

PERCEPTIONS OF TEAMWORK

PERCEPTIONS OF TEAMWORK FROM  
NURSING RESOURCE TEAM NURSES

By:

ERIN EGGLETON, B.Sc.N.

A Thesis Submitted to the School of Graduate Studies  
in Partial Fulfillment of the Requirements for the  
Degree Master of Science

McMaster University © Copyright by Erin Eggleton, May 2018

MASTER OF SCIENCE (2018)

McMaster University

(Nursing)

Hamilton, ON, Canada

TITLE: Perceptions of Teamwork from  
Nursing Resource Team Nurses

AUTHOR: Erin Eggleton, B.Sc.N. (McMaster University)

SUPERVISOR: Dr. Andrea Baumann

NUMBER OF PAGES: [xiii, 156]

### **Lay Abstract**

This study explores nursing resource team (NRT) nurses' perceptions of teamwork as well as their barriers and facilitators to effective teamwork. Q-methodology was used for this study. A literature review on NRTs and a scoping review on teams and teamwork were conducted. The literature and a focus group with NRT nurses were used to identify a representative list of statements about teamwork (n=41). Thirty-four NRT nurses sorted these statements into a table, and using a by-person exploratory factor analysis, three groups of NRT nurses emerged with the following themes: (1) feeling underappreciated; (2) being flexible and confident; and (3) feeling unintegrated. Future research should focus on exploring in-depth the perceptions of teamwork from NRT nurses and comparing unit-based and NRT nurses perceptions of teamwork.

## Abstract

**Introduction/Background:** Nursing Resource Teams (NRT) are a staffing strategy utilized by acute care hospitals to fulfill daily staffing vacancies caused by sick calls, vacation, and patient acuity. Effective teamwork is a critical component to providing safe patient care and the literature suggests that transient team membership, such as NRT nurses, are a barrier to teamwork. NRTs are being used more frequently than ever and yet their perspective on teamwork has not been addressed in the literature. The purpose of this study was to identify NRT nurses' perceptions of teamwork.

**Methods:** Q-methodology was used for this study. Statements about teamwork were derived from the literature and a focus group with NRT nurses. A convenience sample of 34 NRT Registered Nurses and Registered Practical Nurses at a local hospital organization sorted a representative list of 41 statements about teamwork along a scale of -5 (strongly disagree) to +5 (strongly agree) on a Q-sort table. Iterated principal factor analysis and varimax rotation were performed using the qfactor program in Stata.

**Results:** Three factors emerged with the following themes: (1) feeling underappreciated, (2) being flexible and confident, and (3) being unintegrated. A total of 30 participants loaded across the three factors, with no statistically significant demographic correlations. Distinguishing statements helped to define the characteristics of each factor. Four participants did not load on to any factor and therefore were excluded from further analysis.

**Conclusion:** These findings represent perceptions from only one group of NRT nurses and no opportunity was given for participants to explain their sorting decisions. More research should be conducted to expand upon these perceptions of teamwork using an in-depth qualitative approach. NRT nurses perceive themselves to be knowledgeable, skilled, and able to provide effective care across a variety of patient units; however, some of the nurses feel underappreciated and unintegrated into the unit teams.

*Keywords:* teamwork, teams, nursing resource team, q-methodology

## Acknowledgments

A little over two years ago, I woke up with a view of the Rocky Mountains outside my window, reading an acceptance e-mail from McMaster University. Little did I know, that the years to follow would be some of the most challenging, and yet rewarding, times of my life. As my M.Sc.N. journey comes to an end, I would like to acknowledge the many people who have helped to make this thesis possible.

First, I would like to thank Dr. Andrea Baumann, my thesis supervisor. Andrea, you are a passionate and dedicated nurse scientist, and I am so lucky to have been mentored by you. You supported me throughout the entire graduate program, but also challenged me to succeed beyond what I could have ever imagined. I am thankful for all of your advice – professional, academic, and personal – and I look forward to continuing to learn from you.

I have been so privileged to have Dr. Noori Akhtar-Danesh and Dr. Ruth Lee on my Thesis Committee. Their knowledge, feedback, and kindness have been crucial to this thesis. Noori, I cannot express enough how grateful I am for your expertise in Q-methodology, and for spending many sessions with me during my data analysis. Ruth, your experience with NRT and as a nurse has helped me to remain grounded and true to who I am. And Mary Crea-Arsenio, thank you for your guidance, which started from the moment I stepped foot in the office, and your ongoing support throughout the program.

To my parents, you have continued to support me no matter what, and I would not be where I am today without you. You have always encouraged me to prioritize my education, and so it was your voices that I heard in the back of my head when I began the application process. Thank you for everything. To my sisters, Michele and Amanda, I am proud to say that I am now equally as educated as the both of you! Thank you for supporting me over the past two years and accommodating my hectic work and school schedules.

To my soon-to-be family, thank you for taking me in like one of your own. All of the family dinners, leftovers, and kind words of support have helped to keep me going. I am forever grateful.

To my friends, thank you for reminding me that it is okay to take time to have fun. I look forward to attending many more Harry Potter birthday parties, Art Crawl concerts, coffee and tea dates, crafting days, and games nights!

To Michael, my Mans, thank you for being my pillar. Words cannot express how lucky I am to have you and I look forward to spending the rest of my life with you. I don't say it enough, so here goes: You're good.

A special thanks to the NRT manager who was my gatekeeper throughout this process. I hope that we can stay connected over a cup of Timmie's tea.

And finally, to the NRT nurses who participated in this study – a million thanks for your time, honesty, and perceptions. We share this achievement together and so this thesis is dedicated to you.



## Table of Contents

Lay Abstract _____	iii
Abstract _____	iv
Acknowledgments _____	vi
Table of Contents _____	viii
List of Figures and Tables _____	xi
List of Abbreviations _____	xii
Declaration of Academic Achievement _____	xiii
<b>Chapter 1: Introduction and Background _____</b>	<b>1</b>
Introduction to the Study _____	1
Statement of the Problem _____	4
Purpose of the Study _____	5
Situating the Study _____	6
Content of Thesis _____	6
Chapter Summary _____	8
<b>Chapter 2: Literature Review _____</b>	<b>9</b>
Defining a Nursing Resource Team _____	9
Nursing Resource Teams in the Literature _____	12
Characteristics of NRT Nurses _____	12
The Workplace Environment for NRT Nurses _____	13
Clinical Practices of NRT Nurses _____	14
Fatigue _____	14
Summary of NRT Literature _____	15
Scoping Review on Teams and Teamwork _____	16
Summary of the Impact of New or Transient Team Members _____	22
Discussion _____	28
Chapter Summary and Literature Gap _____	29
<b>Chapter 3: Methodology _____</b>	<b>32</b>
Introduction to Q-Methodology _____	32
Concourse _____	33
Extraction of Q-Sample Statements _____	34
P-Set _____	35
Q-Sorting _____	35
Research Outline _____	37
Purpose of Study _____	37
Research Questions _____	37
Study Design _____	37
Setting _____	38
Study Participants _____	38
Eligibility, Recruitment, and Sampling _____	39
Eligibility _____	39

Recruitment _____	40
Sampling _____	41
Sample Size _____	41
Concourse Statements _____	42
Literature _____	42
Interview Process – Focus Group _____	42
Interview Process – One-on-one Interview _____	44
Extraction of Q-Sample _____	44
Q-Sort Table _____	45
Piloting the Statements _____	46
Data Collection, Analysis, and Interpretation _____	47
Data Collection _____	47
P-Set _____	47
Q-Sorting _____	47
Data Analysis _____	48
Data Entry _____	48
Descriptive Statistics _____	49
By-Person Factor Analysis _____	49
Factor Extraction _____	50
Factor Rotation _____	53
Factor Loadings _____	54
Data Interpretation _____	54
Distinguishing Statements _____	54
Consensus Statements _____	54
Factor Scores _____	55
Ethical Considerations _____	55
Focus Group and One-on-One Interview _____	56
Q-sort _____	56
Chapter Summary _____	57
<b>Chapter 4: Results _____</b>	<b>58</b>
Descriptive Summary of Participants _____	58
Results of By-Person Factor Analysis _____	60
Factor Labels _____	61
Factor 1: Underappreciated _____	64
Distinguishing Statements _____	64
Factor 2: Flexible and Confident _____	67
Distinguishing Statements _____	67
Factor 3: Unintegrated _____	69
Distinguishing Statements _____	69
Consensus Statements _____	72
Chapter Summary _____	76
<b>Chapter 5: Discussion and Conclusions _____</b>	<b>77</b>

Supporting Evidence for the Study Findings _____	77
Factor 1: Underappreciated _____	77
Factor 2: Flexible and confident _____	79
Factor 3: Unintegrated _____	81
Comparison of Results to Teamwork _____	84
Shared Mental Models _____	84
Closed-Loop Communication _____	86
Mutual Trust _____	87
Team Leadership _____	89
Mutual Performance Monitoring _____	91
Backup Behaviour _____	93
Adaptability _____	94
Team Orientation _____	95
Summary of the Teamwork Framework _____	96
Relevance and Implications of Study Findings _____	97
Clinical Practice _____	98
Policy _____	102
Education _____	106
Research _____	108
Knowledge Translation _____	109
Study Strengths and Limitations _____	111
Conclusion _____	113

## **References \_\_\_\_\_ 116**

## **Appendices \_\_\_\_\_ 130**

A: Definitions of Key Terms _____	130
B: Arksey and O'Malley (2005) Scoping Review Framework with Levac et al. (2010) Recommendations _____	132
C: Visual Representation of the Big Five and the Coordinating Mechanisms of Teamwork by Salas et al. (2005) _____	135
D: Summary of Articles Included in Scoping Review _____	136
E: Demographic Questionnaire _____	141
F: Focus Group Recruitment E-mail Script Sent on Behalf of the Researcher by the Holder of the Participants' Contact Information__	142
G: P-Set Recruitment E-mail Script Sent on Behalf of the Researcher by the Holder of the Participants' Contact Information _____	143
H: Consent Form for Focus Group and One-on-One Interview _____	144
I: Focus Group Interview Question Guide _____	147
J: Finalized Q-Sample (n=41) _____	149
K: Consent Form for Q-Sort _____	153
L: Ethics Approval _____	156

## List of Figures and Tables

### List of Figures

Figure 1: Diagram of the Search Strategy and Narrowing of Articles in the Scoping Review _____	19
Figure 2: Example of Q-Sort Table _____	36
Figure 3: Q-Sort Table _____	46

### List of Tables

Table 1: Frequency of Relevant Articles in Scoping Review by Methodology	21
Table 2: Definitions of the Components of the Salas et al. (2005) Teamwork Framework _____	23
Table 3: Organization of the Nursing Resource Team at the Study Site _____	39
Table 4: General Guidelines for Writing Q-Statements _____	43
Table 5: Summary Statistics of Demographic Questionnaire _____	59
Table 6: Factor-Specific Summary Statistics of Demographic Questionnaire	62
Table 7: Distinguishing Statements for Factor 1 _____	66
Table 8: Distinguishing Statements for Factor 2 _____	68
Table 9: Distinguishing Statements for Factor 3 _____	70
Table 10: Consensus Statements _____	72

**List of Abbreviations**

<b>CIHR:</b>	Canadian Institutes of Health Research
<b>CNA:</b>	Canadian Nurses Association
<b>CNO:</b>	College of Nurses of Ontario
<b>CPSI:</b>	Canadian Patient Safety Institute
<b>ICU:</b>	Intensive Care Unit
<b>ID:</b>	Identification
<b>IPF:</b>	Iterated Principal Factor
<b>KT:</b>	Knowledge Translation
<b>NICU:</b>	Neonatal Intensive Care Unit
<b>NRT:</b>	Nursing Resource Team
<b>PACU:</b>	Post-Anesthetic Care Unit
<b>PCF:</b>	Principal-Component Factor
<b>RN:</b>	Registered Nurse
<b>RPN:</b>	Registered Practical Nurse
<b>SD:</b>	Standard Deviation
<b>WHO:</b>	World Health Organization

### **Declaration of Academic Achievement**

I declare that I, Erin Eggleton, am the author of this thesis. This copy includes all final revisions as accepted by the Supervisory Thesis Committee. I understand that this thesis will be made electronically available to the public.

## **Chapter 1: Introduction and Background**

### **Introduction to the Study**

Clinical care in Canada is a complex system involving many people and services (Verma, Petersen, Samis, Akunov, & Graham, 2014). The combination of increased healthcare costs, nursing workforce shortages, and an aging and chronically ill population, means that nurses are challenged to continue providing high quality patient- and family-centred care (Nowrouzi, Giddens, Gohar, Schoenenberger, Bautista, & Casole, 2016; Verma et al., 2014). Although there are many strategies that can be used to manage these challenges individually, effective teamwork is viewed as an essential component to healthcare delivery (World Health Organization, 2012).

A team is commonly defined as “[two] or more individuals who are interdependent and share a common purpose” (Kalisch, 2009, p. 485). Teamwork is often defined as a collective effort of a number of individuals in a team who come together to perform a series of specific tasks (Gillespie, Chaboyer, Longbottom, & Wallis, 2010). According to the World Health Organization (WHO, 2012), effective teamwork is becoming increasingly important in healthcare due to its immediate and positive impact on patient safety. As patients are becoming more complex, are requiring specialized care, and have an increasing number of co-morbidities and chronic diseases (WHO, 2012), it is of the utmost importance that nurses and healthcare professionals engage in effective teamwork in order to deliver safe and effective patient care.

Teams in healthcare vary greatly and team members may be drawn from a single professional group or multi-professional groups (WHO, 2012). There are also many different types of teams in healthcare including core teams, coordinating teams, administrative teams, ancillary services, support services, and contingency teams. Each of these types of teams can be further broken down into more specific teams or care areas such as labour and delivery units, intensive care units, medical wards, primary care teams, and rapid response teams to name a few (WHO, 2012). Some teams may have its members located in the same physical area, while other teams may have members distributed across a large geographical area (Bunnel et al., 2013). In each of these examples, it is evident that teams appear differently across the healthcare sector; however, in order to be effective, all teams must share similar characteristics including specific roles; interacting to achieve a common goal; making decisions; possessing specialized knowledge and skills; and embodying collective action (WHO, 2012; Qureshi & Dhaliwal, 2016; Salas, Sims, & Burke, 2005).

There are many ways that teamwork may be disrupted, including staffing changes and shortages that occur on a daily basis. The International Council of Nurses (2013, p. 1) states that “safe nurse staffing means that an appropriate number of nurses, and other staff, is available at all times across the continuum of care, with a suitable mix of education, skills, and expertise to ensure that patient care needs are met and that hazard-free working conditions are maintained”. At any given time on a patient care unit, there may be gaps in the nurse-patient



assignments as a result of sick time and vacation (Buck, 2015). This results in unit nurses having to take on additional patients in their own assignments. The Canadian Nurses Association (CNA) promotes safe workloads, stating that for every 1 patient that is added to a nurse's workload, the likelihood of an inpatient dying within 30 days of admission increases by 7% (CNA, 2015). In order to minimize the risk to patients as a result of these staffing challenges, hospitals have developed strategies for providing safe nurse staffing levels. To this end, healthcare managers have a variety of approaches including agency-, float-, and travel nurses, as well as Nursing Resource Teams (NRTs) (Rainess, Archer, Hofmann, & Nottingham, 2015). The NRT is a staffing strategy comprised of both Registered Nurses (RNs) and Registered Practical Nurses (RPNs) that is utilized by acute care hospitals in Ontario to fill natural vacancies due to sick time, vacation, staff turnover, and changes in patient acuity (Buck, 2015; Dziuba-Ellis, 2006; Rainess et al., 2015).

Although float pools have existed for many years, the term "resource team" was not coined until 1981 when it was first introduced as a more permanent organizational solution to staffing shortages resulting from the reluctance of regular staff to float and a high dependency on supplementary agencies (Dziuba-Ellis, 2006; Smith, 1981). NRTs differ from float and agency nurses in that they are called a team but do not have a "home" unit. They are still permanent employees of an organization and receive an organization-specific orientation to policies and procedures (Libby & Bolduc, 1994; Strzalka & Havens, 1996). NRTs

are viewed as a valuable resource given their breadth of knowledge in nursing (Rainess et al., 2015). In comparison to other staffing strategies such as agency use and paying overtime, NRTs provide an affordable and effective means for organizations to maintain safe workloads through adequate staffing while still providing high quality patient care (Libby & Bolduc, 1994; Linzer, Tilley, & Williamson, 2011; Rainess et al., 2015; Strzalka & Havens, 1996; Vaughan & Slinger, 2013).

