	• Integrates the principles of resource allocation and cost-effectiveness into clinical decision-making.
Support of Systems	
Consult with others regarding conduct of projects or presentations.	• Acts as a consultant to and/or refers and accepts referrals from health-care providers, community agencies and allied non-health-care professionals.
Actively contribute to medical center and school of nursing recruitment and retention activities.	• Collaborates with members of the health-care team to provide and promote interprofessional client-centred care at the individual, organizational and systems levels.
Participate in strategic planning for the service, department, or hospital.	• Collaborates with members of the health-care team to promote and guide continuous quality improvement initiatives at the individual, organizational and systems levels. • Initiates or participates in the development of strategies to address identified client and/or population health implications.
Provide direction for and participation in unit or service quality-improvement programs.	• Initiates or participates in the design of services/interventions for health promotion, health protection, and the prevention of injury, illness, disease and complications.
Provide leadership and actively participate in the assessment, development, implementation, and evaluation of quality-improvement programs in collaboration with nursing leadership.	• Applies advanced knowledge and skills in communication, negotiation, coalition building, change management and conflict-resolution, including the ability to analyze, manage and negotiate conflict. • Initiates or participates in the development and implementation of evaluation processes, including identification of indicators for ongoing monitoring of strategies, services and interventions.

Provide leadership in the development, implementation, and evaluation of standards of practice, policies, and procedures.	• Advocates for and participates in creating an organizational environment that supports safe client care, collaborative practice and professional growth. • Guides, initiates and provides leadership in the development and implementation of standards, practice guidelines, quality assurance, and education and research initiatives.
Serve as a mentor.	• Acts as a preceptor, mentor and coach to nursing colleagues, other members of the health-care team and students.
Advocate for the role of the acute care NP.	• Articulates and promotes the role of the nurse practitioner to clients, other health-care providers, social and public service sectors, the public, legislators and policy-makers.
Serve as a spokesperson for nursing and the medical center when interacting with other professionals, patients, families, and the public.	• Provides leadership in the development and integration of the nurse practitioner role within the health-care system.
Research	
Conduct clinical investigations.	• Develops, utilizes and evaluates processes within the practice setting to ensure that clients receive coordinated health services that identify client outcomes and contribute to knowledge development.
Participate in investigations to monitor and improve quality of patient care practices.	• Identifies, collects data on, and evaluates the outcomes of, nurse practitioner practice for clients and the health-care system.
Seek out potential funding sources to support investigations of clinical issues or to fund program development.	• Identifies and implements research-based innovations for improving client care at the individual, organizational and systems levels.
Facilitate clinical research through collaboration with others in investigations, analyze practice problems to generate research questions, and enable access to clients and data.	• Collaborates with other members of the health-care team or the community to identify research opportunities and to conduct and/or support research.
Use research and integrate theory into practice and recommend policy changes on the basis of research.	• Engages in evidence-informed practice by critically appraising and applying relevant research, best practice guidelines and theory when providing health-care services.

Engineer or design clinical information systems that make data available for future research.	• Develops, utilizes and evaluates processes within the practice setting to ensure that clients receive coordinated health services that identify client outcomes and contribute to knowledge development. •
Education	
Evaluate education programs and recommend revision as needed.	• The Canadian Nurse Practitioner Framework (2010) can be either adopted as is or modified so support: reviewing & approving/recognizing NP education programs. Nurse practitioner educators may use it for curriculum development.
Serve as a formal educator and clinical preceptor for nursing and medical students, staff, and others.	• Acts as a preceptor, mentor and coach to nursing colleagues, other members of the health-care team and students.
Identify learning needs of various populations and contribute to the development of educational programs and resources.	• Acts as a preceptor, mentor and coach to nursing colleagues, other members of the health-care team and students.
Serve as informal educator to staff while providing direct care activities.	• Acts as a preceptor, mentor and coach to nursing colleagues, other members of the health-care team and students.
Facilitate professional development of nursing staff through education.	• Engages in ongoing professional development and accepts personal responsibility for maintaining nurse practitioner competence.
Provide appropriate patient and family education.	• Supports, educates, coaches and counsels clients regarding diagnoses, prognoses and self-management, including their personal responses to diseases, disorders, conditions, injuries, risk factors, lifestyle changes and therapeutic interventions.
Publication & Professional Leadership	
Disseminate nursing knowledge through presentation or publication at local, regional, national, and international levels.	• Acts as a change agent through knowledge translation and dissemination of new knowledge that may include formal presentations, publication, informal discussions and the development of best practice guidelines and policies.
Serve as a resource or committee member in professional organizations.	• Guides, initiates and provides leadership in the development and implementation of standards, practice guidelines, quality assurance, and education and research initiatives. • Guides, initiates and provides leadership in policy-related activities to influence practice, health services and public policy.

	Coordinates and facilitates client care with other health-care providers, agencies and community resources.
Serve as a consultant to individuals and groups in the professional and lay communities and other hospitals or institutions.	• Consults with and/or refers clients to other health-care providers at any point in the care continuum when the client's condition is not within the nurse practitioner scope of practice or the individual nurse practitioner's competence.
Represent nursing in institutional and community forums focused on the educational needs of various populations.	• Provides leadership in the management of clinical care and is a resource person, educator and role model.
Represent a professional nursing image at institutional and community forums.	• Practices in accordance with federal and provincial/territorial legislation, professional and ethical standards, and policy relevant to nurse practitioner practice. • Understands the changes in scope of practice from that of a registered nurse and the ways that these changes affect responsibilities and accountabilities when assuming the reserved title and scope of practice of a nurse practitioner. • Adheres to federal and provincial/territorial legislation, policies and standards related to privacy, documentation and information management (this applies to verbal, written or electronic records).
Provide leadership in shaping public policy on healthcare.	• Guides, initiates and provides leadership in policy-related activities to influence practice, health services and public policy.

Note. NP nurse practitioner.

Appendix B. Ethics Approval Letter

Western Research

Research Ethics

Use of Human Participants - Revision Ethics Approval Notice

Principal Investigator: Dr. Mary Anne Andrusyszyn
File Number:104646
Review Level: Delegated
Protocol Title: Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence & Patient Safety Competence
Department & Institution: Health Sciences\Nursing,Western University
Sponsor:
Ethics Approval Date: March 04, 2014 **Expiry Date:**February 28, 2015
Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Revised Study End Date		

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the University of Western Ontario Updated Approval Request Form.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

The Chair of the HSREB is Dr. Joseph Gilbert. The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Signature

Ethics Officer to Contact for Further Information

___ Erika Basile (ebasile@uwo.ca)	___Grace Kelly (grace.kelly@uwo.ca)	___ Mina Mekhail (mmekhail@uwo.ca)	___ Vikki Tran (vikki.tran@uwo.ca)

This is an official document. Please retain the original in your files.

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6A 3K7 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/services/ethics

Appendix C. Letter to Request Nursing Agency Participant Recruitment

Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence & Patient Safety Competence

Date:

My name is Elsie Duff, and I am a doctoral student at the Arthur Labatt Family School of Nursing at the Western University Canada. I am conducting a study about how nurse practitioners (NPs) perceive empowerment, role competence, and perceptions of patient safety competence. These data will inform my PhD research.

The purpose of this letter is to ask for your help to recruit recently graduated Nurse Practitioners for my study. Would you consider placing a notice about this study in your member communications such as newsletters, webpages, discussion forum, and/or Facebook pages? Below is an example of a posting which you could use for your organization's member communications, where we can discuss options for specific dates to publish or post.

RESEARCH PARTICIPATION OPPORTUNITY!

Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence, and Patient Safety Competence

- ✓ **Would you like the opportunity to contribute to NP research?**
- ✓ **Would you like to share your perceptions about conditions of learning during NP education?**
- ✓ **Would you like to share your perceptions of learning patient safety skills and knowledge?**
- ✓ **One early bird reward for a tablet computer by xxx date and one final Cash reward will be drawn for participation by xxxx date!**

If you answered YES to any of the above question, please click on the link below to access a research survey related to NPs.
http://

For your information, the link will take participants to an electronic questionnaire which contains no personal identifying items. Participation will be voluntary and completing the online survey will imply consent. All data will be collected in the secure FluidSurveys® software and exported for data analysis by the Manitoba Centre for Nursing and Health Research (MCNHR).

Please let me know if you would be willing to help me recruit practicing NPs. If you have specific policies with regard to recruit participants, I kindly ask that you let me know.

Should you have any questions or concerns about this study, please contact me. If you have any questions about the conduct of this study, you may contact the Office of Research Ethics at Western University (███████████ or email at: ███████████).

I look forward to hearing from you to invite members to participate in this study. Thank you for your time and participation, which I believe may help inform the development of newly practicing NPs.

Sincerely,

Elsie Duff

Elsie Duff, NP, MEd, PhD (c)
Doctoral Student, Western University

Appendix D. Informed Consent Letter

Project Title: Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence & Patient Safety Competence
Principal Investigator: Dr. Mary-Anne Andrusyszyn, Arthur Labatt Family School of Nursing, Western University, PhD Committee Chair
Co-Investigators: Elsie Duff, PhD(c), Arthur Labatt Family School of Nursing, Western University, Dr. Mickey Kerr, Arthur Labatt Family School of Nursing, Western University, Dr. Mary van Soeren, Arthur Labatt Family School of Nursing, Western University

My name is Elsie Duff, NP, and I am a doctoral candidate in the Arthur Labatt Family School of Nursing at the Western University Canada. I am conducting a research study for my PhD dissertation. I am interested in your perceptions about how nurse practitioners (NP) perceive empowerment, role competence, and patient safety competence as new health care practitioners. Your response to my survey is important to provide me with information that can be used to identify factors relevant for developing the (NP) role competence, empowerment, and perceptions of patient safety competence. The purpose of this letter is to provide you with information to make an informed decision regarding participation in this research.

Concern for patient safety, positive health outcomes, and garnering public trust are three aspects that are integral to the competencies of all care providers, including NPs (Harrington, 2011; Pohl et al., 2009). Educational outcomes focused on the quality and safety of practice in new graduates are a research priority (Canadian Institute for Health Research, 2009; Modak et al., 2007; Randolph et al., 2012; Weber et al., 2012). However, no studies were located that examine the perceptions of structural and psychological empowerment of newly practicing NPs, in relation to their perceptions of practice competence, and perceptions of patient safety competence.