In addition to the financial benefits, NRTs are also praised for providing high quality patient care and having superior documentation practices compared to their agency- and unit-hired nurse counterparts (Lebanik & Britt, 2015; Strzalka & Havens, 1996). Smith (1981) noted that using a resource team resulted in fewer unfilled nursing positions, decreased turnover rates, increased staff satisfaction, and led to a 50% reduction in outside agency use. NRT nurses are a group of clinicians who are oriented as a “team” by name but are often inserted into other teams. Their insights and perceptions have not been documented. This thesis is focused on NRT nurses’ perceptions of teamwork. As a transient member of numerous teams, NRT nurses may have different experiences with teamwork, and therefore unique perspectives on teamwork and providing patient care. The findings from this study will provide greater understanding of teamwork from the NRT nurse perspective and be used to inform decisions around staffing, patient care assignments, and the utilization of NRTs by individual hospital units.

### **Statement of the Problem**

There is an abundance of literature focused on the characteristics of effective teamwork; however, the effects and perceptions of NRT nurses on teamwork are left unexplored. Changing team membership is often viewed as an inhibitor of teamwork (O’Leary, Sehgal, Terrell, & Williams, 2011; Rahn, 2016) and yet NRT nurses are increasingly being utilized in order to maintain safe nurse to patient staffing ratios (Dziuba-Ellis, 2006; Rainess et al., 2015). The contradictions between the teamwork literature and the NRT literature suggests that more research needs to be done to understand the effects of NRT nurses on teamwork. As NRT nurses play an important role in providing safe and effective patient care, it is of utmost importance that the NRT nurse perspective on teamwork be identified.

### **Purpose of the Study**

The purpose of this study is to: (a) identify and explore common perceptions of teamwork from NRT nurses; and (b) to identify common barriers and facilitators of teamwork. This study aims to answer the following research questions:

1. What are NRT nurses’ perceptions of teamwork?
2. What are common barriers and facilitators of effective teamwork from the perspective of NRT nurses?
3. What is the profile of a sample of NRT nurses at a large, urban acute care hospital organization?

4. Is there a relationship between demographic characteristics and perceptions of teamwork among NRT nurses?

Q-methodology was selected to answer the first research question as it provides a systematic and feasible way of identifying perceptions of teamwork from the NRT nurse perspective. It combines both qualitative and quantitative methods in that it explores subjective topic areas while also using statistical techniques to measure differences in the perspectives (Akhtar-Danesh, Baumann, & Cordingley, 2008; Brown, 1996). The second research question is also answered using Q-methodology, as the barriers and facilitators of teamwork become apparent during the interpretation and discussion of the study findings. The third and final research questions are answered using descriptive and comparative statistics in order to supplement the findings of the first and second research questions.

### **Situating the Study**

The study arose from my experiences working full-time as a NRT nurse in a large, acute care, multi-hospital organization for over four years. Discussions with my NRT nurse colleagues suggested that we shared similar experiences with teamwork on similar patient care units. With insight into teamwork across all the units of an organization, I learned that NRT nurses have a unique perspective that can serve to benefit policy developers and hospital administrators; however, NRT nurse perspectives were often not included in these decision-making processes.

### **Content of Thesis**

This thesis is comprised of five chapters. This first chapter introduces the topic of teamwork and NRTs and provides a rationale for conducting this study. The study purposes, research questions, and rationale for Q-methodology are described. Key terms found throughout this study are located in Appendix A.

Chapter two consists of reviews of two different types of literature. First, the literature on NRTs was reviewed to identify how NRT nurses impact and perceive teamwork. Second, a scoping review was conducted on the team and teamwork literature in the context of high functioning teams in order to: (a) determine consistency in the characteristics of high functioning teams; and (b) determine what the effects of transient team members, like NRT nurses, is on the effectiveness of high functioning teams and teamwork. The second chapter summarizes the characteristics of effective teamwork using the Salas et al. (2005) framework, which was a dominant teamwork framework identified in the scoping review. Chapter two also identifies the gaps in the literature, which provide the necessary background to support the research questions.

The third chapter provides a comprehensive overview of Q-methodology followed by a detailed description of the study design and rationale for each component. Sampling, data collection, and data analysis procedures are presented along with ethical considerations.

Chapter four describes the results of the study, including summaries of the demographic data and the three factor groups. Distinguishing statements for each

factor are explored in-depth and consensus statements for all the factor groups are presented.

The final and fifth chapter is a discussion of the results of the study in the context of the NRT and teamwork literature. The relevance and implications of the results are applied to clinical practice, policy, education, and research. The chapter concludes with strategies for knowledge translation of the findings, the strengths and limitations of the study, and recommendations for further research.

### **Chapter Summary**

This chapter has provided an introduction to teamwork and NRTs. The purposes of this study are clearly stated followed by the corresponding research questions. The remaining chapters of this study and their contents were reviewed.

## **Chapter 2: Literature Review**

This chapter reviews the literature on nursing resource teams (NRT) to determine if there is any existing evidence around the impact of NRT nurses on teamwork, including their perceptions of their impact on teamwork. NRT nurses are working on a variety of patient care units and engage in teamwork across many areas; therefore, the literature on teams and teamwork, in the context of high functioning teams, was deemed relevant for the literature review. A scoping review was conducted to identify the characteristics of high functioning teams and to determine how transient team members, such as NRT nurses, are perceived in this body of literature. Finally, the gaps identified from the literature reviews are summarized and applied to the research questions of this study.

### **Defining a Nursing Resource Team**

As a result of increasing patient acuity and a need to maintain safe nurse-patient staffing ratios, float pools and resource teams have been developed (Dziuba-Ellis, 2006; Rainess et al., 2015). Over time, the concept of floating has evolved, and hospitals are moving away from agency and temporary nurses and resorting to the use of in-house float pools and resource teams.

Temporary staffing, float pools, and resource teams are terms that are often used interchangeably in the literature (Dziuba-Ellis, 2006). Dall'Ora and Griffiths (2017) differentiate between temporary staffing and floating in that temporary staffing is an umbrella term used to describe the deployment of staff who are not permanent employees of the hospital, including agency and travel

nurses, while floating is viewed as a practice of assigning nurses to work on units different from their regular home units (Dall’Ora & Griffiths, 2017). The authors divide floating further into unrestricted unit floating and clustered unit floating, but do not specifically mention whether the nurses who are floating are always floated away from their home unit, or whether the nurses are permanently employed in a float pool (Dall’Ora & Griffiths, 2017).

Floating a nurse outside their home unit is often a cause for anxiety, disorganization, and uneasiness, with some nurses reporting that they “hate” being floated (Dziuba-Ellis, 2006; Kane-Urrabazo, 2006; Nicholls, Duplaga, & Meyer, 1996; Strayer & Daignault-Cerullo, 2008). Some of the reasons that nurses provide for not wanting to float include a lack of orientation and training to the other units, a decrease in morale and job satisfaction as a result of floating, and no desire to work in a different area of care (Kane-Urrabazo, 2006; Rudy & Sions, 2003). Kane-Urrabazo (2006) presents an ethical argument about the practice of floating and actually suggests that nurses have an obligation to float if it means balancing out the nursing shortages on other units.

Floating and float pools can be further differentiated according to what types of units the nurses are floated to (i.e. to only specific types of unit or to any unit) and to the duration of the floating (e.g. full shift or partial shift) (Dall’Ora & Griffiths, 2017; Dziuba-Ellis, 2006). Some hospitals use the term float pool to describe nurses who have a home unit, but who can also be called upon to float to other units for urgent or intermittent needs (Dziuba-Ellis, 2006). In this way, the



float pool design does not have its own permanent staff. Other hospitals define float pools as a permanent unit comprised of RNs and RPNs who are competent in their role and can support staffing needs across many different units (Libby & Bolduc, 1994). These more permanent float pool structures are sometimes also referred to as in-house float pools or hospital float pools (Strzalka & Havens, 1996). The differing meanings associated with the term “float pool” creates a great deal of confusion around what a float pool actually is.

To add to the confusion, resource team is another term used less commonly in the literature. Smith (1981) was the first to utilize the term resource team to describe a group of permanently employed nurses who did not have a home unit. This definition is similar to the Libby and Bolduc (1994) definition of float pools; however, the structure of resource teams is what distinguishes it further. Resource teams directly hire nurses into their positions, and usually have their own manager (Dziuba-Ellis, 2006). While float pool nurses would be assigned to any unit depending on need, resource team nurses are usually clustered into specialized care areas, which helps to ensure that nurse competency is matched with patient care needs (Dziuba-Ellis, 2006). In this study, the NRT refers to permanently employed RNs and RPNs who are clustered into medical-surgical, critical care, and pediatrics and women’s health groups. The NRT fills natural vacancies due to sick time, vacation and staff turnover (Dziuba-Ellis, 2006) and helps to provide safe nurse staffing levels as a result of changes in patient acuity (Rainess et al., 2015). In comparison to float pools, resource teams

are often thought to be cost-effective, have increased job satisfaction, and reduce the need for unit-based nurses to float (Linzer et al., 2011).

### **Nursing Resource Teams in the Literature**

There are many studies that describe the experiences of nurses who float, but very few specifically describe the experiences of NRT nurses. Nurses who float or are floated are often reassigned involuntarily, while NRT nurses choose to work as a NRT nurse, therefore, their experiences would be expected to differ greatly. As mentioned, effective teamwork leads to better patient outcomes, but an important component to effective teamwork is having adequate nurse staffing. NRTs provide an affordable and effective means for organizations to maintain safe workloads through adequate staffing (Vaughan & Slinger, 2013), but the impact of a NRT nurse on teamwork within the units, which can also affect patient outcomes, is relatively unknown. Among the few studies that focus on NRTs, none focus specifically on NRT nurses' experiences with teamwork on the units or on their perceptions of teamwork generally. The studies that do exist around NRTs are described in sequence.

**Characteristics of NRT nurses.** Linzer et al. (2011) compared personality traits of unit-hired nurses and resource nurses at a Magnet community hospital in Boston using a self-report assessment tool. Although they use the term float pool to describe RNs who are assigned each shift to a specific clinical unit depending on organizational need, their definition is similar to a resource team because the RNs are only employed in the float pool of one organization (Linzer

et al., 2011). The findings of the study demonstrated that the resource team nurses scored statistically higher on independence, openness to change, and social boldness, but scored statistically lower on tough-mindedness, rule consciousness, and tension (Linzer et al., 2011). These results suggest that resource team nurses have specific traits that facilitate working across different units. The authors recommended that personality traits be considered in recruitment processes and be used as a way to promote improved nursing practice by targeting employees for specific educational opportunities (Linzer et al., 2011). This study does not discuss the direct impact of these personality traits on teamwork.

Lebanik and Britt (2015) described the key characteristics that nurses in an in-house float pool need to possess: adaptability, knowledge, optimism, communication, and focus. In this study, the float pool nurses are described as permanent full- and part-time employees with benefits, therefore, the authors are describing a similar structure of a resource team. Some of the characteristics are ones that are described as inherent to effective teamwork, such as being prepared to take on challenges with courtesy and enthusiasm and having effective communication skills; however, this article does not examine the perceptions of the float pool nurses on teamwork.

**The workplace environment for NRT nurses.** Vaughan and Slinger (2013) discuss the perspectives that NRT nurses have toward healthy workplace environments at London Health Sciences Centre in Ontario. The results of this quality improvement project were to identify what NRT nurses required in order

to maintain a healthy workplace environment when going to diverse units across the organization (Vaughan & Slinger, 2013). Some of the needs of the NRT staff included being respected, sharing common values of the organization, shared decision-making, appropriate staffing, and supportive, collaborative relationships with the unit staff (Vaughan & Slinger, 2013). Although important for a work environment, this article does not discuss how each of these needs contributes to effective teamwork or how the absence of these needs affects teamwork, and ultimately, patient care.

**Clinical practices of NRT nurses.** In a descriptive comparative study, Strzalka and Havens (1996) compared documentation practices of unit-hired nurses, in-house float pool nurses, and agency nurses on quality and safety indicators. In this study, in-house float pool nurses are defined as nurses hired into a hospital-specific float pool, but it is unclear if these nurses are permanent employees. The in-house float pool nurses documented more consistently compared to both agency- and unit-hired nurses by documenting at 100% on all the safety indicators (Strzalka & Havens, 1996). With respect to teamwork, this study suggests that in-house float pool nurses are competent in an important component of care, documentation, but there is no discussion on the ability of the nurses to provide safe patient care in a team.

**Fatigue.** Another study focused on factors that affect fatigue in float nurses. A semi-structured interview and questionnaire were used on ten float nurses at a medical centre in the United States (Dykstra, Sendelbach, & Steege,

2016). Float nurses were defined as “nursing staff [who] move between different units within a hospital in order to assist when there are staffing shortages” (Dykstra et al., 2016, p. 624). The authors do not necessarily mention whether the nurses are hired specifically to float, but they otherwise seem to meet the criteria of a resource team. A limitation to this study is the small sample size and use of only one site.

Fatigue is identified as a performance and safety issue, particularly with nurses who provide most hours of direct patient care (Dykstra et al., 2016). Dykstra et al. (2016) identified several factors that contribute to fatigue in float nurses, including inequality in patient assignments, switching unit-assignments multiple times in one shift, and unit culture. Units that had cultures of open communication, strong teamwork, and respect for float nurses were viewed as less fatiguing (Dykstra et al., 2016). The participants in this study describe how strong teamwork on the unit they are assigned to work on results in more availability of help, and more inclusion of the float nurse onto the unit. This finding is crucial because it suggests that there are variations in perceptions of teamwork by float nurses.

**Summary of NRT literature.** Overall, there is a lack of research on the perceptions of teamwork from the perspective of NRT nurses. The literature implies that NRT nurses have a unique perspective on nursing, and one study even suggested that there are differences in teamwork and NRT nurse experiences, depending on the unit that they are assigned to work on (Dykstra et

al., 2016). Each of the studies focused on different, but important components of patient care and NRTs, and some studies describe methodological processes more clearly than others. Although there is some literature that related NRT to teamwork, there is little related to effective team work and what makes an effective team. Therefore, an additional review was completed on the literature of high-functioning teams, in order to better understand how NRT nurses impact teamwork.

### **Scoping Review on Teams and Teamwork**

The literature on teams in recent years has focused on what works and what is commonly referred to as “high functioning”. There is an abundance of literature on the characteristics of effective teams in numerous contexts, including business, healthcare and education settings. As already noted, NRT nurses work on teams on a daily basis; however, it was not identified from the NRT literature what the impact of NRT nurses and other transient nurses have on the overall effectiveness of teams and teamwork.

A literature review is “a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners” (Fink, 2005, p. 3). There are many different types of literature reviews, each differing according to how systematic it is in its approach, and the overall function of the review (Fink, 2005).

One type of literature review is a scoping review or scoping study, which aims to rapidly map the key concepts underpinning a research area, especially where an area has not been reviewed comprehensively before (Arksey & O'Malley, 2005). The Arksey and O'Malley (2005) framework is a Cochrane-endorsed method for conducting scoping reviews and was used to further understand the relationship of teams and NRTs. Levac, Colquhoun and O'Brien (2010) present some challenges and strategies to completing a scoping review and these suggestions have been incorporated into the overall process as well. The six stages in the Arksey and O'Malley (2005) scoping review framework alongside the Levac et al. (2010) suggestions are presented in Appendix B.

The purposes of this scoping review were:

1. To determine whether there is consistency in the characteristics of high functioning teams within the literature;
2. To determine whether the literature related to high-functioning teams discusses the effect that transient or new team members (like NRT nurses) have on high functioning teams; and
3. To identify areas of further research.