The purpose of this study, therefore, is to gather information about your experiences of structural and psychological empowerment, NP competence, and perceptions of patient safety competence as a newly practicing health care provider. The sample will be NPs in Canada. Study inclusion criteria are: 1) registration as an NP or Graduate NP with a respective professional association or regulatory authority, and 2) completion of a NP program in a Canadian university in the preceding two year period.

Your will receive a link to an online questionnaire, which should take about 15 minutes to complete. There are no known risks to your involvement in this study. Your responses will be confidential, and participation is voluntary and anonymous. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time with no effect on your future employment or education. Should the results of the study be published, data would be grouped and reported as such. The electronic survey is located at: http://

There are no known or anticipated risks or discomforts associated with participating in this study. You may not directly benefit from participating in this study but information gathered may be used to identify factors relevant for developing the NP role competence and provider perceptions of patient safety competence.

There is one early bird draw for a tablet computer prize for completed surveys received within one week of receiving this invite. There will be one final draw for a cash gift card for survey completion.

Participation in this study is voluntary. All data collected will remain confidential and accessible only to the investigators of this study.

If you require any further information regarding this research project or your participation in the study you may contact

Elsie Duff, PhD(c), Arthur Labatt Family School of Nursing, ████████ London, ON, N6A 5B9 Phone: ████████████
Or
Dr. Mary-Anne Andrusyszyn, PhD Supervisor, ████████████████████
████████████████

Should the results of the study be published, data would be grouped and reported as such. If you would like to receive a copy of any potential study results, please contact Elsie Duff, Doctoral Student, Arthur Labatt Family School of Nursing, ███████, London, ON, N6A 5B9 Phone: ████████████   Email: ████████████

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics ████████████ email: ████████████

Completion of the survey is indication of your consent to participate.

Sincerely, Elsie Duff
Email: ████████████

This letter is yours to keep for future reference.

Appendix E. Electronic Ballot for Incentive Gift Draw

Name: _____

Email: _____

Phone (include area code): _____

*automated electronic collection via FluidSurveys®

Appendix F. Notice for Nursing Agencies Communications

Research Participation Opportunity!

Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence & Patient Safety Competence

- ✓ **Would you like the opportunity to contribute to NP research?**
- ✓ **Would you like to share your perception for condition of learning during NP education?**
- ✓ **Would you like to share your perceptions of learning patient safety skills and knowledge?**
- ✓ **One early bird reward for a tablet computer and one final $100 reward will be drawn for participation!**

> If you answered YES to any of the above question, please click on the link below to access a research survey related to NPs.
> *http://*

Appendix G. Text of Latent Variable Items

Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence & Patient Safety Competence

Thank you for agreeing to complete this questionnaire about empowerment, NP role and provider perceptions of patient safety competence.

Sociodemographics

Please choose or complete the corresponding box that best relates or explains your experience upon entry to practice as a primary care NP.

1. What month/year did you graduate as a NP?
2. What month/year did you become a registered (licensed) as a NP?
3. Did you graduate from a NP a) primary care or b) other education program.
4. Is your current NP position in a) primary care non hospital setting or b) other.
5. Number of months in current NP position: ….Years
6. Number of years as a Registered Nurse: ……. Years
7. Name the province or territory of your current NP practice. _____
8. From what NP educational institute did you graduate? _____
9. Did you attend NP education a) less than part-time, b) part-time, c) full-time.
10. What is your age?
11. Please indicate your sex:
    ☐Male   ☐Female
12. Indicate the highest level of education you hold (please specify if in a field other than nursing)
    ☐ Nursing Diploma
    ☐ BN or equivalent
    ☐ Post BN Certificate NP
    ☐ Post Graduate (Master) Certificate Nurse Practitioner
    ☐ Post Graduate (Master) Diploma Nurse Practitioner
    ☐ Masters degree, NP major, please specify _____
    ☐ PhD
    ☐ Other – Please specify: _____

Conditions of Learning Effectiveness Questionnaire
(Lethbridge, 2010; Siu et al., 2005)

Please answer the following questions as they relate to your experiences in learning the NP role (i.e., NP education program). Indicate your choice by choosing the appropriate number on the scale beside each item.
The scale is as follows:

How much support for the following was present during your NP education?	None 1	2	Some 3	4	A Lot 5
1. Specific information about the things you do well.					
2. Specific comments about things you could improve.					
3. Helpful hints or problem solving advice.					
4. Encouragement to pursue your own learning needs.					
5. Encouragement to challenge ideas.					
6. Active engagement in learning activities.					
7. Open discussion of learning concerns with your teacher.					

How much opportunities for each of these activities were there during your NP education?	None 1	2	Some 3	4	A Lot 5
8. Tasks that use all of your skills and knowledge.					
9. Challenging learning opportunities.					
10. Chance to learn new skills.					
11. Design learning experiences according to individual learning needs.					
12. Accomplish learning goals in your own way.					
13. Share with others what you have learned.					

How much access to information about each of the following did you have during you NP education?	None 1	2	Some 3	4	A Lot 5
14. Teaching/learning values of faculty?					
15. Goals of the nursing curriculum.					
16. Teacher expectations of you.					
17. Expertise of your peers gained from their learning experiences.					
18. Teacher expertise relevant to your learning experiences.					
19. Formal knowledge that helps you to solve patient care problems.					