Three large databases were searched for articles: CINAHL, PubMed and EMBASE. A variety of search terms were utilized in each database in many combinations including: “high function\*”, “high perform\*”, “attribute\*”, “characteristic\*”, “qualit\*”, “team\*”, and “teamwork”. The literature search was conducted between January and March of 2017. The only limitations placed on

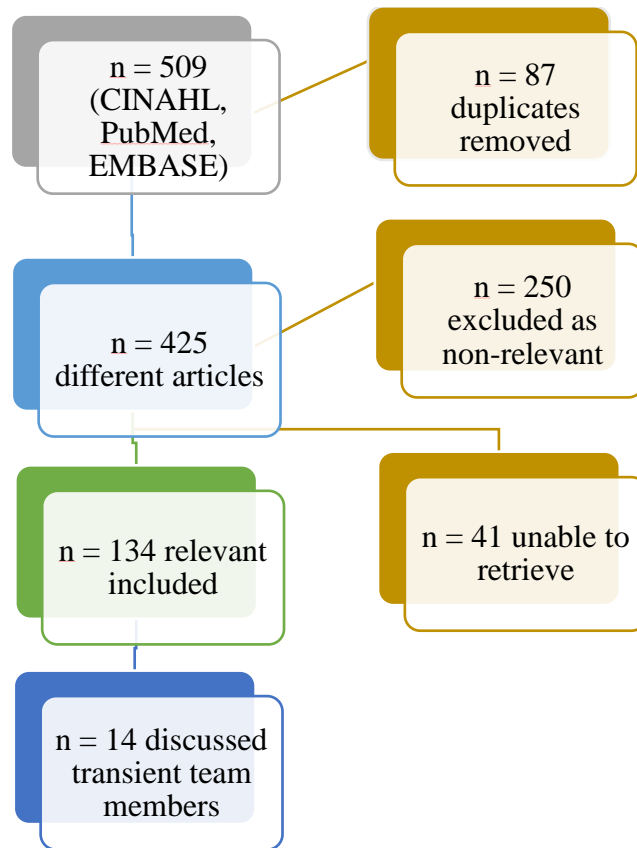
the search were English language only and availability of each article in full text.

After removal of duplicates (n=87) a total of 425 articles were identified.

RefWorks and Microsoft Excel were used to organize the articles.

To identify relevant articles within the 425 retrieved in the literature search, inclusion criteria were applied, including English-only and full-text articles (in case this was not already effective during the initial literature search). Exclusion criteria were articles that focused on the new graduate nurse transition. Each article was reviewed by title, abstract and then in-full if perceived as relevant to the research questions. A total of 134 articles were identified as focusing on the characteristics of high functioning teams. Articles were excluded (n = 250) for not actually discussing characteristics of high functioning teams, and for focusing on athlete performance or the performance of non-human objects, such as microbes in laboratory tests, or technology. Articles that were not accessible in full, despite the search limitation, were excluded (n = 41). Of the 134 relevant articles, only 14 discussed the impact that new or transient team members have on team effectiveness. Figure 1 outlines the narrowing of the literature search. Each of the 134 relevant articles were documented and organized alphabetically in a literature matrix in an excel document with the following headings: article citation, purpose/objectives, methodology and main results.





*Figure 1.* Diagram of the search strategy and narrowing of articles in the scoping review.

The 134 articles ranged in publication years from 1998-2016. Table 1 summarizes the frequency of relevant articles according to research methodology. Some of the methodologies or strategies used in these articles included literature reviews; identifying high-performing organizations using existing databases and then conducting interviews or administering surveys to identify the characteristics that make the organization high performing; and implementing and evaluating a team training or other team program. The decision was made to include high-performing organizations in the scoping review because high-performing

organizations are determined and defined by the effectiveness of the teams within it (Deneckere et al., 2013). It is not necessary within the framework of a scoping review to critically appraise the included articles and so this was not performed in this scoping review (Arksey & O'Malley, 2005). It is important to note that during the review of full article texts, it became apparent that many of the included articles were in grey literature such as magazine articles or opinion-pieces that were not published in peer-reviewed journals. As a scoping review is meant to identify breadth in knowledge surrounding a topic, it was decided to include these articles in order to help answer both of the research questions more completely.

The first scoping review question asks: Are the characteristics of high functioning teams consistent throughout the literature? Within the 134 articles, characteristics were identified for high functioning interdisciplinary, nursing and critical care teams as well as for high-performing organizations. There was frequent overlap in the identified characteristics, including (a) strength in leadership, (b) trust among team members, (c) mutual support, (d) role clarity and competence, (e) relevant education and training, (f) effective communication, (g) shared mental model and common team goals, (h) interdependence, (i) adaptability, (j) process for performance monitoring, (k) patient-centred care, (l) productive working environment, (m) familiarity with team members, (n) investment in improvement, and (o) team goals aligned with organizational goals. Many studies addressed barriers to effective teamwork, which were often the

immediate opposite to the characteristics of high functioning teams (e.g. lack of effective leadership opposed to strength in leadership).

Table 1

<i>Frequency of Relevant Articles in Scoping Review by Methodology</i>	
Methodology	No. of articles (% total)
Quantitative, observational (e.g. cross-sectional, cohort)	27 (20.1)
Quantitative, experimental (e.g. RCT)	2 (1.5)
Qualitative descriptive	25 (18.7)
Qualitative other (e.g. case study, ethnography, phenomenology)	19 (14.2)
Mixed methods	12 (9.0)
Literature review	15 (11.2)
Meta-analysis	2 (1.5)
Psychometric testing	1 (0.7)
Quality improvement	18 (13.4)
Non-scholarly	13 (9.7)
<b>Total</b>	<b>134 (100)</b>

Salas et al. (2005) author a frequently cited framework among the articles in this scoping review. Salas et al. (2005) outline the “big five”, which are five core components to effective teamwork, including: team leadership, mutual performance monitoring, backup behaviour, adaptability, and team orientation. Three supporting coordinating mechanisms are also required, which include a shared mental model, closed-loop communication, and mutual trust (Salas et al., 2005). The Salas et al. (2005) “big five” framework summarizes the characteristics of high functioning teams well and the characteristics identified in the literature can be easily correlated to this framework, demonstrating overall

consistency. The definitions of the Salas et al. (2005) framework are provided in Table 2, while a visual representation of the framework is located in Appendix C.

**Summary of the impact of new or transient team members.** The second scoping review question, an important one for this study, asks whether the literature on high functioning teams discusses the effects of new or transient teams on teamwork. Fourteen articles were identified within the literature on the characteristics of high functioning teams; however, these articles only indirectly or partially answered the research question. A summary of the 14 articles included in the scoping review is in Appendix D. Nine of the 14 articles were primary studies and five were secondary sources (e.g. literature review). Each article is discussed below according to how it describes the impact of the new team member on team effectiveness.

Each of the 14 articles states that there is an interruption to teamwork as a result of introducing a new team member or by having transient (non-permanent) team membership. Andregard and Jangland (2015) conducted a systematic review on the introduction of nurse practitioners (NPs) into primary healthcare teams. Existing team members felt threatened by the new NP role due to a lack of role clarity and understanding. Once the NP and the team members had a better understanding of each other's knowledge, skills, and scope, interprofessional collaboration was possible and the NP could feel part of the team. The authors conclude that new members can be more effectively integrated into a team when

each team member remains cognizant of the common goal of providing the best patient care possible.

Table 2

*The Big Five and the Coordinating Mechanisms of Teamwork*

Teamwork Term	Definition	Behavioral Makers
Team leadership	Ability to direct and coordinate the activities of other team members, assess team performance, assign tasks, develop team knowledge, skills, and abilities, motivate team members, plan and organize, and establish a positive atmosphere.	Facilitate team problem solving. Provide performance expectations and acceptable interaction patterns. Synchronize and combine individual team member contributions. Seek and evaluate information that affects team functioning. Clarify team member roles. Engage in preparatory meetings and feedback sessions with the team.
Mutual performance monitoring	The ability to develop common understandings of the team environment and apply appropriate task strategies to accurately monitor teammate performance.	Identifying mistakes and lapses in other team members' actions. Providing feedback regarding team member actions to facilitate self-correction.
Backup behavior	Ability to anticipate other team members' needs through accurate knowledge about their responsibilities. This includes the ability to shift workload among members to achieve balance during high periods of workload or pressure.	Recognition by potential backup providers that there is a workload distribution problem in their team. Shifting of work responsibilities to underutilizes team members. Completion of the whole task or parts of tasks by other team members.
Adaptability	Ability to adjust strategies based on information gathered from the environment	Identify cues that a change has occurred, assign meaning to that change, and develop a new plan to deal with the changes.

	through the use of backup behavior and reallocation of intrateam resources. Altering a course of action or team repertoire in response to changing conditions (internal or external).	Identify opportunities for improvement and innovation for habitual or routine practices. Remain vigilant to changes in the internal and external environment of the team.
Team orientation	Propensity to take other's behavior into account during group interaction and the belief in the importance of team goal's over individual member's goals.	Taking into account alternative solutions provided by teammates and appraising that input to determine what is most correct. Increased ask involvement, information sharing, strategizing, and participatory goal setting.
Shared mental models	An organizing knowledge structure of the relationships among the task the team is engaged in and how the team members will interact.	Anticipating and predicting each other's needs. Identify changes in the team, task, or teammates and implicitly adjusting strategies as needed.
Mutual trust	The shared belief that team members will perform their roles and protect the interests of their teammates.	Information sharing. Willingness to admit mistakes and accept feedback.
Closed loop communication	The exchange of information between a sender and a receiver irrespective of the medium.	Following up with team members to ensure message was received. Acknowledging that a message was received. Clarifying with the sender of the message that the message received is the same as the intended message.

Adapted from Salas et al. (2005)

DeWitt (2009) also suggests that misconceptions about scope of practice by exiting team members may be a barrier to collaborative teamwork as it relates to the introduction of a new level of care provider, namely RPNs in the post-anaesthetic care unit (PACU) setting. This is echoed in Grace, Rich, Chin and Rodriguez's (2014) qualitative descriptive study on the integration of new team members to primary care, whereby the authors note that having a shared understanding of team member's roles and responsibilities was critical to the integration of RN case managers and patient health coaches.

Several of the studies take place in the context of critical care areas. Courtenay, Nancarrow and Dawson (2013) reviewed the literature on interprofessional teamwork in a trauma setting. The authors mention that changes to the team membership occur often and that this hindered team performance by negatively affecting adaptive capacity, or ability to predict other team members' needs. In order to keep these changing team members up to date, better communication strategies were required. Ballangrud, Hall-Lord, Persenius and Hedelin (2014) briefly mention that the intensive care unit (ICU) teams have dynamically changing team membership and this has contributed to negative patient incidents. The authors discuss the benefits of using a team training program to enhance teamwork generally, but that team training programs are only effective when team membership is consistent over a period of time. Piquette, Reeves and Leblanc (2009) also describe the dynamic team memberships in the ICU and how this impacts team functioning during acute medical crises. The

authors focus more on changes to physician membership, and how different physicians bring differing, and sometimes unfavourable, levels of motivation toward team development and team effectiveness (Piquette et al., 2009).

In acute care settings, Wakeam, Hyder, Ashley and Weissman (2014) performed a case series to examine barriers and strategies for effective patient rescue. Of note, staff discontinuity, or rotation of staff, was perceived as a major barrier to teamwork; however, staff discontinuity was related more to mid-level staff, such as NPs, and physician groups, rather than frontline nursing staff (Wakeam et al., 2014).

In addition to recognizing the impact that dynamic team membership has on team functioning, several studies discuss strategies for overcoming this barrier. Bunnell et al. (2013) discuss the characteristics of an outpatient oncology clinic including the many transient team members who practice in off-site locations at different times. The unit is referred to as a “virtual team” that makes it challenging to maintain a shared mental model and communicate effectively. The focus of this article is on preventing chemotherapy medication errors by streamlining communication, developing situational awareness, having a clear leadership role, and having a shared mental model, which are achieved through team training (Bunnell et al., 2013). Again, however, team training does not often focus on NRT nurses entering into teams on a shift-by-shift basis. Similarly, in a qualitative descriptive study by Mulkins, Eng and Verhoef (2005), many part-time workers were employed in an integrative healthcare setting, rarely working all



together. This integrative healthcare team used numerous strategies to ensure that patient care was not interrupted including: using enhanced communication tools; hiring people with personalities that fit well with the existing team; providing satisfactory compensation; and having a supportive organizational structure (Mulkins et al., 2005).

Mulkins et al. (2005) also note that team members must demonstrate an openness to change and continuous learning in order to ensure that the team functions well. This reliance on team members being open is also reflected in McKeon, Oswaks and Cunningham (2006), whereby new team members need to show a willingness to jump in when needed and to accept help without fear of being perceived as weak. This speaks to the specific personality of a new team member, as mentioned in Mulkins et al. (2005). Simmons and Sherwood (2010) discuss how nurses in the neonatal intensive care unit (NICU) and on trauma teams place high importance on developing and maintaining relationships with team members in order to be high-performing overall. Qureshi and Dhaliwal (2016) also signify the importance of having close ties to team members as this increases trust and loyalty among team members. Interestingly, McKeon et al. (2006) acknowledge that feeling comfortable with team members is important for ensuring effective teamwork, but teams who do not routinely work together can still display teamwork as long as team members identify with one another by having a shared mental model.

O’Leary, Sehgal, Terrel and Williams (2011) completed a literature review to summarize the current understanding of teamwork and recognized that team membership in hospitals is constantly changing because of shift work and varying shift rotations. The authors go on to conclude that changing membership hinders teamwork (O’Leary et al., 2011). Rahn (2016) expands upon this notion that changing team membership is a barrier to effective teamwork and correlates changing team membership to poorer patient outcomes, such as pressure ulcers and hospital-acquired infections.

Overall, there are very few studies that discuss the effects of new team members on the effectiveness of teams within the context of the literature on high-functioning teams. There were five secondary sources and nine primary sources included in this scoping review, with great variation in methodology. None of the included studies focused specifically on the effects of new or transient team members, although it is evident that new team members and changing team membership impacts the effectiveness of teamwork. Therefore, more research needs to be conducted in this area.

**Discussion.** This scoping review included 134 articles that vary in terms of research methodology, measurement tools, setting, and definitions of team and teamwork. The first finding of the scoping review is that the core characteristics of effective teamwork are consistent in the literature on high functioning teams. Salas et al. (2005) provides a frequently cited framework for understanding

teamwork and describes five core components of teamwork and three coordinating mechanisms.

The second finding is that the literature related to the characteristics of high functioning teams contains few articles that mention the impact of new or transient team members on effective teamwork. No article explicitly focuses on the impact of new team members, but 14 articles recognize the challenges associated with changing team membership and the potential impacts to teamwork and patient safety. Given the inevitability of including NRT nurses and other transient and new team members into acute care hospital teams, there is a clear need for further research to understand NRT nurses and teamwork.

Overall, this scoping review has highlighted important areas for further research. The characteristics of high functioning teams are consistent and well researched. The fact that dynamic team membership hinders team effectiveness is frequently cited, but not explored in-depth. As mentioned, more research needs to be conducted specifically on the impact of new team members on effective teamwork in healthcare. It would also be of benefit to conduct this research from the perspective of the new team member, as this is missing from the current literature. More specifically, with the increasing use of NRT and float nurses to help fill staffing gaps, it is important that research be conducted on the perceptions of teamwork from the perspective of NRT and float nurses.

### **Chapter Summary and Literature Gap**

This chapter reviewed the literature on float pools and NRTs and identified that neither the effects of NRT nurses on teamwork, nor the perspective of NRT nurses on teamwork, has been fully explored. Given the lack of information around NRT nurses and teamwork in the NRT literature, a subsequent scoping review was required. This scoping review aimed to determine if the literature on high-functioning teams discusses the impact of new or transient team members, like NRT nurses, on teamwork, and whether there is consistency in the characteristics of high-functioning teams within that literature.

At present, there is some contradictory evidence in terms of the effectiveness of new team members and the impact to teamwork. Resource teams are perceived as an excellent human resources tool for filling natural gaps in nurse staffing, which means that adequate nurse to patient ratios can be maintained (Dziuba-Ellis, 2006; Rainess et al., 2015). The scoping review on teams and teamwork, however, revealed that new team members might be disruptive to team functioning due to factors such as a lack of role clarity and misconceptions about scope of practice; poorer adaptive capacities; and looser relationships between team members (Andregard & Jangland, 2015; Courtenay et al., 2013; Dewitt, 2009; Qureshi & Dhaliwal, 2009).

There is a need to understand teamwork from the perspective of NRT nurses themselves. A few key areas that are missing from the literature include the NRT nurse perspective on: (a) the definition of a team and teamwork; (b) the characteristics of a high functioning team; (c) barriers and facilitators to

teamwork; (d) experiences of teamwork when another NRT nurse is present; and (e) experiences entering into a team and being the “new” team member.

This study fills one gap in the existing literature by focusing specifically on perceptions of teamwork from the NRT nurse perspective. It is the first study of its kind to look at teamwork from this unique perspective and serves to further contribute to the understanding of the role and function of NRTs and their contribution to existing teams providing care.

### **Chapter 3: Research Methodology**

This chapter provides a detailed description of the methodology used in this study. An introduction to Q-methodology is provided, followed by the step-by-step instructions for carrying out a Q-methodology study. The research outline for this study is also provided, including the purpose of study, design, setting, participants, recruitment and sampling, reliability and validity, and measurement and outcomes. Methodological considerations are presented, including study limitations and ethical considerations.

#### **Introduction to Q-Methodology**

William Stephenson first introduced Q-methodology in 1935 and later followed his discovery with numerous publications describing his unique method of factor analysis (Stephenson, 1935, 1936, 1953). Stephenson (1935) identified that by using less people and more tests or responses, groups of people with common tastes, or perceptions, can easily be identified through correlation tests and subsequent factor analyses. Theoretical and conceptual differences between factor analysts at the time of conception of Q-methodology were quickly mitigated by the continued and justified use of Q-methodology across research disciplines (Brown, 1993). Today, Q-methodology has been utilized in a variety of disciplines and research areas. The advancement of statistical software for Q-methodology analysis has also encouraged researchers to pursue Q-methodology more often and easily (Akhtar-Danesh et al., 2008; McKeown & Thomas, 1988).

By drawing on the strengths of both quantitative and qualitative research methods, Q-methodology is capable of uncovering unique insights into human subjectivity, particularly in the field of nursing (Akhtar-Danesh, Baumann, & Cordingley, 2008; Landeen et al., 2015; Lobo, Fisher, Baumann, & Akhtar-Danesh, 2012). Although perceptions are an inherently subjective topic, Q-methodology provides a way of systematically exploring perceptions with the most prominent viewpoints and relationships being explored in-depth using factor analysis, thus providing new insights into the topic area (Akhtar-Danesh et al., 2008; Brown, 1993). Rather than determining how many people share a viewpoint, Q-methodology uncovers the how and why a person holds a viewpoint without inflicting influence or bias from the researcher on to the results (Brown, 1993; Chinnis, Summers, Doerr, Paulson, & Davis, 2001; Landeen et al., 2015; Lobo et al., 2012).

In this study, Q-methodology was used to explore NRT nurses' perceptions of teamwork. The unique ability of Q-methodology to identify common perceptions of teamwork without the use of a very large sample was an important decision made by the researcher and thesis committee. Measuring teamwork may be difficult due to its subjective nature and so Q-methodology provides a systematic and feasible way of exploring this new area of perceptions of teamwork from the NRT nurse perspective without compromising the reliability of the results.

### **Concourse**

The first step in a Q-methodology study is to develop the concourse. The concourse is a collection of statements that is sufficiently representative of all the viewpoints about the topic area of interest (Akhtar-Danesh et al., 2008; Coogan & Herrington, 2011). Statements for the concourse are usually derived from, but not limited to, the literature; focus groups or interviews with members of the study population; and expert consultation (Akhtar-Danesh et al., 2008; Brown, 1996; Coogan & Herrington, 2011). Once the concourse is complete, the statements are categorized into themes to ensure that all aspects of the topic area are covered (Coogan & Herrington, 2011).

### **Extraction of Q-Sample Statements**

The next step is to select a smaller sample of statements from the concourse for the final Q-sample, which is representative, but not exhaustive of the concourse; clear from ambiguity; and not repetitive (Akhtar-Danesh et al., 2008; Brown, 1993). Watts and Stenner (2005) suggest that between 40 and 80 statements is appropriate for a final Q-sample. Fewer than 40 statements may lead to issues of inadequate coverage of the topic area, and more than 80 statements may be overwhelming for the participants. It is difficult for a researcher to know when the Q-sample is complete because there can always be more statements added; however, the main concern in Q-methodology is the “relative likes and dislikes, meanings, interpretations and overall understandings” that result from each participants’ sorting of the statements (Watts & Stenner, 2005, p. 76).



In order to ensure face and content validity of all statements in the Q-Sample, it is important to have the statements carefully reviewed by experts in the field or by participants from the study population. Face validity is also preserved by ensuring statements use participants' exact wordings from interviews, with editing reserved for grammar and readability (Dennis, 1986; Valaitis, Akhtar-Danesh, Eva, Levinson, & Wainman, 2007). Each statement in the Q-sample is randomly numbered before being printed on separate pieces of paper in order to prevent participants from assigning any meaning to the numbers prior to sorting the statements.

### **P-Set**

The group of participants in a Q-methodology study who participate in the Q-sort (sorting of statements) is known as the person- or P-set (Akhtar-Danesh et al., 2008; Chinnis et al., 2001; Dennis, 1986; McKeown & Thomas, 1988). It is recommended that a sample of 40-60 participants be included in the P-set, but generally no more than 50 participants are needed (Akhtar-Danesh et al., 2008; Brown, 1993).

### **Q-Sorting**

The final step in Q-Methodology is to have the participants sort the statements from the Q-Sample in a quasi-normal distribution table (Q-sort table) along a Likert scale (Akhtar-Danesh et al., 2008). The table must contain the same number of cells as the number of statements. Brown (1993) explains that the range and distribution shape of the Q-sort table is arbitrary and has no effect on



individual Q-sort are then entered into statistical software for factor analysis and rotation, which will produce factors, or groups of participants, who share a common perception about teamwork. There are many statistical programs capable of analyzing Q-methodology data, including *PQMethod 2.35* (Schmolck, 2014), PCQ online, and qfactor written in Stata (Akhtar-Danesh, 2016).

### **Research Outline**

**Purpose of study.** In this study, perceptions of teamwork from NRT nurses are explored. The purpose of this study is to provide insight into the unique perspectives of a particular sample of nurses. This study helps the research and nursing communities to better understand the characteristics of effective teamwork, which will also help to identify common barriers and facilitators of teamwork.

**Research questions.** The overarching research question is: What are NRT nurses' perceptions of teamwork? The secondary research question is: What is the profile of the NRT nurses included in this study?

**Study design.** The first research question was answered using Q-methodology, whereby participants were asked to rank statements about teamwork on a pre-determined scale. The objective of Q-methodology in this study is to identify groups of participants, or factors, who share similar perceptions of teamwork as represented by their Q-sorts (Akhtar-Danesh et al., 2008).

The second research question was answered using a demographic questionnaire that is attached in Appendix E. Participants were asked to complete the demographic form prior to the focus group and Q-sorting. The objective of collecting demographic data was to be able to correlate the identified factors from the Q-sorts with demographic data for interpretive purposes, and also to provide a richer understanding of the characteristics of the NRT nurses at a large, urban, acute care organization who participated in this study.

**Setting.** The setting for this study is a large, acute care multi-site hospital organization in a large, urban city in Southern Ontario.

**Study participants.** The participants for this study are NRT nurses employed at the same large, acute care hospital organization. There are 119 NRT RNs and RPNs employed full-, regular part- or occasional part-time at this organization. NRT nurses are grouped into three different clusters, which distinguishes the types of patient units that they can work on: medical-surgical; critical care; and pediatrics and women's health. Depending on their cluster, NRT nurses may be eligible to work at multiple hospital sites within the hospital organization. A summary of the organization of the NRT RNs and RPNs at the study site is provided in Table 3. Before each shift, the NRT nurse calls in to the NRT scheduling office and finds out to what patient unit they are assigned to work. The scheduling office is aware of any specific training that the NRT nurse has received so that they are appropriately assigned to a patient care area. Training of the NRT nurse usually coincides with the cluster. For example, NRT nurses

who have received critical care orientation usually work in the critical care cluster and are assigned to work on a critical care patient unit.

Participants were required for two parts of this study: the focus group and the Q-sorting. Participants for both parts were recruited from the same population of NRT nurses.

Table 3

*Organization of the Nursing Resource Team at the Study Site*

Variable	Frequency of RNs	Frequency of RPNs
Total Number	85	33
Employment Type		
Full-Time	74	29
Regular Part-Time	11	3
Casual Part-Time	1	2
Cluster		
Medical-surgical	77	33
Critical care	10 <sup>a</sup>	0 <sup>b</sup>
Women's health/pediatrics	8	0 <sup>b</sup>

<sup>a</sup>Critical care nurses also belong in the medical-surgical cluster  
<sup>b</sup>RPNs only work in the medical-surgical cluster

### **Eligibility, Recruitment, and Sampling**

Eligibility, recruitment, and sampling criteria were developed for this study. The first step of the study involved NRT nurses in a focus group and one-on-one interview in order to develop statements for the concourse. The second step of the study involved NRT nurses participating in the actual Q-sort process.

**Eligibility.** NRT nurses currently employed at the acute care hospital organization either full- or part-time with the NRT, in any NRT cluster, and who were working independently (i.e. had at least completed orientation) were eligible

to participate in this study. Due to low recruitment for the Q-sort part of the study, the participant group was revisited by the researcher and Thesis Committee, and it was decided to include nurses who had recently worked on the NRT (within the last 2-3 months), provided that they were giving their data from their perspective as a NRT nurse. Exclusion criteria for the study were NRT nurses who: were still on orientation; had finished orientation but had not worked any shifts independently; and failed to provide consent for their participation.

**Recruitment.** Focus group participants were recruited from the group of study participants described above. The researcher contacted the NRT manager by phone and then e-mail to ask that the recruitment e-mail be sent out to all NRT nurses about the opportunity to participate in the research study focus group (refer to Appendix F for the recruitment e-mail). Interested participants replied to the researcher by e-mail, text message, or in-person at the hospital. A statistician and expert in Q-methodology recommended that five nurses participate in the focus group based on the smaller number of NRT nurses available to recruit from. During the recruitment process, only five nurses total responded to the recruitment e-mail, and only four of these nurses were able to attend the focus group due to scheduling conflicts with the fifth respondent. In order to include the fifth respondent, a one-on-one interview was held. NRT nurses were initially recruited for the P-set using the same strategy as the focus group. Very few nurses responded to this initial e-mail (see Appendix G), and so the researcher asked the NRT educators to send out another e-mail about the study, which was more

personalized. Again, response rates remained low, and so the researcher, with permission from the NRT manager, approached NRT nurses when they were working on the wards and asked them if they were interested in participating in the study. Special care was taken to ensure that NRT nurses did not feel pressured to participate, and that patient safety was never compromised while the NRT nurse was completing the study. It became evident during this in-person recruitment strategy, that meeting nurses working on a night shift was more effective, as the nurses had more available time to participate.

**Sampling.** The original sampling plan for both the focus group and P-set was to use maximum variation sampling, which aims to recruit a heterogeneous sample of participants using pre-determined criteria (Patton, 1990). The benefit to using maximum variation sampling is that any common patterns that emerge represent shared viewpoints about a central phenomenon, like teamwork (Patton, 1990). Maximum variation sampling was to be used in this study in order to purposefully select participants out of those who respond to the recruitment e-mail, in order to vary them by (a) age, (b) professional designation, (c) years nursing, (d) years working as a NRT nurse, and (e) NRT cluster.

**Sample size.** Recruitment for the P-set was ongoing from October 2017 to January 2018, at which point 34 NRT nurses had participated in the study.

Sampling was ended prior to achieving the sample size goal of 40 participants. Smaller sample sizes do not bias the results of a Q-methodology study, as breadth and diversity are more important than proportionality (Brown, 1980), with the

objective being able to “describe typical representations of different viewpoints rather than to find the proportion of individuals with specific viewpoints” (Akhtar-Danesh et al., 2008, p. 763).

### **Concourse Statements**

The concourse in this study included a list of statements that were sufficiently representative of the viewpoints of teamwork. In this study, statements about teamwork for the concourse were identified from a comprehensive literature review on teamwork and NRT (see Chapter 2) and from a focus group of NRT nurses.

**Literature.** The extensive and comprehensive literature review on teamwork and NRT (Chapter 2) was used to derive numerous statements for the concourse. Cavalieri (2013, p. 75) provided general guidelines for writing Q-statements in Table 4, which assisted the researcher in developing statements for the concourse in this study.

**Interview process – focus group.** The researcher conducted the four-person focus group at the McMaster University campus with a PhD student present to assist. At the start of the focus group, consent was obtained, and a copy given to each participant (see Appendix H). The demographic survey from Appendix E was then administered to and filled out by each participant. The focus group was approximately sixty minutes long, with the researcher asking open-ended questions about teamwork and the NRT. The interview guide for the focus group was modeled after the questions used in a Q-methodology study on



Table 4

*General Guidelines for Writing Q-Statements*

---

1. Suggested length of a Q-statement is 1 to 3 sentences.
  2. There are no pre-defined proportions for negatively and positively worded statements in the Q-sample.
  3. Any overtly negative statement should include suggestions or ways of overcoming the barrier discussed; however, it is not absolutely necessary to have a solution for every statement.
  4. Terms and sentence construction should reflect a comprehension level that is appropriate for the intended participants and the topic of interest.
  5. Avoid complex sentence structures (e.g. do not use double negatives to avoid confusion/lack of understanding).
  6. Statements should be written from the perspective of the population of interest, in the first person, and in the present tense.
  7. In order to keep statements concise, and to ensure clear understanding of the statements, examples, including phrases, can be included along with the statements.
  8. If the statement consists of more than one sentence, a clear relationship between the sentences should be established. Include only one idea per statement.
  9. If faced with choosing between two statements, opt for the statement that adds breadth to the finalized set of statements.
  10. It is helpful to categorize the finalized –statements if possible. This allows the researcher to compare the categories that the distinguishing and consensus statements (revealed during by-person factor analysis) fall within for each of the identified factors. This can aid in interpretation of the factors.
- 

perceptions of professionalism among nursing faculty and students (Akhtar-Danesh et al., 2013) and can be found in Appendix I. During the focus group,

each participant was asked to provide five or more statements on the definition of, barriers to, and facilitators of teamwork. The focus group was audio recorded and later transcribed verbatim by the researcher. In addition to the statements that were developed by the focus group participants, the transcript was reviewed for any other statements that could be added to the concourse during the general interview responses. There was no interpretive component to the focus group analysis.

**Interview process – one-on-one interview.** The one-on-one interview with the fifth participant and researcher was held at the McMaster University campus. Consent was obtained (see Appendix H) and the demographic questionnaire completed. The same interview guide was utilized for the interview as for the focus group. The participant was also asked to write down five or more statements about teamwork to add to the concourse. The interview was audio recorded, transcribed verbatim by the researcher, and the transcript was reviewed for any statements that could be extracted for the concourse.

A total of 111 statements were included in the concourse (25 NRT nurse-generated statements, and 86 from the literature and interview transcripts). In order to maintain a high level of face validity, the exact wording of the statements was retained from the transcript, participant statements, and literature, as recommended by Dennis (1986) and Valaitis et al. (2007), with only minor changes made for grammar and readability purposes.

### **Extraction of Q-Sample**

Once the concourse contained a comprehensive number of statements, the next step was to finalize the Q-sample. To develop the Q-sample, a structured and inductive approach was used, in which categories emerged from the concourse, and statements were then grouped into these categories by looking for similarities and differences among them (Akhtar-Danesh et al., 2008). Repetitive statements were discarded. Fourteen categories about teamwork emerged: (a) communication; (b) accountability and professionalism; (c) being part of the team; (d) facilitation of teamwork; (e) knowledge, skill, and judgment; (f) leadership and followership; (g) friendship, trust, and respect; (h) patient safety; (i) job expectations; (j) roles; (k) personality; (l) relationships; (m) adaptability and resiliency; and (n) conflict. Any uncertainties related to the categorization of a particular statement were resolved through consensus among the thesis committee during several meetings. Statements are considered as pertaining to their category for only logical and organizational purposes, and a statement can still be perceived as meaning something different to different participants (Brown, 1991).