How much access to the following resources did you have during your NP education?	None 1	2	Some 3	4	A Lot 5
20. Time available to accomplish learning goals.					
21. Teacher availability for help with your learning needs.					
22. Availability of peers for sharing information about their learning experiences with.					
23. Availability of health care professionals (i.e., nurses, doctors, and other members of health care team) for consultation on learning needs.					
24. Availability of other people to help with your learning goals (i.e., other faulty, librarian,					

To what extent were each of the following present during your NP education?	None 1	2	Some 3	4	A Lot 5
25. Rewards for innovative approaches to learning.					
26. Flexibility allowed in the learning process.					
27. Collaborating with teachers on learning activities.					
28. Being sought out by peers for help with learning problems.					
29. Being sought out by clinical teachers for help with learning activities.					
30. Seeking out ideas from professionals other than the preceptor (i.e., other teachers, nurses, doctors, physiotherapist, occupational therapists).					

Psychological Empowerment Survey (Spreitzer, 1995b)

Listed below are a number of self-orientations that people may have with regard to their work role. Using the following scale, please indicate the extent to which you agree or disagree that each one describes your self-orientation.

Indicate your choice by circling the appropriate number on	Very Strongly disagree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Very Strongly Agree
31. I am confident about my ability to do my job.							
32. The work that I do is important to me.							
33. I have significant autonomy in determining how I do my job.							
34. My impact on what happens in my job is large.							
35. My job activities are personally meaning to me.							
36. I have a great deal of control over what happens in my job.							
37. I can decide on my own how to go about doing my own work.							
38. I have considerable opportunity for independence and freedom in how to do my job.							
39. I have mastered the skills necessary for my job.							
The work I do is meaningful to me.							
40. I have significant influence over what happens in my job.							

41. I am self-assured about my capabilities to perform my work activities.							

Modified Strong Advanced Practice Role Delineation (M-Strong-APRD) tool
(Ackerman et al., 1996, p. 71; Chang, Gardner, Duffield, & Ramis, 2011, p. 1378; Mick & Ackerman, 2000, p. 217)

For each of the following activities, please indicate the extent you feel competent, in your **current position**, by placing a tick in the corresponding box. The scale for Section B is as follows:

	Not at all	Little Extent	Some extent	Great extent	Very great extent
DOMAIN 1: DIRECT COMPREHENSIVE CARE	**0**	**1**	**2**	**3**	**4**
1. Conduct and document patient history and physical examination					
2. Assess psychosocial, cultural and religious factors affecting patient needs					
3. Make a medical diagnosis within specialty scope of practice and practice guidelines.					
4. Identify and initiate required diagnostic tests and procedures					
5. Gather and interpret assessment data to formulate plan of care					
6. Perform specialty-specific care and procedures					
7. Assess patient/family response to therapy and modify plan of care based on response					
8. Communicate plan of care and response to patient/family					
9. Provide appropriate education (counseling) to patient & family					
10. Document appropriately on patient record					
11. Serve as a consultant in improving patient care and nursing practice based on expertise in area of specialization					
12. Facilitate the process of ethical decision making in patient care					
13. Coordinate interdisciplinary plan for care of patients					
14. Collaborate with other services to optimize patient's health status					
15. Facilitate efficient movement of patient through healthcare system					

16. Serve as informal educator to staff while providing direct care activities					

	Not at all	Little Extent	Some extent	Great extent	Very great extent
DOMAIN 2: SUPPORT OF SYSTEMS	**0**	**1**	**2**	**3**	**4**
1. Consult with others regarding conduct of projects or presentations					
2. Contribute to, consult or collaborate with other healthcare personnel on recruitment and retention activities					
3. Participate in strategic planning for the service, department or hospital					
4. Provide direction for and participation in unit/service quality improvement programs					
5. Actively participate in the assessment, development, implementation, and evaluation of quality-improvement programs in collaboration with nursing leadership					
6. Provide leadership in the development, implementation, and evaluation of standards of practice, policies and procedures					
7. Serve as a mentor					
8. Advocate the role of the nurse					
9. Serve as a spokesperson for nursing and the medical centre when interacting with other professionals, patients, families, and the public					

	Not at all	Little Extent	Some extent	Great extent	Very great extent
DOMAIN 3: EDUCATION	**0**	**1**	**2**	**3**	**4**
1. Evaluate education programs and recommend revision as needed					
2. Serve as educator and clinical preceptor for nursing and/or medical students, staff, and/or others					
3. Identify learning needs of various populations and contribute to the development of educational programs/resources					
4. Facilitate professional development of nursing staff through education					
5. Provide appropriate patient and family education					

	Not at all	Little Extent	Some extent	Great extent	Very great extent
DOMAIN 4: RESEARCH	**0**	**1**	**2**	**3**	**4**
1. Conduct clinical investigations					
2. Participate in investigations to monitor and improve quality of patients care practices					
3. Contributes to identification of potential funding sources for the development and implementation of clinical projects/programs					
4. Use research and integrate theory into practice and recommend policy changes based on research					
5. Identify the clinical data that needs to be collated and available in information systems for nursing					
6. Collaborate with Information Specialists in the design of information systems for research and quality assurance projects in nursing and midwifery					

	Not at all	Little Extent	Some extent	Great extent	Very great extent
DOMAIN 5: PUBLICATION AND PROFESSIONAL LEADERSHIP	**0**	**1**	**2**	**3**	**4**
1. Disseminate nursing knowledge through presentation or publication at local, regional, national and international levels					
2. Serve as a resource or committee member in professional organizations					
3. Serve as a consultant to individuals and groups within the professional/lay communities and other hospitals/institutions					
4. Represent nursing in institutional/community forums focused on the educational needs of various populations					
5. Represent a professional nursing image at institutional and community forums					
6. Collaborate with other healthcare professionals to provide leadership in shaping public policy on healthcare					

Domains of Practice

Previous research has identified the activities of an advanced practice nurse fall within five domains of practice. After reading the explanation of each domain of practice below, please indicate the extent to which you feel competent working within each domain, by ticking the corresponding box. The scale for Section C is as follows:
4 = To a very great extent; 3 = To a great extent; 2 =To some extent; 1 = To a little extent; 0 = Not at all.

	Not at all	Little Extent	Some extent	Great extent	Very great extent
DOMAIN OF PRACTICE	**0**	**1**	**2**	**3**	**4**
Domain 1: Direct, Comprehensive Care Activities carried out on behalf of individual patients, focusing on their specific needs. These are 'hands on' activities such as procedures, assessments, interpretation of data, providing physical care and patient counselling.					
Domain 2: Support of Systems Activities that support systems that promote innovative patient care and facilitate the optimal progression of patients through the healthcare system. Role advocacy is also an important component of systems support.					
Domain 3: Education Activities involving the dissemination of current scientific knowledge to caregivers and students to enhance their knowledge. Also, education is the provision of information to inform the public and enable them to cope with illness, as well as to promote wellness. This domain incorporates a wide variety of activities including education of undergraduate and graduate students, informal staff development, education of house staff, and formal presentations to other healthcare professionals.					
Domain 4: Research Activities that support the generation of knowledge and the integration of research findings into clinical practice. Such activities support a culture of practice that challenges the norm and strives to find better ways to provide care, based on research. This domain also promotes the use of creativity and innovative problem-solving strategies to answer clinical questions.					
Domain 5: Publication and Professional Leadership Activities that allow for sharing and dissemination of knowledge within an area of expertise that is beyond the individual's institutional setting. It extends beyond the confines of the workplace and requires commitment to the profession and to the profession's public. The activities within this domain are intended to promote the nursing and healthcare profession.					

Health Professional Education in Patient Safety (H-PEPSS; Ginsburg et al., 2012)

The H-PEPSS questionnaire asks about:
- Clinical safety issues such as hand hygiene, transferring patients, medication safety
- System issues that effect safety such as aspects of the organization, management, or the work environment including policies, resources, communication and other processes

The survey is seeking your perceptions and opinions only. There are no right or wrong answers. Indicate the extent to which you agree or disagree with each question statement. If you are unsure whether you agree or disagree mark, "neutral".

What we mean by: Patient Safety: The pursuit of reduction and mitigation of unsafe acts within the health care system, as well as the use of best practices shown to lead to optimal patient care outcomes.

Clinical Safety: "I feel confident in what I learned about...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
1. Hand hygiene.						
2. Infection control.						
3. Safe medication practices.						
4. Safe clinical practice in general.						

Working in Teams with Other Health Professionals: "I feel confident in what I learned about ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
5. Managing inter-professional conflict.						
6. Sharing authority, leadership, and decision-making.						
7. Encouraging team members to speak up, question, challenge, advocate and be accountable as appropriate to address safety issues.						

Communicating Effectively: "I feel confident in what I learned about ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
8. Enhancing patient safety through clear and consistent communication with patients.						
9. Enhancing patient safety through effective communication with other health care providers.						
10. Effective verbal and nonverbal communication abilities to prevent adverse events.						

Managing safety risks: "I feel confident in what I learned about ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
11. Recognizing routine situations in which safety problems may arise.						
12. Identifying and implementing safety solutions.						
13. Anticipating and managing high risk situations.						

Understanding Human & Environmental Factors: "I feel confident in what I learned about ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
14. The role of human factors, such a fatigue, that effect patient safety.						

15. The role of environmental factors such as work flow, ergonomics, resources, that effect patient safety.						

Recognize, Respond to and Disclose Adverse Events and Close Class: "I feel confident in what I learned about ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
16. Recognizing and adverse event or close call.						
17. Reducing harm by addressing immediate risks for patients and others involved.						

Culture of safety: "I feel confident in what I learned about ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Don't know
18. The importance of having a questioning attitude and speaking up when you see things that may be unsafe.						
19. The importance of a supportive environment that encourages patients and providers to speak up when they have safety concerns.						
20. The nature of systems (e.g., aspects of the organization, management or the work environment including policies, resources, communication and other processes) and system failures and their role in adverse events.						

There is one early bird draw for a tablet computer mini. You are eligible for this draw if you have completed the survey by midnight, April 8th. A cash prize draw will be conducted at the end of data collection for all those who have completed the survey. The electronic prize ballot for entering your name into this draw is not linked to the data you have provided. A link to this draw entry page is displayed once you have clicked on the "next" button below.