The Q-sample was reduced to 41 statements, which fits within the range of 40 to 80 as suggested by Watts and Stenner (2005). At least one statement from each category was included in the final Q-sample. See Appendix J for a list of the 41 statements included in the Q-sample. The final Q-sample statements were numbered randomly and typed onto separate cards.

### **Q-Sort Table**

The Q-sort table, or the data collection instrument, is a grid comprised of as many cells as there are statements in the Q-sample (Akhtar-Danesh et al., 2008); therefore, there were 41 cells in the table. A Q-sort table was developed (Figure 3) that has a symmetrical distribution with 11 columns, and a scale at the top ranging from strongly disagree (-5) to strongly agree (+5). The range and distribution shape of the Q-sort table is arbitrary and has no effect on the statistical analysis (Brown, 1993). Consensus on the Q-sort table shape was discussed in consultation with the members of the Thesis Committee, which included an expert in Q-methodology.

STRONGLY DISAGREE						STRONGLY AGREE				
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

*Figure 3.* Q-Sort Table

**Piloting the statements.** Piloting the Q-sample helps to evaluate face validity and to provide an opportunity to make edits to the statements so that they are clearly understood by the participants (Akhtar-Danesh et al., 2008; Valaitis et al., 2007). In this study, the statements were carefully reviewed by all members of

the Thesis Committee for clarity and content. The statements were piloted by the first NRT nurse to participate in the data collection. During this time, one error was found in the form of a duplicated statement, which was the result of a systematic error. This was corrected immediately and the NRT nurse was still able to complete the Q-sort process fully. As per this participant's feedback, there were no other concerns with interpreting the statements.

### **Data Collection, Analysis, and Interpretation**

**Data collection.** Data collection for this study was comprised of obtaining the sample of NRT nurses to participate in the study and the completion of individual Q-sorts. The details of these processes are outlined below.

**P-set.** It is important that the P-set provides adequate representation of different points of view about a topic, therefore, depending on the study, far fewer participants may be used (Akhtar-Danesh et al., 2008). Based on the limited number of NRT nurses in the sampling frame (100), a goal of 40 participants were sought for this study.

**Q-sorting.** Each participant of the P-set participated in the Q-sort process independently and almost always with the researcher present. Each statement in the Q-sample was randomly numbered, cut out, and given to each participant in a randomly ordered pack so that the statements could be physically manipulated during the Q-sort process (Brown, 1993). A physical representation of the Q-sort table was provided to the participant as well. The participant was first asked to sign and return the consent form (see Appendix K) and then asked to complete the

demographic questionnaire (see Appendix E). Clear instructions for the Q-sort were verbalized to the participant, whereby they were instructed to rank order the statements in the randomly numbered pack along the continuum of the Q-sort table. One statement was to be placed in only one cell of the Q-sort table until all the cells were filled. Once the participant felt that they were finished Q-sorting, the statements were turned over and the corresponding number was written into the cell of the Q-sort table. The participants were thanked and provided with a \$20 coffee gift card for their time. On multiple occasions, the participant was unable to complete the Q-sort with the researcher present (e.g. unable to leave patient unattended at that time). In these instances, the researcher would give the participant all the materials for completing the Q-sort, verbalize the instructions, and answer any questions from the participant. The consent form, demographic questionnaire, and \$20 coffee card were exchanged in-person. The participant was then able to complete the Q-sort process independently and sent an electronic copy of the completed Q-sort table back to the researcher. One NRT nurse failed to return the completed Q-sort table, despite numerous follow-up e-mails, and therefore this nurse's data was fully excluded from any analysis.

**Data analysis.** Stata version 15.1 was used for all the data analysis, specifically the qfactor program developed by Akhtar-Danesh (in press).

**Data entry.** The first step in the data analysis was to enter the number of statements required under each column or ranking of the Q-sort table using the qconvert program (Akhtar-Danesh, 2017b). After this, the Q-sort data from each

participant could be entered into the program, starting with the statement numbers for -5 all the way to +5. The program then organized all the participants' data according to statement number, at which time the researcher could populate a new column in the data with the first 40 characters of each statement. The demographic questionnaire data was entered into a separate Stata file.

***Descriptive statistics.*** The demographic questionnaire data was analyzed to answer the second research question for this study and to enhance the interpretation of the factors revealed in the by-person factor analysis (Chapter 4). Frequencies were used for categorical data (gender, level of education, professional designation, level of employment, NRT cluster), while means and standard deviations (SD) were used for continuous data (age, total years nursing, years working on NRT).

***By-person factor analysis.*** The statistical analysis in Q-methodology is based on factor analysis, followed by factor rotation (Akhtar-Danesh, 2017a). A by-person factor analysis is used, which means that the factor analysis is performed on the participants, not the variables or traits (Akhtar-Danesh, 2017a; Dennis, 1986; Watts & Stenner, 2005). More specifically, Q-methodology utilizes exploratory by-person factor analysis. The objective of a by-person factor analysis in Q-methodology is to identify the Q-sorts that are highly correlated with one another. Then, the participants who ranked the statements similarly on the Q-sort table will be grouped together into factors (Brown, 1993). One participant is loaded on one factor if their factor loading is statistically significant ( $p \leq 0.05$ ). A

factor loading is the correlation between a Q-sort and the factor itself (Akhtar-Danesh, 2017a). In this study, each factor represents a group of participants who share similar views, feelings, or experiences in relation to teamwork (Akhtar-Danesh et al., 2008; Akhtar-Danesh, 2017a). Once factors are identified, they can be further described by distinguishing statements, which are statements that the participants in that factor group have sorted into significantly different ranks from the participants on all the other factors (Coogan & Herrington, 2011). The researcher is then responsible to use these statements in order to interpret and label each factor. The steps of the exploratory by-person factor analysis used in this study are outlined below.

*Factor extraction.* The first step in by-person factor analysis is the extraction of factors from the data set. During factor analysis, an  $n \times n$  correlation matrix is calculated, which represents the correlations of each Q-sort (participant) with every other Q-sort, where  $n$  equals the number of participants in the study (Brown, 1993; Thomas & Watson, 2002; Watts & Stenner, 2005). A correlation coefficient of +1.00 indicates a perfect positive correlation (complete agreement), 0 indicates no correlation or agreement, and -1.00 indicates a perfect negative correlation (total disagreement) (Brown, 1993). Different methods of factor extraction calculate the correlation matrix differently, and subsequently calculate the factors that account for the most variance in the dataset (Akhtar-Danesh, 2016). Qfactor in Stata has three main types of factor extraction methods: principal factor (PF), principal-component factor (PCF), and iterated principal



factor (IPF). PCF is a factor extraction method available in almost every statistical program and is used frequently in Q-methodology (Akhtar-Danesh, 2016). PCF extracts uncorrelated linear combinations of the Q-sorts and analyzes their variance (using 1's in the diagonal of the correlation matrix); the objective of PCF is to explain the maximum variance for each factor, starting with the factors that explains the most variance, until 100% of the variance is explained by all the factors (Akhtar-Danesh, 2016, 2017a). PF calculates factor loadings using the squared multiple correlations as estimates of the communality. The communality of a Q-sort is defined as the proportion of variance that is explained with the other Q-sorts and replaces the 1's in the diagonal of the correlation matrix. IPF is similar to PF except that the estimates of the communalities are calculated using an iterative process. The squared multiple correlation of a Q-sort with all the other Q-sorts are the starting values of communality, with iteration continuing until the changes in the communalities satisfy the convergence criterion for extraction (Akhtar-Danesh, 2016, 2017a). IPF is considered to be most appropriate for exploratory factory analysis, and so IPF was used as the starting method for factor extraction in this study.

In Q-methodology, there are no firm rules on how many factors should be extracted from the analysis. It is usually suggested that the researcher consider the eigenvalues, distinguishing statements, and the number of participants loading on each factor.

Eigenvalues measure the variance extracted from each factor (Coogan & Herrington, 2011). Factors with an eigenvalue greater than 1 are usually extracted because higher eigenvalues represent high variance, or distinct viewpoints, that are present within the data (Akhtar-Danesh, 2016; Coogan & Herrington, 2011; Dennis, 1986; Watts & Stenner, 2005).

Distinguishing statements are statements that help to define the factor. A statement loads significantly on to a factor when the participants in that factor all ranked that statement similarly to each other and differently from the participants in other factors (Coogan & Herrington, 2011). Akhtar-Danesh (2018) recently published a study challenging the current methods used to identify a distinguishing statement in a factor. He provides evidence to suggest that Cohen's effect size identifies distinguishing statements independent of the number of Q-sorts loaded on a factor. It is suggested that an effect size of 0.2 is considered small, 0.5 is medium, and 0.8 is large. For this study, effect size of 0.8 was used. Depending on the factor extraction method used, different distinguishing statements may load on to the factors. When choosing factors, it is important to review the subtle differences in statements between analyses as this can help to emphasize the differences between factors better or worse (Coogan & Herrington, 2011).

Extracted factors should have at least two Q-sorts (participants) load significantly on them (Watts & Stenner, 2005). More importantly, Brown (1980)

notes that factors are more valuable when they have at least four or five participants loading significantly on to them.

*Factor rotation.* At this point, the factors are unrotated and usually not as easy to interpret. Factor rotation is the process by which the original unrotated factors are rotated about their origin to produce a simple structure and to enhance interpretability (Akhtar-Danesh, 2016). There are many different types of rotation methods. Orthogonal rotation methods assume that the factors are not correlated while oblique methods allow for factors to be correlated. The most common type of rotation method for orthogonal and oblique methods is described.

Varimax rotation is an orthogonal technique and it is also the most common rotation method. Varimax rotation maximizes the amount of variance explained by the extracted factors (Watts & Stenner, 2005), which means that each factor is of equal importance mathematically (Akhtar-Danesh, 2017a). Promax rotation is an oblique method, similar to varimax, and assumes that there are correlations between the extracted factors, although factors do not necessarily have to correlate (Akhtar-Danesh, 2016, 2017a).

The researcher attempted many different analyses using a variety of factor extraction and rotation methods on the qfactor program in Stata. Important considerations were made when deciding on a final analysis, including: the total number of Q-sorts loading across all factors; the number of Q-sorts loading on each individual factor; Q-sorts loading negatively on a factor or on more than one factor; and the interpretation of the distinguishing statements. In reviewing the

results with the Thesis Committee, the final analysis extracted three Factors utilizing iterated principal factor analysis and varimax rotation, with an effect size of 0.8.

*Factor loadings.* Three distinctive Factors were revealed in the analysis. In this study, 30 out of 34 Q-sorts were loaded among the Factors. Four participants did not load significantly on any Factor and were excluded from any further analysis with the demographic data (Akhtar-Danesh et al., 2008). No Q-sort loaded on more than one Factor and there were no negative loadings on any Factor.

**Data interpretation.** Following data analysis, the results were interpreted by the researcher and in consultation with the Thesis Committee. Interpretation was based on distinguishing statements for each Factor, consensus statements, and Factor scores.

*Distinguishing statements.* Each factor is interpreted using the distinguishing statements that define it (Akhtar-Danesh et al., 2008). Statements with extreme scores on either end of the sorting continuum (-5, -4, +4, +5) were also of particular interest to the researcher because they represented the most disagreed to and agreed to statements by the participants on that one Factor (Akhtar-Danesh et al., 2008 Valenta & Wigger, 1997).

*Consensus statements.* Consensus statements are those in which there are no statistically significant differences in scores between any of the Factors. They helped to provide insight into the common perceptions between all 30 Q-sorts.

**Factor scores.** A factor score is a score for a statement that is calculated as a weighted average of all the Q-sorts loaded on the factor. (Brown, 1993). To obtain the factor score, first, a weighted (synthetic) Q-sort is produced for each rotated factor by calculating a normalized z-score using only the Q-sorts that loaded significantly on the factor. The z-scores are then assigned to the original Q-sort format by assigning the highest z-scores to the higher scores on the table until all the cells are filled (Akhtar-Danesh et al., 2008). In this study, the two highest z-scores are assigned +5, the next 3 highest are assigned +4, and this continues until the lowest two z-scores are assigned -5. As mentioned, the Factor scores were an important component to the interpretation of the data because they provided insight into the most disagreed to and agreed to statements. They also helped to provide a clear comparison of distinguishing statements from one Factor to the other two Factors, with greater differences in Factor scores of statements helping to further define each Factor.

### **Ethical Considerations**

Ethics board approval was received on July 21, 2017 by the Hamilton Integrated Research Ethics Board. A copy of this approval is provided in Appendix L. This study was considered to be non-invasive with minimal (if any) risk to the participants. At no point during the focus group, interview or Q-sorts, were participants at risk for emotional, physical, or psychological harm. Additional ethical considerations of the focus group, interview, and Q-sort processes are described.

**Focus group and one-on-one interview.** During recruitment, eligible NRT nurses contacted the researcher directly to ensure that neither the NRT manager nor any other person would be able to identify who was participating in the study. Participants were also clearly informed of their rights as study participants, including the right to informed consent and the right to withdraw at any time without cause. Each of the four participants in the focus group and the one participant in the one-on-one interview had a random personal identification (ID) number assigned to them. This personal ID was correlated with identifying information such as name and e-mail address. Each of the participant's focus group data was assigned a random study ID number. A legend was kept in a secure and password-protected computer and file in a locked office, which contained the association between the study ID and the personal ID. The demographic questionnaires were kept in a secure location before being entered into a password-protected computer file. The data from the focus group was kept strictly confidential and any patient- or ward-identifying information was removed from the transcript before disseminating to the Thesis Committee. The transcript was not shared with anyone outside of the Thesis Committee.

**Q-sort.** During recruitment, eligible NRT nurses contacted the researcher directly to ensure that neither the NRT manager nor any other person would be able to identify who was participating in the study. One of the potential risks during recruitment was the potential for NRT nurses to feel coerced or pressure into participating when the researcher approached them directly. This was

mitigated by clearly informing the participants of their rights as study participants, including the right to informed consent and the right to withdraw at any time without cause. If, at any point, a participant was hesitant to participate, or suggested that patient care responsibilities needed to be prioritized, the researcher did not pursue recruitment further at that time but did attempt to receive permission to contact the eligible participant at a later time. Each of the 34 participants in the P-set had a random personal ID number assigned to them. This personal ID was correlated with identifying information such as name and e-mail address. Each participant's Q-sort data was assigned a random study ID number. A legend was kept in a secure and password-protected computer file in a locked office, which contained the association between the study ID and the personal ID. Otherwise, no identifying information was obtained from the study data.

### **Chapter Summary**

This chapter provided an overview of Q-methodology and why it was deemed an appropriate method for this thesis. A detailed account of this study's methodology, including study design, data collection, data analysis, and data interpretation processes were specified. Finally, ethical consideration specific to this study were described.

## **Chapter 4: Results**

This chapter provides an overview of the results of the analyses used in this thesis. In this study, the results pertain to the analyses of both descriptive statistics and the by-person factor analysis. First, descriptive statistics, including frequencies and means were calculated for the demographic questionnaire data for all 34 participants. The participants from the focus group and interview also completed the Q-sort table and so their demographic information is only included once. Second, the qfactor program for Stata was used for the by-person factor analysis of the 34 completed Q-sorts. The three identified Factors are presented, including their interpretations, distinguishing statements, and Factor scores. Associations to the demographic data are also provided. The consensus statements are reviewed and interpreted in the context of the three identified Factors.

### **Descriptive Summary of Participants**

Table 5 provides a summary of the demographic questionnaire statistics data for all 34 participants in this study. All 34 participants were NRT nurses with a mean age of 33.21 years ( $SD = 8.41$ , Range = 23-57). One participant excluded age from the demographic questionnaire. Twenty-eight of the participants were female (82.4%) while only six were male (17.6%). This is not an unexpected finding given that nursing is a female-dominated profession. The majority of participants, 28, were RNs (82.4%) and only six were RPNs (17.6%). Nine participants have a college diploma (26.5%), 24 have an undergraduate degree



(70.6%), and one has a graduate degree (2.9%). It is important to note that some RNs in Ontario may have a college diploma if they graduated before 2005.