Thank you for participating, Elsie Duff, NP, PhD(c), Western University

Appendix H. Nurse Practitioner Competence Measures

Several tools are available to measure NP role competence. For instance, Hayes (1998) developed an NP confidence scale to measure health assessment and self-efficacy. Hayes (1998) investigated the relationship between NP student's perceptions (n=238) of clinical mentoring and self-confidence (i.e., physical assessment, research, consultation, case-management, quality assurance, teaching, counseling, and influencing health policy) to take on the NP role. Hayes's original confidence scale was adapted from a physical assessment confidence scale originally developed by Grundy, (reported Cronbach's alpha 0.84; Grundy, 1993; Hayes, 1998). The tool was then adapted to include diagnostic reasoning (internal consistency Cronbach's alpha .888) for a later study (Neal, 2008) in addition to the original physical assessment (reported Cronbach's alpha .898). The NP confidence scale is grounded in self efficacy theory (Grundy, 1993; Hayes, 1998; Neal, 2008) but the items do not reflect the broad scope of NP practice today, as research, collaboration and leadership measures are not included.

Similarly, the Confidence in Skills scale was developed to measure an orientation to nursing and confidence in NP practice skills and knowledge as a result of imposed medical model role patterns (Thibodeau & Hawkins, 1989). The Confidence in Skills Scale is a 65 items measure for hands-on skill (i.e., differentiate heart sounds, perform a pelvic exam, develop a definition of health, analyzed financial aspects of NP role, describe methods of quality assurance, develop a needs assessment) and knowledge (i.e., function as client advocate, contribute to knowledge through research, develop own practice protocols, skilled differential diagnosis, physicians should participate in the education of NPs, include medical management in practice, client should be expected to

comply with plan of care, NPs should not practice without medical backup, etc.) role

activities for NP practice (Thibodeau & Hawkins, 1988). The tool was tested in a pilot

study with a stratified random sample of 135 NPs from the Northeast United States and in

a follow-up study with 70 NP respondents. The pilot test was used with a test-retest

method for face and content validity (reported Cronbach's alpha=0.868; Thibodeau &

Hawkins, 1989). Similar to Hayes's measure of NP role competence, the tool is

clinically focused with an emphasis on the medical model of teaching and learning that

does not capture the current scope of practice for NPs.

Alber et al. (2009) investigated self-perceptions using 14 psychiatric NP role

competence items (i.e., conduct a psychiatric evaluation, recognize a psychiatric

diagnosis, developing treatment plans, managing medications, managing multiple tasks,

and intuitive decision making) in 130 psychiatric nurses. Although, this measure

captures NP role competence, it is specific to psychiatric mental health nursing.

An alternative measure, the NP Preparedness Survey, was developed by a panel of

university NP faculty, two expert advanced practice nurse educators, and researchers

using NP competencies to evaluate perceived preparedness of NP practice (Hart &

Macnee, 2007). NP practice (i.e., casting, managing acute disease, managing chronic

disease, managing urgent disease, management of mental illness, collaboration and

referral, counseling, EKG interpretation, health assessment, laboratory diagnostics, etc.)

was then measured in 562 attendees who attended two large national NP conferences.

Generally, the measure is long and detailed with an emphasis on specific clinical practice

skills such as EKG or X-ray interpretation, with no measure of other domains of practice

important for the NP role. A strength is that the tool adds clarity to the clinical work of

an NP but is limited as a measure for the purpose of capturing the full regulated scope of

practice. The reliability was not reported. Similarly, other tools include measures of specific NP clinic knowledge in complementary alternative care (i.e., massage therapy, meditation, homeopathy, reflexology, aromatherapy, etc.), referral practices (Sohn & Cook, 2002), tuberculosis (Benkert et al., 2009), and cultural competence and prescribing (Dawson & Lighthouse, 2010). The large and small studies of NP role self-perceptions are informative yet limited in measuring narrow aspects of the role, such as knowledge of tuberculosis, cultural competence, or referral practices.

A broader in NP scope measure is the Johns Hopkins NP task force performance measure based on the nursing process (Levitt et al., 1985). The measure is divided into clinical (i.e., health assessment, treatment plan, and evaluation), leadership (i.e., planning departmental schedules, time management, collaboration, supervision, and effective communication), education (i.e., patient teaching and assess learning), and professional activities (i.e., community involvement, political activity, public speaking, continuing education, publication, preceptorship, and research) categories (Levitt et al., 1985). The content validity was established by 20 NPs in various settings, nurse managers, and the directors of departments within the hospital who agreed upon and evaluated the role categories of clinical, leadership, education, and professional activities. Essential elements for NP practice are included in each category with practices generic to all NPs. The tool content was tested with 10 NPs from a variety of hospital settings and revisions were then made to use for employee evaluation purposes. The reliability has not been tested. The tool is complicated and difficult to complete, thus is limited as a measure of NP role competence in a large scale study.

Last, the *Strong Model* items have been used to measure advanced practice nurses', CNSs', and NPs' role practice; yet few psychometric properties of the measures

are available. Theoretically and illustrated in a content analysis, the *Strong Model* suitably delineates Canadian NP role competencies, however, the psychometric properties in the Canadian context are lacking. Furthermore, an item analysis is intended to screen and determine if the items indicate the intended purpose and adequacy for inclusion (Pedhazur & Schmelkin, 1991), where the *Strong Model* items measure NP role competencies and adequately measure the concept of interest (Polit & Beck, 2016), NP work. Researchers in Australia have found the *Strong Model* domains of practice to be a reliable measure, with a Cronbach's alpha coefficient of 0.94 and individual factors of direct comprehensive care α = 0.95, support of systems α = 0.93, education α = 0.83, research α = 0.90, and publication and professional leadership α = 0.94 (Chang et al., 2011). Along with appropriately delineating the NP role in Canada, the *Strong Model* measures are less abstract than other measures, and thus introduce less variability for measurement purposes (Spector, 2006). Thus for this study, the *Strong Model* was chosen to explain and predict NPs specific knowledge, skills and corresponding role competencies required for practice. In a content analysis, the factors to measure confidence in the NP role appear homogenous with the role in Canada, but further psychometric testing would strengthen this assertion. As few NP role competence studies have addressed the psychometric properties of their measures, this study will assess the reliability and construct validity of the *Strong Model* NP role measure.

Appendix I. Canadian Provincial & Special Interest Nursing Groups

Agency	Recruitment
College of RNs British Columbia	NP Association of BC emailed
College & Association of RN Alberta	Researcher emailed
Saskatchewan RNs' Association	Agency emailed
College of RNs Manitoba	Agency emailed
College of Nurses of Ontario	Researcher emailed
Nurses Association of New Brunswick	Agency emailed
College of RNs Nova Scotia	Agency emailed
The Association of RNs of Prince Edward Island	Director of Primary Care emailed
Association of RN of Newfoundland & Labrador	Agency emailed
Canadian Association of Advanced Practice Nurses	Agency emailed
British Columbia NP Association	Agency emailed
NP Association of Alberta	Agency posted in newsletter, no email option
Saskatchewan Association of NPs	Agency emailed
NP of Saskatchewan	SRNA emailed
NP Association of Manitoba	Agency emailed
NP Association of Ontario	Agency emailed
NP Association of New Brunswick	Agency emailed
NP Association of Nova Scotia	Researcher emailed
Newfoundland & Labrador NPs Association	Agency emailed
NP Canada	Agency emailed

Note. RN registered nurse, NP Nurse Practitioner.

Appendix J. Correlations Among SEM Study Variables

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Support	3.49	0.73	-																
2. Information	3.42	0.80	.68**	-															
3. Resources	3.53	0.68	.76**	.73**	-														
4. Opportunity	3.52	0.69	.89**	.70**	.84**	-													
5. Impact	3.68	0.83	.25**	.25**	.25**	.33**	-												
6. Meaning	5.24	0.78	.17*	.13	.19*	.26**	.62**	-											
7. Confidence	3.68	0.78	.23**	.16*	.20**	.27**	.47**	.37**	-										
8. Self-determination	4.21	1.01	.21**	.22**	.22**	.30**	.97**	.57**	.45**	-									
9. Direct Care	2.52	0.47	.22**	.19*	.21**	.26**	.34**	.08	.62**	.32**	-								
10. Collaboration	1.81	1.05	.12	.11	.07	.16*	.24**	.03	.21**	.20**	.37**	-							
11. Research	1.32	0.81	.12	.06	.08	.12	.07	-.07	.11	.05	.24**	.67**	-						
12. Leadership	1.49	0.97	.17*	.04	.11	.13	.06	-.05	.04	.04	.22**	.70**	.75**	-					
13. Work in Teams	3.95	0.75	.25**	.30**	.26**	.32**	.28**	.18*	.30**	.26**	.37**	.29**	.20**	.24**	-				
14. Communicate	4.19	0.56	.33**	.29**	.32**	.39**	.32**	.27**	.29**	.26**	.28**	.19**	.11	.17*	.60**	-			
15. Manage Risk	3.91	0.68	.30**	.25**	.24**	.32**	.32**	.19**	.33**	.28**	.37**	.26**	.15*	.25**	.61**	.70**	-		
16. Understand Factors	3.92	0.83	.28**	.24**	.25**	.33**	.26**	.18*	.22**	.22**	.26**	.21**	.124	.22**	.56**	.63**	.70**	-	
17. Harm Reduction	4.17	0.75	.31**	.29**	.28**	.35**	.30**	.28**	.24**	.26**	.24**	.16*	.16	.16*	.57**	.63**	.71**	.78**	-
18. Culture of Safety	4.06	0.64	.31**	.23**	.30**	.37**	.32**	.22**	.22**	.29**	.36**	.25**	.11	.24**	.56**	.60**	.64**	.72**	.71**

Note. ** correlation is significant at the 0.01 level (2 tailed), *correlation is significant at the 0.05 level (2-tailed).

Curriculum Vitae

Name: Elsie Duff

Post-secondary Education and Degrees:
2006, Athabasca University Graduate Diploma – Master of Nursing (Advanced Practice)
2003, University of Manitoba - Graduate Degree - Master of Education (Adult)
2002, University of Manitoba - Graduate Certificate - Higher Education Teaching
1997, Brandon University - Bachelor of Science in Nursing (distinction)

Honours and Awards:
2015 Canadian Association of Advanced Practice Nurses Karen Antoni Award
2015 Canadian Nurses Foundation Ann Beckingham Award
2014 Sigma Theta Tau Xi Lambda Research Award
2014 Foundation of Registered Nurses of Manitoba Doctoral Award
2013 University of Toronto, Lawrence S. Bloomberg Faculty of Nursing Bursary
2013 Nurse Practitioner Association of Manitoba Research Award
2014 Foundation of Registered Nurses of Manitoba Doctoral Award
2012 Queen Elizabeth II Diamond Jubilee Medal (Nursing)
2012 Western University Faculty of Health Studies Graduate Student Travel Award
2012 Nurse Practitioner of Manitoba Doctoral Award
2011 Irene Nordwich Foundation Doctoral Award