Table 5

*Summary Statistics of Participant Demographics*

Variable	Frequencies(%)	Mean(SD)
Age	-	33.21(8.41)
Gender		
Female	28(82.4)	-
Male	6(17.6)	-
Education		
College Diploma	9(26.5)	-
Undergraduate Degree	24(70.6)	-
Graduate Degree	1(2.9)	-
Professional Designation		
RPN	6(17.6)	-
RN	28(82.4)	-
Experience		
Total Years Nursing	-	9.06(9.97)
Total Years on NRT	-	5.29(3.68)
Employment Type		
Full-Time	33(97.1)	-
Part-Time	1(2.9)	-
Cluster		
Medical-surgical	26(76.5)	-
Critical care	6(17.6)	-
Women's health/pediatrics	2(5.9)	-
Factor		
1	11(32.4)	-
2	9(26.5)	-
3	10(29.4)	-
Did not load on a factor	4(11.8)	-
Total Q-sorts loaded	30(88.2)	-

The participants in this study had been nursing overall for a mean 9.06 years ( $SD = 10.0$ , Range = 1-50) and nursing with NRT for 5.29 years ( $SD = 3.68$ ,

Range = 1-17). Thirty-three of the participants were employed full-time while only one participant was employed part-time. In terms of cluster, 26 participants worked in the medical-surgical cluster (76.5%), six worked in the critical care cluster (17.6%) and two worked in the women's health and pediatrics cluster (5.9%).

### **Results of By-Person Factor Analysis**

As noted already in Chapter 3, the qfactor program for Stata was used for the by-person factor analysis. Iterated principal factor analysis, varimax rotation, and effect size 0.8 were used for analysis, revealing three distinct Factors, or groups of participants who share common perceptions about teamwork. There was a relatively even distribution of Q-sorts (participants) loading significantly among each of the three Factor groups, with 11(32.4%) participants in Factor 1, nine (26.5%) participants in Factor 2, and 10 (29.4%) participants in Factor 3. Each Factor had between eight and ten participants load on it, which indicates statistically robust results (Brown, 1993). Only four participants did not load significantly on any of the Factors, representing only 11.8% of all the data collected. These four participants were likely independently unique, and therefore were excluded from further data interpretation. Each Factor also had between seven and nine distinguishing statements, which were independent of the number of Q-sorts loading on each Factor because effect size was indicated during data analysis (Akhtar-Danesh, 2018). There were seventeen consensus statements in this study.

**Factor labels.** Each of the three Factors were given names, or labels, which describes the viewpoints of the participants in that Factors based on the distinguishing statements (Akhtar-Danesh et al., 2013). There was no statistically significant difference between any of the Factors and age, total years nursing, total years with NRT, gender, education, employment status, professional designation, or cluster. Table 6 provides a summary of demographic questionnaire data for the 30 participants across the three identified Factors. Not included in this table are the data for the four NRT nurses who did not load on to any one Factor. Of these four NRT nurses: all were female; mean age was 31.50 years ( $SD = 9.15$ ); two were RNs, and two were RPNs; three were employed full-time and one was part time; mean total years nursing was 4.63 years ( $SD = 1.38$ ), and the mean years with NRT was 4.25 ( $SD = 2.02$ ); and three were in the medical-surgical cluster and one was in the critical care cluster. Each Factor is discussed below including a summary of the demographic data for the loaded Q-sorts and the respective distinguishing statements. It is important to note that many statements overlapped between the Factors, and some statements were ranked similarly between two of the Factors. In order to help distinguish between the Factors more clearly, the statements that were ranked most differently from the other factors are highlighted more in the discussion below.

Table 6

*Factor-Specific Summary Statistics of Participant Demographics*

Variable	Factor 1		Factor 2		Factor 3	
	Freq(%)	Mean(SD)	Freq(%)	Mean(SD)	Freq(%)	Mean(SD)
No. Participants Loaded	11(32.4)	-	9(26.5)	-	10(29.4)	-
Age	-	35.64(9.17)	-	33.75(7.42)	-	30.80(8.51)
Gender						
Female	8(72.7)	-	6(66.7)	-	10(100)	-
Male	3(27.3)	-	3(33.3)	-	0(0)	-
Education						
College Diploma	3(27.3)	-	2(22.2)	-	2(20)	-
University Degree	8(72.7)	-	7(87.8)	-	7(70)	-
Graduate Degree	0(0)	-	0(0)	-	1(10)	-
Professional Designation						
RPN	2(18.2)	-	1(11.1)	-	1(10)	-
RN	9(81.8)	-	8(90.9)	-	9(90)	-
Experience						
Total Years Nursing	-	9.95(9.39)	-	12.81(15.74)	-	6.85(5.86)
Total Years NRT	-	5.02(2.10)	-	7.79(4.93)	-	4.25(4.20)

Employment						
Full-Time	11(100)	-	9(100)	-	10(100)	-
Part-Time	(0)	-	(0)	-	(0)	-
Cluster						
Medical-surgical	8(72.7)	-	7(87.8)	-	8(80)	-
Critical care	3(27.3)	-	0(0)	-	2(20)	-
Women's health/ Pediatrics	0(0)	-	2(22.2)	-	0(0)	-

**Factor 1: *Underappreciated*.** The first identified Factor included 11 NRT nurses. The mean age of the NRT nurses is 35.64 years ( $SD = 9.17$ ); eight were female and three were male; eight had a university degree, three had college diplomas; nine were RNs and two were RPNs; the mean total years nursing was 9.95 ( $SD = 9.39$ ); the mean years nursing with NRT was 5.02 ( $SD = 2.10$ ); all 11 were employed full-time; and there were eight nurses in the medical-surgical cluster, three in critical care, and none in pediatrics and women's health.

***Distinguishing statements.*** The nine distinguishing statements that characterized Factor 1 are presented in Table 7. In the analysis and interpretation of the statements, it is evident that the NRT nurses in this Factor feel like underappreciated members of the team. More specifically, these NRT nurses feel confident in their knowledge, skills, and judgment, but these qualities are not being acknowledged at the unit-level.

In order to describe this Factor in a more logical sense, the statements that the NRT nurses of Factor 1 disagreed with are discussed first. The most negatively scored distinguishing statement indicates that these NRT nurses do not need more time to complete the patient assignments because they need to be more conscientious of hospital policies and procedures (#29; score= -4). This suggests that NRT nurses are not only able to complete their patient assignments in a timely manner but are confident enough in their knowledge and skills such that following hospital policies and procedures does not take up additional time for them. In addition, this Factor disagrees that NRT should not be formal leaders

because they are not as familiar with the unit routines as the unit staff are (#40; score= -2). Again, this finding suggests that NRT nurses feel confident enough in their knowledge of unit routines that they should be considered for formal leadership roles. Although this Factor disagreed that they have to be humble to get along with different personalities (#27; score= -3), this was a similar ranking to Factor 2 (score= -1).

At the point of neutrality, this group was indifferent as to whether NRT nurses were not as respected by the unit staff as they should be (#16; score=0) and whether NRT nurses can experience conflict, but it is in their best interests to resolve it (#8; score=0). These scores are similar to the scores given by Factor 3 participants, but is still a notable finding because although NRT feel confident in their skills, they are not associating the under appreciation of these skills to a lack of respect or conflict and conflict management per se.

The statement that was ranked most highly and differently by the participants in Factor 1 illustrate that NRT nurses feel like the units assign them the chronic and higher needs patients in order to give the unit staff a break (#28; score= +4). Although not ranked as differently to Factor 3, these NRT nurses also feel that the units do not perceive them as part of the team and this is another reason that they are assigned the higher needs patients (#20; score= +5). The nurses also felt that the type of unit and patient population were less important than the nurses working on that unit (#24; score= +3). The second statement here is crucial to understanding the perceptions of Factor 1; these NRT

Table 7

*Distinguishing Statements for Factor 1*

No.	Statement	Factor Scores		
		1	2	3
20	I feel that some units do not perceive NRT nurses as part of their team, and this is why we get the heavier patient assignments.	5	-2	3
28	I feel like the units assign us the patients who are chronic, have high needs, are a lot of work, and are challenging, in order to give their own unit staff a break.	4	-3	1
24	The type of unit and patient population is less important to me than the actual nurses working on that unit.	3	-4	-3
8	I think that NRT nurses can experience conflict, but it is in their best interests to resolve it because they are going to go back to that unit again.	0	5	1
16	I feel like NRT nurses are not as respected by the unit nurses as they should be.	0	-3	2
12	I need to be able to ask for help because this opens doors to better teamwork. If I don't ask for help, the other nurses on the unit may not include me in the team.	-1	2	1
40	I feel that NRT nurses should not be formal leaders on the unit because they are not as familiar with the unit routines as the regular staff.	-2	2	3
27	You have to be humble to be able to get along with different personalities, especially as a floater.	-3	-1	2
29	I feel that NRT nurses require more time to complete patient assignments because they need to be more conscientious about patient safety and hospital policies.	-4	0	2

nurses value the interpersonal relationships in the unit (i.e. the nurses working) and this has a greater impact to teamwork and feeling part of the team, than the physical unit or patient population. As already noted, the NRT nurses in this



Factor are confident in their skills, but it also appears that they are not being perceived as being part of the team, and thus their skills are not necessarily known and being utilized effectively, which is why they are getting the less desirable patient assignments. The fact that NRT nurses emphasize the importance of nurses working over the patient population further suggests that there is a connection between the interpersonal relationships of the NRT and unit nurses to the patient assignments, to the lack of recognition of NRT nurses' knowledge, skill, and judgment.

**Factor 2: *Flexible and confident.*** The second identified Factor included nine NRT nurses. The mean age of these NRT nurses was 33.75 years ( $SD = 7.42$ ); six were female and three were male; seven had a university degree, two had college diplomas; eight were RNs and one was an RPN; the mean total years nursing was 12.81 ( $SD = 15.74$ ); the mean years nursing with NRT was 7.79 ( $SD = 4.93$ ); all nine were employed full-time; and there were seven nurses in the medical-surgical cluster, none in critical care, and two in pediatrics and women's health.

***Distinguishing statements.*** The seven distinguishing statements that characterized Factor 2 are presented in Table 8. The NRT nurses in Factor 2 are overall very independent and adaptable. These nurses exemplify the ideal NRT nurse teamwork experience and contrasted greatly to the perceptions of Factors 1 and 3.

Table 8

*Distinguishing Statements for Factor 2*

No.	Statement	Factor Scores		
		1	2	3
21	I think that NRT nurses are able to identify gaps in team member roles and then fill that gap by taking on whatever role is needed the most.	-1	<b>3</b>	-1
23	I think that having good relationships in a team is dependent on knowing the role of each team member rather than who each team member is.	-1	<b>2</b>	-1
4	I need to have a clearly identifiable leader on the unit (e.g. charge nurse, manager, clinical leader, educator) in order to function as a member of the team.	-2	<b>0</b>	-2
27	You have to be humble to be able to get along with different personalities, especially as a floater.	-3	<b>-1</b>	2
20	I feel that some units do not perceive NRT nurses as part of their team, and this is why we get the heavier patient assignments.	5	<b>-2</b>	3
28	I feel like the units assign us the patients who are chronic, have high needs, are a lot of work, and are challenging, in order to give their own unit staff a break.	4	<b>-3</b>	1
16	I feel like NRT nurses are not as respected by the unit nurses as they should be.	0	<b>-3</b>	2

The nurses in this group agreed that NRT nurses are able to identify gaps in roles on the team and then fill those gaps (#21; score= +3). In addition, they felt that having good relationships was dependent on knowing the role of a person rather than who they were (#23; score= 2). These two statements suggest that these NRT nurses are adaptable and that role clarity and understanding are more important to teamwork than interpersonal relationships.

Factor 2 nurses were indifferent about having a clearly identifiable leader on the unit in order to function as a team member (#4; score=0). They also moderately disagreed that NRT nurses are not as respected by the units as they should be (#16; score= -3), that the units assign them higher needs patients in order to give their own staff a break (#28; score= -3), and that the units do not perceive them as part of the team, which is why they get assigned higher needs patients (#20; score= -2). These three statements are in stark contrast to the rankings given to these statements in the other two Factors, suggesting that these NRT nurses do feel like part of the unit teams and are not unfairly given higher needs patient assignments. In addition, these NRT nurses feel respected by the nurses, which is unique to this Factor. Overall, Factor 2 is characterized by nurses who are flexible to the roles in the team, and who are respected as team members by the units they work on.

**Factor 3: *Unintegrated.*** The last factor included 10 NRT nurses. The mean age of the NRT nurses was 30.80 years ( $SD = 8.51$ ); all 10 were female; seven had a university degree, two had college diplomas, and one had a graduate degree; nine were RNs and one was a RPN; the mean total years nursing was 6.85 ( $SD = 5.86$ ); the mean years nursing with NRT was 4.25 ( $SD = 4.20$ ); all 10 were employed full-time; and there were eight nurses in the medical-surgical cluster, two in critical care, and none in pediatrics and women's health.

***Distinguishing statements.*** The seven distinguishing statements that characterize Factor 3 are presented in Table 9. The ten NRT nurses in this Factor

are struggling with unclear roles and a lack of respect from the units. Although they feel comfortable with their nursing experience, they do not feel integrated into the team.

Table 9

*Distinguishing Statements for Factor 3*

No.	Statement	Factor Scores		
		1	2	3
20	I feel that some units do not perceive NRT nurses as part of their team, and this is why we get the heavier patient assignments.	5	-2	<b>3</b>
27	You have to be humble to be able to get along with different personalities, especially as a floater.	-3	-1	<b>2</b>
16	I feel like NRT nurses are not as respected by the unit nurses as they should be.	0	-3	<b>2</b>
28	I feel like the units assign us the patients who are chronic, have high needs, are a lot of work, and are challenging, in order to give their own unit staff a break.	4	-3	<b>1</b>
34	I think that NRT nurses have clear roles and responsibilities that all units need to understand and adhere to.	0	0	<b>-4</b>
13	It is important for me to have recent experience in the area of care that I am sent to work on in order to be a valuable team member.	0	-1	<b>-4</b>
5	I am comfortable bringing up safety and professionalism issues to the unit team.	3	1	<b>-5</b>

This group of NRT nurses in Factor 3 has similarities to Factor 1, in that they feel that the units do not perceive NRT as part of the team and subsequently assign them higher needs patient assignments (#20; score= +3). They agree less with Factor 1 in that the units assign NRT nurses the higher needs patients in order to give their own staff a break (#28; score= +1). These NRT nurses are

unique in that they were the only group to agree that they have to be humble in order to get along with different personalities (#27; score= +2) and that they are not as respected by the unit nurses as they should be (#16 score= +2). It appears that these nurses are trying to get along with everyone by blending in but still are not feeling duly respected by the units.

The most negatively scored statement in Factor 3 suggests that this group of NRT nurses do not feel comfortable bringing up safety and professionalism issues to the unit team at all (#5; score= -5). They also strongly disagree that NRT nurses have clear roles and responsibilities that units need to understand and adhere to (#34; score= -4). Factor 3 is the only group to rank both of these statements negatively. These findings are indicative of NRT nurses who are struggling with role clarity, which translates into the units not understanding the NRT role either. Interestingly, these nurses are not comfortable bringing up certain safety issues to the team, which coincides with their feelings of disrespect. On a different note, it was not important for this group of nurses to have recent experience in the area that they are assigned to (#13; score= -4). This is the only statement that reflects any confidence in the NRT nurses' ability to function on the unit. Overall, the NRT nurses in Factor 3 feel disconnected and unintegrated with the units due to a lack of respect and lack of role clarity. Although they do not require recent experience on a unit and try to be humble to get along with everyone, they are still not comfortable bringing up safety issues.

**Consensus statements.** A total of 17 statements were ranked similarly across all three Factors, thus were labelled as consensus statements in the analysis. A summary of the consensus statements and scores are presented in Table 10. To aid in the interpretation of the consensus statements, the statements that were ranked on the extremes of strongly agree and strongly disagree will be discussed the most, as well as a few statements that were ranked neutrally.

All 30 NRT nurses included in the analysis strongly agreed on two qualities of NRT nurses: that there is an innate sense of teamwork among NRT nurses with each other (#39; scores=3,3,5); and that NRT nurses are excellent teachers and resources (#37; scores=4,5,5). The nurses in this study strongly (and equally) agreed that teamwork requires respect of each other's

Table 10

<i>Consensus Statements</i>		Factor Scores		
No.	Statement	1	2	3
39	I feel that there is an innate sense of teamwork among NRT nurses who are working together on a unit: "I got your back, you've got mine" is implied.	3	3	5
37	I think that NRT nurses are excellent teachers and resources for a team because they have knowledge from across the hospital sites and can speak to a variety of topics.	4	5	5
25	Teamwork requires people to respect each other's roles and skills.	4	4	4
15	I feel that NRT and unit nurses share a common purpose at work, which is to provide safe and effective nursing care to our patients.	5	4	4
10	I feel that being able to stay out of the "politics" on a ward is better for teamwork.	2	3	4

33	I easily adapt to the needs of the unit I am assigned to work on.	2	4	3
7	I feel that building personal relationships with my NRT coworkers helps me to be a more resilient NRT nurse.	1	-1	1
14	I feel that my ability to function as a team member is affected by the existing relationships of the unit or team I am assigned to work on.	1	-1	1
19	I feel that NRT nurses need to have certain characteristics in order for the units to perceive me as a “good” team member. Some of these characteristics include “going with the flow”, being easy-going, and being outgoing.	0	0	0
17	I think that having confidence in your skills is a unique attribute to NRT nurses. Therefore, NRT nurses need to describe themselves, and communicate their strengths and weaknesses to the team they are assigned to.	1	2	0
9	I believe that NRT nurses follow hospital policies and procedures strictly.	1	1	0
26	Whoever I am making decisions with is considered to be a part of the team	2	1	0
36	I think that NRT nurses are more likely to utilize the expertise of other members of the healthcare team as a resource because NRT nurses know who to go to.	0	0	-1
30	I need to prove my skills and knowledge to the staff on the units that I am assigned to until the staff get to know me.	-4	-3	-1
2	I believe that NRT staff do not have enough opportunities to work together, which means that the NRT is not a high functioning team.	-4	-4	-2
11	I believe that nurses who are carefully selected to work on a unit team will perform better than individuals who are not. For example, nurses hired to a specific unit perform better than NRT nurses.	-5	-4	-4
3	I am less likely to feel accountable for adverse events, such as a patient fall, when I do not trust my team members.	-3	-5	-5

roles and skills (#25; scores=4,4,4). This is a consistent perception with the literature on high functioning teams. One of the most important characteristics of a high functioning team is that everyone has the same goals or purpose and there was very strong agreement that NRT and unit nurses share a common purpose of providing safe and effective care to patients (#15; scores=5,4,4). This finding demonstrates that the NRT nurse perception of teamwork may be more similar to other team members that one would expect.

There was indifference across all Factors with respect to NRT nurses needing to have certain characteristics in order to be perceived as a good team member (#19; scores =0,0,0). Although Factors 1 and 2 slightly agreed that having confidence in skills is a unique attribute of NRT nurses (#17; scores=1,2,0), in terms of hiring nurses for NRT, there are no specific characteristics that need to be present in order for NRT to be a good team member.

Several statements were strongly disagreed to by all three Factors. The NRT nurses in this study did not feel that they needed to prove their skills and knowledge until the unit staff got to know them (#30; scores=-4,-3-1), which suggests high levels of confidence in their abilities. They disagreed that NRT staff do not have enough opportunities to work together and therefore are not a high functioning team (#2; scores=-4,-4,-2). This is another unexpected finding compared to the literature on teamwork as it is generally agreed that consistent



team members help to form a high functioning team, whereas fluctuating team membership is viewed more negatively. NRT nurses in this study perceive themselves as being members of a high functioning team, and this may be a result of their education, which prepared them to work alone or as a team. It may also be a result of the innate sense of teamwork identified above. There was disagreement that nurses who are carefully selected to work on a unit will perform better than an NRT nurse (#11; scores=-5,-4,-4), which may have implications for the criteria that is used to hire nurses currently. A sense of confidence in their skills, knowledge, and judgment, suggests that the NRT nurses in this study feel equally as qualified to provide nursing care to patients as the nurses who work only on one patient unit.

Finally, they disagree that they are less likely to feel accountable for adverse events when they do not trust their team members (#3; scores=-3,-5,5). This ranking was interpreted as meaning that NRT nurses accept accountability for their own actions irrespective of having trust in other team members. In the literature, trust is an important component and attribute of high functioning teams (Kalisch & Lee, 2009; Mahoney, Ellis, Garland, Palyo, & Greene, 2012; Qureshi & Dhaliwal, 2016; Salas et al., 2005); the NRT nurses here are suggesting that accountability is perceived more highly than the constraint of trust among team members. More importantly, these findings suggest that NRT nurses are accountable for their actions, which means they are independently providing safe and effective patient care no matter what team they are assigned to. Overall, the

consensus statements reflect camaraderie, independence, accountability, and effectiveness among the NRT nurses in this study.

### **Chapter Summary**

This chapter has provided a summary of the analysis, including demographic data, three extracted Factors, distinguishing statements for each Factor, and consensus statements among 30 NRT nurses. The three Factors identified were labeled as underappreciated, flexible and confident, and unintegrated. Although there were many similarities between Factors as evidenced by the consensus statements, there were also very clear differences made apparent in the distinguishing statements, thereby helping to recognize each Factor as its own.

## Chapter 5: Discussion and Conclusion

This chapter provides a discussion about the research findings in this study. First, the three identified Factors are explored in-depth and in the context of the NRT literature. The findings are then applied to the Salas et al. (2005) framework on effective teamwork with a discussion on barriers and facilitators of teamwork from the NRT nurse perspective. Relevance and implications of the study findings are discussed for clinical practice, policy, research, and education. Finally, the study's strengths and limitations are outlined, followed by a description of the plans for knowledge translation of the study findings.

### Supporting Evidence for the Study Findings

The teamwork literature outlines the characteristics of high functioning teams and teamwork. The well-known framework for understanding teamwork by Salas et al. (2005) includes five core components of teamwork: team leadership, team orientation, backup behaviour, mutual performance monitoring, and adaptability. It also includes three coordinating mechanisms: shared mental models, closed-loop communication, and mutual trust. The literature on teamwork, however, does not address teamwork from the unique NRT perspective. To find supporting evidence for this study, the literature on NRT and teams was explored further. In the next section, the literature and study findings are integrated for each of the three Factors.

**Factor 1: *Underappreciated*.** The NRT nurses loaded onto Factor 1 have been identified as feeling confident in their knowledge, skills, and judgment, but

they also feel that these qualities are not being acknowledged or appreciated at the unit-level. As discussed in Chapter 2, Linzer et al. (2011) discuss how float nurses score differently than unit-based nurses on a variety of personality traits. In their study, float nurses scored significantly lower on Rule Consciousness, which suggests that float nurses are “more likely to be expedient and less conforming” than unit-based nurses (Linzer et al., 2011). This coincides with the results from this study, whereby NRT nurses in Factor 1 strongly disagreed that NRT nurses needed more time to complete patient assignments because they have to be more conscientious about hospital policies and procedures. Factor 1 was also distinguished by the importance that the NRT nurses placed on interpersonal relationships over the unit or patient population. Linzer et al. (2011) provide evidence to support this study finding in that the float nurses in their study scored significantly lower on the Tough-Mindedness factor. This may suggest that float nurses are more receptive to new ideas and tend to tailor their approach more to the emotional and less to realistic or practical dealings.

Finally, a common theme in Factor 1 is that the NRT nurses indicate that their skills are not being acknowledged and utilized appropriately. Vaughan and Slinger (2013) note that the NRT nurses at London Health Sciences in Ontario value a patient assignment that matches their own experience and technical skills, with the unit leader playing an important role in ensuring that the match is appropriate. In a recent study about fatigue, Dykstra et al. (2016) interviewed 10 float nurses in a Midwestern Academic Medical Centre. Two of the main sources

of fatigue were more demanding patient assignments and inequality in patient assignments between the float nurse and unit nurses. The float nurses described being given the most demanding patients from whom the unit staff needed a break (Dykstra et al., 2016). The tendency for float nurses to receive more demanding or high-acuity patient assignments in order to give unit staff a break is echoed in other sources (Bates, 2013; Good & Bishop, 2011; Larson, Sendelbach, Missal, Fliss, & Gaillard, 2012; Nicholls et al., 1996). The findings in these studies directly relates to the perceptions of the NRT nurses in this study, whereby the NRT nurses in Factor 1 strongly agree that they are given higher needs patients in order to give the unit staff a break. There is also an element of empathy toward the unit nurses, whereby the NRT nurse acknowledges that there is good reason for receiving a more demanding patient assignment, and this supports the importance of interpersonal relationships that has already been identified. Overall, Factor 1 represents a group of NRT nurses who are capable and confident in their knowledge, skills, and judgment, but they are not being appropriately acknowledged or appreciated for their abilities in the form of patient assignments. They also value interpersonal relationships over the physical unit and patient population.

**Factor 2: *Flexible and confident.*** Factor 2 is characterized by NRT nurses who feel flexible and confident in their role. These nurses strongly agreed that they were able to identify gaps in roles on the team and then fill those gaps accordingly. This adaptation response is echoed in Linzer et al.'s (2011) study

that notes that float nurses scored significantly higher on the factors of Openness to Change and Social Boldness. The first suggests that float nurses are more open-minded and actually enjoy new experiences. The latter suggests that float nurses are comfortable in social situations and are thick-skinned (Linzer et al., 2011). Lebanik and Britt (2015) describe key characteristics that they feel are crucial for a float pool nurse to have, and adaptability is the first one to be identified. They suggest that float pool nurses must be able to adjust their skill set to meet the challenges of and changes in patient assignments that can occur within the span of a single 12-hour shift (Lebanik & Britt, 2015). The NRT nurses in Factor 2 are exemplars of this ideal float pool characteristic in that they perceive themselves as able to identify gaps in roles on the unit and adapt their skills to meet that role need.

Although not very different from the score of the nurses in Factor 1, the NRT nurses in Factor 2 somewhat disagreed that they have to be humble to get along with different personalities (score=-1). This further supports the findings in Linzer et al. (2011) that float nurses display Social Boldness, because the NRT nurses do not feel that they need to minimize their abilities and contributions to the team.

Unique to Factor 2, these NRT nurses feel respected by the unit nurses. They do not feel that they receive more demanding or complex patients because they are not perceived as part of the team or because they are giving the unit staff a break. The experiences of the NRT nurses in this group contrast with the

literature described above, which suggests that float nurses or NRT nurses receive more demanding patient assignments. The NRT nurses in Factor 2 appear to have positive experiences with floating, which is reflected in their perceptions of teamwork and ranking of the distinguishing statements. Although not statistically significant, this group of NRT nurses have been nursing in total for the longest amount of time (12.8 years) and employed with NRT for the longest amount of time (7.8 years) in comparison to the other two Factor groups. Perhaps it is the result of increased experience both in nursing and with NRT that has contributed to this group of NRT nurses feeling confident, adaptable, and respected by the unit nurses.

**Factor 3: *Unintegrated*.** The third group of NRT nurses identified in this study is characterized by unclear roles and a lack of respect from the units on which they are assigned to work. As a result, these NRT nurses are feeling unintegrated into the unit teams. As stated in Chapter 4 and described above, Factor 3 and Factor 1 share similar feelings of agreement with regard to being assigned heavier or more demanding patient assignments in order to give unit staff a break or because they are not perceived as part of the team. This group is unique in that they were the only Factor to agree to being humble in order to get along with different personalities and to agree that they did not feel as respected as they should be by the unit nurses. Vaughan and Slinger (2013) describe how it is the desire of all NRT nurses in their study to feel respected for their knowledge and skills, as this helps to develop healthy communication and subsequently

effective teamwork. In this study, the Factor 3 NRT nurses' perception is that they are not as respected by the unit nurses as they should be, which suggests that teamwork is going to be negatively affected. In addition, the NRT nurses strongly disagreed that they had clear roles and responsibilities that all units needed to understand and adhere to. Role ambiguity from the NRT nurse perspective helps to explain why they do not feel respected and why they feel they have to be humble in order to get along with people.

The NRT nurses in Factor 3 strongly disagreed that it was important to have recent experience in the area of care to which they are assigned in order to be a valuable team member. This suggests that NRT nurses perceive themselves as valuable and important to the team, but that their recent experience was not a factor in their team member functionality. Linzer et al. (2011) suggest that float nurses are more fearless, easy-going, and composed when faced with new social situations such as being assigned to a different or new unit on each shift. It is possible that this group of NRT nurses in Factor 3 share these characteristics, which makes it easier for them to float to and provide patient care on different units regardless of their recent experience. Dykstra et al. (2016) note that float nurses often have years of experience in various settings making them valuable assets to the nursing team of the unit to which they are assigned. The float nurses discussed how their nursing care changed slightly based on the specific unit assignment, but indicated that they had developed standard time management tactics that allowed them to successfully adapt from unit to unit (Dykstra et al.,



2016). Again, these findings echo the perceptions of NRT nurses in Factor 3 such that recent experience is not as important to being a valuable team member as having effective strategies for adapting and providing nursing care across a range of patient care units, which is derived from previous experiences.

Finally, Factor 3 was distinguished by a strong disagreement toward being comfortable in bringing up safety and professionalism issues to the unit team. Bates (2013) suggests that float nurses perceive themselves to be a burden to unit staff and, as a result, may be less likely to bring up concerns or challenges with their patient assignment. Nicholls et al. (1996) surveyed nurses who had experienced being floated to another unit. The respondents expressed concerns about assessments of the new or different patient population, omissions and mistakes, and feeling like a burden to the unit staff. All of these are probable factors that could lead a NRT nurse to feel uncomfortable addressing safety and professionalism issues on the unit. It is important to note that the statement given to the NRT nurses in this study did not discuss whether or not NRT nurses brought up safety or professionalism issues, rather it addressed their comfort (or lack thereof) in bringing an issue forward; therefore, this group is not comfortable bringing up safety and professionalism issues, but it is not clear whether issues are not brought up at all or are brought up with a level of discomfort. If the former is true, this could indicate that there is a concern for patient safety.

Overall, the NRT nurses loaded on to Factor 3 display feelings of unclear roles and responsibilities and a lack of respect by the unit nurses. These nurses try

to be humble in order to get along with the different personalities of nurses and other team members, but they still do not feel comfortable bringing up safety and professionalism issues. As a result, the NRT nurses in Factor 3 are not fully integrated into the unit teams.

### **Comparison of Results to Teamwork**

In this section, the results of this study will be compared to the literature on teamwork. In the previous section, it is identified that there is some evidence to support the perceptions of NRT nurses in each of the three Factors. However, the primary research question of this study is to identify NRT nurses' perceptions of teamwork with an overall purpose of contributing to the current research related to effective teamwork. The teamwork literature is extensive, and, as noted in Chapter 2, Salas et al. (2005) provide a framework to outline the main characteristics of effective teamwork. The three coordinating mechanisms in the framework are necessary to ensure that the five core components of effective teamwork are achievable for any team. The Salas et al. (2005) framework is discussed below in the context of the findings of this study, including the three Factors and consensus statements. Any identified barriers or facilitators to effective teamwork are extracted from the application of the results.

**Shared mental models.** Shared mental models are defined as a shared understanding of the “team goals, individual team member tasks, and the coordination of the team to achieve common goals” (Salas et al., 2005, p. 565). In this study, one of the consensus statements that all Factor groups strongly agreed

to was that NRT and unit nurses share a common purpose at work: to provide safe and effective care to patients. This statement represents a shared mental model of nursing care in which safe and effective patient care is the ultimate goal. The NRT nurses also strongly agreed that there is an innate sense of teamwork among NRT nurses working together. This is an unexpected finding because it suggests that an implicit shared mental model exists among NRT nurses, but it does not indicate whether this mental model is shared with the assigned unit.