Related Work Experience
2010   Research assistant, *Development of Human Resources in Nursing Academe* with
       Dr. C. Iwasiw, Dr. M. Andrusyszyn, Dr. Y. Babenko-Mould, K. Ferguson, J.
       Elliot, S. Jones, **E. Duff,** & L. Anderson.
2009   Research Assistant, *Evaluation of the Primary Health Care Nurse Practitioners'
       and Students' Narratives* with Dr. C. Iwasiw, Dr. M. Andrusyszyn, Dr. S. Ray, Dr.
       E. Staples, & **E. Duff.**

Publications:
Duff, E., Miller, L., & Bruce, J. (2016). Online Virtual Simulation and Diagnostic
     Reasoning: A Scoping Review. *Clinical Simulation in Nursing*, *12*(9), 377–384.
     http://doi.org/10.1016/j.ecns.2016.04.001
Pylypowich, A., & **Duff, E.** (in press). Differentiating the symptom of dysphonia. *The
     Journal for Nurse Practitioners*
Maxwell, L., & **Duff, E.** (2016). Mindfulness: An effective prescription for depression
     and anxiety. *The Journal for Nurse Practitioners*, 1-7, http://doi.org/
     10.1016/j.nurpra.2016.02.009
Slatnik, C., & **Duff, E.** (2015). Ovarian cancer: Ensuring early diagnosis. *The Nurse
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     management in primary care. *The Journal for Nurse Practitioners*, *10*(9), 687–693.
Jaumault, V. & **Duff, E.** (2013). Adolescent concussions. *The Nurse Practitioner*, *38*(2),
     16–22, http://doi.org/10.1097/01.NPR.0000425825.82811.ae

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Duff, E. (2011). Relating the nursing paradigm to practice: A teaching strategy. *The International Journal of Nursing Education Scholarship, 8(1).* 1548-1556.

Iwasiw, C., Andrusyszyn, M., Ray, S., & Staples, E., & **Duff, E.** (2011). *The State of Nurse Practitioner Education in Canada* (Unpublished manuscript), University of Western Ontario, School of Nursing, London, ON.

Duff, E. (2011). *Baccalaureate Nursing Students' Mentoring Communications and Empowerment Relationship.* Unpublished Field Study, School of Nursing, University of Western Ontario, London, ON.

Presentations:

Duff, E., Andrusyszyn, M., Kerr, M., & van Soeren, M. (2015, September). Invited Speaker: *A Study of Nurse Practitioners: Relationships of Empowerment, Role Competence and Complex Socio-cultural Patient Safety Competenc*e, Canadian Association of Advanced Practice Nurses Conference, Winnipeg, MB.

Duff, E., Andrusyszyn, M., Kerr, M., & van Soeren, M. (2015, March). Invited Speaker: *Empowerment Factors Influencing NP Role Competence & Complex Socio-Cultural Patient Safety Competence.* Sigma Theta Tau International, Xi Lambda Chapter, Winnipeg, MB

Duff, E., Andrusyszyn, M., Kerr, M., & van Soeren, M. (2013, November). Invited speaker: *Newly Practicing Nurse Practitioners' Perceptions of Structural Empowerment in Education, Psychological Empowerment, Role Competence & Patient Safety Competence.* University of Toronto, Bloomberg Emerging Scholars 2013 International Forum. Toronto, ON.

Duff, E., Andrusyszyn, M., Kerr, M., & van Soeren, M. (2013, October). Poster presentation *Nurse Practitioner Competence: The Relation to Empowerment & Patient Safety.* Canadian Association of Advanced Practice Nurses Conference, Halifax, NS.

Duff, E., Andrusyszyn, M., Kerr, M., & van Soeren, M. (2013, February). *Newly Practicing Nurse Practitioner Perceptions' of Structural Empowerment in Education, Psychological Empowerment, Role Competence, & Patient Safety Competence.* Western & Northern Region Canadian Association of Schools of Nursing 2013 Conference. Winnipeg, MB.

Andrusyszyn, M., Iwasiw, C., Jones, S., Babenko-Mould, Y., Elliott, J., **Duff, E.,** Anderson, L., & Ferguson, K. (2011, June). *Promoting Evidence-Based Faculty Development of Novice Clinical Teachers.* RCN Joint Education Forums' 3rd International Conference & Exhibition, Belfast, Ireland.

Andrusyszyn, M., Iwasiw, C., Jones, S., Babenko-Mould, Y., Ferguson, K., Elliot, J., **Duff, E.**, Anderson, L. (2011, May). *The Process of Creating Educational Modules for Faculty Development of Novice Clinical Teachers.* The University of Western Ontario School of Nursing Research & Sigma Theta Tau International Iota Omicron Chapter 24th Annual Research Conference, London, ON.

Duff, E. (2011, January). Presenter: *Baccalaureate Nursing Students' Mentoring Communication and Empowerment Relationship*. University of Western Ontario, Nursing Research Unit, London, ON.