Salas et al. (2005) describe two types of mental models: team-related mental models and task-related mental models. The former relate to team functioning and expected behaviours, while the latter relate to materials and equipment required for a task. It is identified in Factor 3 that NRT nurses do not have clear roles and responsibilities, which negatively affects the ability of NRT and unit nurses to understand individual team member tasks. NRT nurses and unit nurses are missing the team-related mental model component. There were some commonalities between the three Factors in that they all perceived themselves to be capable, knowledgeable, and valuable to the team. In the consensus statements, all Factors strongly agreed that NRT nurses are excellent teachers and resources, which suggests that the NRT nurses in this study have a task-related mental model comprised of confidence in their skills, knowledge, and teaching abilities.

Both Factors 1 and 3 strongly agreed that some units do not perceive NRT nurses as part of the team and give them higher needs patient assignments as a result. Having a shared mental model means anticipating and predicting each

other's needs (Salas et al., 2005). The NRT nurses in Factors 1 and 3 may not be utilized to their full capacity, which is contributing to their perception of receiving heavier patient assignments. The NRT nurses in Factor 2 have a different perception of the mental model as they do feel perceived as part of the team and respected by the unit nurses. The increased importance that the nurses in Factor 2 place on role clarity and their subsequent ability to adapt to roles as required reflects the need to adjust team strategies in response to changes in the team or tasks as discussed by Salas et al. (2005).

Overall, there appears to be a shared mental model among NRT nurses in terms of an innate sense of teamwork and confidence in their abilities. They share a common purpose of providing safe and effective patient care with the unit nurses, but a disconnect remains between the unit nurses and NRT nurses' perception of NRT nurses' knowledge and skills. This disconnect produces a barrier to teamwork because of the negative consequences to NRT nurses' assignments and a feeling of being under appreciated, as evidenced in Factor 1. A facilitator of teamwork is the ability of unit nurses to anticipate and plan an NRT nurses' assignment according to their knowledge, skills, and experience.

**Closed-loop communication.** Closed-loop communication is defined as the exchange of information between two or more individuals, irrespective of the medium, whereby the sender of information initiates a message, the receiver of the message interprets it and acknowledges its receipt, and the sender follows up to ensure that the intended message was received (Salas et al., 2005). In this

study, few statements specifically address the topic of communication, but several relate to communication. The most evident statement comes from the NRT nurses in Factor 3 who strongly disagreed about feeling comfortable bringing up safety and professionalism issues to the unit team. Given they share the common purpose of providing safe and effective care to patients, it is not that the goals of the NRT and unit nurses are misaligned; rather, it is the method of communicating these issues. Closed-loop communication is often emphasized in critical care, resuscitation, and other emergency teamwork settings as a tactic to address and resolve patient safety concerns effectively (Bellury, Hodges, Camp, & Aduddell, 2016; Severson, Maxson, Wroblewski, & Dozois, 2014), and it is intended as a non-judgmental method for exchanging information. It is possible that NRT nurses in Factor 3 feel judged for bringing up safety and professionalism issues to the unit team. Therefore, they do not feel comfortable with the process. This would align with their feelings of not being as respected by the unit nurses. Factors 1 and 2 did not have any distinguishing statements that explicitly addressed communication.

**Mutual trust.** Mutual trust is defined as a shared belief that team members perform their roles and protect the interests of their teammates (Salas et al., 2005). A culture of mutual trust affects how team members' behaviours are interpreted and have a profound effect on the five core components of teamwork. When mutual trust exists, it is understood and accepted by the team that individual team members are looking out for each other and for the greater good of the team (Salas et al., 2005).

In this study, each of the Factors addresses trust in their own way. In Factor 1, the NRT nurses somewhat disagreed that asking for help opens up doors to teamwork. According to Salas et al. (2005), mutual trust is evident when team members admit mistakes, share information, and accept feedback. The NRT nurses did not find that asking for help was an effective proponent of teamwork, which suggests they possess a certain level of mistrust toward the unit teams. In Factor 2, the nurses did not explicitly address trust, but they agreed that having good relationships was dependent on knowing the role of a person, not who that person was. This coincides with the understanding that individual team members are looking out for each other in a mutual trust setting (Salas et al., 2005) and the interpersonal component of a relationship is not as important as the practical component on a team. In Factor 3, the same statement that they disagree with, i.e., being comfortable bringing up safety and professionalism issues, applies to a lack of mutual trust between the NRT and unit nurses. Mutual trust is fostered by information sharing. If the NRT nurses are not comfortable sharing crucial information such as safety and professionalism issues then mutual trust cannot be truly achieved. This Factor was the only group to agree with not feeling as respected by the unit nurses as they should be, which further diminishes a culture of mutual trust.

One of the consensus statements that all three Factors strongly disagreed with was about NRT nurses feeling less accountable for adverse events when they do not trust the team. This statement focuses more on the accountability of the

NRT nurse rather than the level of trust between NRT and unit nurses, but it suggests that NRT nurses are willing to admit mistakes independent of the team. In keeping with mutual trust, NRT nurses are performing their roles and protecting the interests of their teammates, and this is translating across all units. As already noted, the three Factors all strongly agreed that there was an innate sense of teamwork among NRT nurses, whereby NRT nurses back each other up. This finding suggests that mutual trust exists among NRT nurses, but it is unclear if this mutual trust truly extends toward the unit nurses as well.

**Team leadership.** Team leadership is the first of the five core components of the framework (Salas et al., 2005). It is defined as the “Ability to direct and coordinate the activities of other team members, assess team performance, assign tasks, develop team knowledge, skills, and abilities, motivate team members, plan and organize, and establish a positive atmosphere” (Salas et al., 2005, p. 560). Of the four statements in the Q-sample that were categorized under Leader vs. Follower (see Appendix J), only one statement loaded onto each list of distinguishing statements for Factor 1 and Factor 2.

In Factor 1, the NRT nurses disagreed that they should not be formal leaders on the unit because they are not as familiar with the unit routines as the regular staff. The interpretation of this statement suggests that NRT nurses feel confident in their familiarity and understanding of unit routines and can therefore be formal leaders. The major theme of this Factor was that the NRT nurses were not feeling appreciated for their knowledge and skills, including their leadership

capabilities. According to Salas et al. (2005), team leaders can differ according to team tasks. One type of task is coordination, which requires the team leader to assign specific roles to team members and oversee completion of these roles. A change to workflow requires the team leader to make adjustments in the team. This coordination task is relevant to a clinical unit setting in which the unit leader (i.e., charge nurse, manager, clinical leader) provides nurses with their patient assignments at the start of shift, and the nurses perform their roles accordingly. The leader oversees the team members and intervenes when changes to the team structure and functioning are required, e.g., when a new admission is coming to the unit or a patient assigned to a RPN becomes unstable and requires RN care. It is also possible that the NRT nurses in Factor 1 have an under appreciation for the roles of a unit leader, which is why they feel so confident in their ability to be given that role.

The NRT nurses in Factor 2 were neutral about needing to have a clearly identifiable leader on the unit in order to function as a member of the team. This group of nurses has already been identified as flexible and confident, and it is perhaps their adaptability that makes them able to function as a team member regardless of having a clearly identifiable leader. Given that this group of nurses also values the roles of team members, it is unusual that they would not value the importance of having a clear leader, which is arguably the most important role on a team (Barbosa, 2013; Barrett, Piatek, Korber, & Padula, 2009; Castner, Foltz-Ramos, Schwartz, & Ceravolo, 2012; Cleary, Hungerford, Lopez, & Cutcliffe,



2015; Courtenay et al., 2013; Mahoney et al., 2012; Salas et al., 2005; Severson et al., 2014).

The other two statements that related to leadership were about taking on leadership roles on units that have a higher turnover of nurses and taking on follower roles on units that are perceived as being high functioning. These statements did not load significantly onto any one Factor and they were not ranked similarly enough to be identified as consensus statements.

**Mutual performance monitoring.** Mutual performance monitoring is a term used to describe the ability of a team member to keep track of what other team members are doing while carrying on with their individual tasks (Salas et al., 2005). Individuals are able to ensure that all team members are following procedures correctly. This becomes even more important during stressful tasks when overloaded team members are more likely to make mistakes (Salas et al., 2005). The goal of mutual performance monitoring is not to critique only individual performance but also to gather information about performance that affects the team's performance and ultimately its effectiveness (Salas et al., 2005). Mutual performance monitoring could be perceived as similar to maintaining accountability among team members. Three statements from the Q-sample relate to this area.

Factor 3 is the only one that has a distinguishing statement related to accountability. As already discussed under closed-loop communication, the NRT nurses in Factor 3 were unintegrated and felt uncomfortable bringing up safety

and professionalism issues to the unit team. This is a concern for mutual performance monitoring. While the NRT nurses in this group may be capable of identifying mistakes or issues, they are not comfortable addressing them and providing team members with the necessary feedback to rectify them.

The other two statements from the Q-sample related to accountability or mutual performance monitoring are both found within the list of consensus statements. All three Factors were neutral about NRT nurses following hospital policies and procedures strictly. In terms of mutual performance monitoring, NRT nurses were indifferent about how strictly policies and procedures were followed, which may suggest that NRT nurses are less likely to engage in mutual performance monitoring within the unit teams overall. The final statement that all the NRT nurses strongly disagreed with was about being less likely to feel accountable for adverse events when they do not trust their team members. This statement was already discussed in the context of mutual trust. However, with respect to mutual performance monitoring, this statement can also be interpreted to mean that the NRT nurses in this study are open to mutual performance monitoring by being accountable for their actions (including adverse events). This statement does not provide evidence to suggest that NRT nurses would not engage in mutual performance monitoring by identifying other team members' limitations and providing feedback, only that the NRT nurses are accountable for their own behaviours and independent performance monitoring.

**Backup behaviour.** Through mutual performance monitoring, backup behaviour is the ability of team members to anticipate other members' needs through accurate knowledge about their responsibilities (Salas et al., 2005). An outcome of backup behaviour is shifting workload among members to achieve a more even distribution. There are several statements in the Q-sample that represent perceptions on distribution of workload. The first statement loads significantly on Factor 1 and the NRT nurses in this group disagree that they need to be able to ask for help to open doors to teamwork on the unit. The act of asking for help may be a method of attempting to shift the workload away from the NRT nurses and onto the other nurses of the unit. More importantly, the two most agreed to statements for the underappreciated Factor 1 are about NRT nurses being assigned the more demanding patients as a result of units not perceiving NRT as part of the team and to give their own staff a break. In Factor 1, the NRT nurses are experiencing an absence of backup behaviour from the unit nurses and are trying to compensate for this by asking for help, which is unsuccessful. The NRT nurses in Factor 3 experience the same workload inequality. The NRT nurses in Factor 2 have an opposite experience in that they do not feel they are given the more demanding patients. In other words, they may have sufficient backup behaviour from the unit nurses.

The innate sense of teamwork and implied continuous support felt by NRT nurses in all the Factors reflects a backup behaviour that is understood among the NRT nurses. Again, in terms of the Salas et al. (2005) framework, this is a strong

facilitator of teamwork between NRT nurses who are working together on the same unit. The inequality in workload experienced by Factors 1 and 3, however, is a significant barrier to teamwork, especially when it is a result of the NRT nurses not being perceived as part of the team.

**Adaptability.** Adaptability in this framework is defined as the ability to adjust strategies or action in response to changing conditions (Salas et al, 2005). In this study, the concept of adaptability is addressed in several statements and under various categories because adaptability can be utilized in teamwork in many different forms (e.g., role clarity, personality, and leadership). In Factor 2, the NRT nurses have been identified as being adaptable in their roles. This is evidenced by Factor 2 being the only group to agree to being able to identify and fill gaps in roles on the team. In terms of being adaptable with personality, Factors 1 and 2 did not agree that being humble was the way to get along with team members, whereas the NRT nurses in Factor 3 did. Factors 1 and 3 had also agreed that they received heavier patient assignments as a result of not being perceived as part of the team and to give the unit staff a break. This finding may suggest that the NRT nurses in Factors 1 and 3 are adaptable to heavier patient assignments, but further exploration is needed in order to fully understand these perceptions.

All the NRT nurses in this study agreed that they were able to easily adapt to the needs of the unit that they were assigned to. This consensus is a critical finding. It suggests that all NRT nurses perceive themselves as adaptable, which

is a component to teamwork as per Salas et al. (2005) and a necessary quality for any nurse, especially an NRT nurse, to possess in a dynamic healthcare setting. It appears that each Factor displays unique forms of adaptability in terms of personality, roles, and patient assignments, but all the NRT nurses agree on being able to easily adapt to the needs of the unit more broadly.

**Team orientation.** Team orientation is a way of thinking in which the team's goals are prioritized over individual team member's goals (Salas et al., 2005). It has already been made apparent in the shared mental model that NRT nurses feel that they share a common purpose with unit nurses, which is to provide safe and effective care to patients. With this common purpose or team goal in mind, each Factor has different perceptions and experiences about the methods used to achieve this common purpose. The NRT nurses in Factor 1 feel knowledgeable and capable of doing the work, but they also feel undervalued by the unit nurses. As part of team orientation, Salas et al. (2005) suggest that team members take into account the suggestions provided by teammates, appraise the suggestion, and determine what suggestion is best for the situation. In Factor 1, the unit teams are prioritizing the needs of their own staff over the NRT nurse, which may explain why NRT nurses are receiving the more demanding patients. NRT nurses are not being included in the definition of team, which means that their needs are not taken into account as part of the team orientation.

In Factor 2, there is evidence of an effective team orientation from the perspective of NRT nurses. Again, these NRT nurses perceive themselves as

adaptable to whatever roles are needed, and this action is reflecting a team orientation, whereby the team's needs or goals are being prioritized over the NRT nurses' goals. Although not clearly indicated in the statements, it is possible that not all roles that an NRT nurse may need to perform are desirable to that NRT nurse. However, filling these roles helps to ensure that the team's goals are not compromised, which in this study would be safe and effective patient care.

The NRT nurses in Factor 3 feel that they are not as respected by the unit nurses and do not have clear roles and responsibilities, which may impact the NRT nurses' level of participation in team orientation. Salas et al. (2005) describe some behaviours of team orientation, including increased task involvement and information sharing. In Factor 3, the NRT nurses indicate being uncomfortable with sharing information about safety and professionalism issues and about having a high level of task involvement in the form of heavier patient assignments. These findings also suggest that the group of NRT nurses in Factor 3 are not being considered equal team members from the unit nurse perspective, which means that in trying to prioritize team goals NRT nurses are being unfairly tasked.

**Summary of the teamwork framework.** In this study, the framework by Salas et al. (2005) was used to better understand the perceptions of teamwork from the NRT nurses in each of the three Factors independently and as a group. In each of the Factors, there is some evidence to support the existence of the three coordinating mechanisms and five core components in various forms. However,

there were significant barriers identified in terms of how the framework applies in the context of NRT nurses being included as part of the unit team versus how NRT nurses feel as a team on their own. Some of the barriers identified included a lack of respect for NRT nurses by unit nurses; NRT not being perceived as part of the unit team; NRT nurses receiving the most demanding patient assignments; and unclear roles. Some of the facilitators of effective teamwork included being adaptable to unit needs; sharing a common purpose with unit nurses; identifying and filling gaps in roles; and being accountable.

NRT nurses are in a unique position of belonging to two teams at all times: the NRT and the unit team. However, the Salas et al. (2005) framework does not account for these duelling perspectives of teamwork very well. Although the nurses in Factor 2 appeared to integrate well with the unit teams, the NRT nurses in Factors 1 and 3 may be struggling to identify as members of the team either due to ineffective interpersonal relationships and being under appreciated (as in Factor 1) or due to unclear role identity and feeling unintegrated (as in Factor 3). The Salas et al. (2005) framework has been helpful to sort through the barriers and facilitators to effective teamwork and to highlight some of the key perceptions of teamwork from NRT nurses. It has become apparent that NRT nurses share many of the important qualities of effective teamwork among themselves, but these qualities are not necessarily being reciprocated by the unit nurses or teams.

### **Relevance and Implications of Study Findings**

**Clinical practice.** NRT nurses in this study perceive themselves to be confident in their skills, knowledge, and judgment, which are the three basic components for competency for nurses according to the CNO (2002, 2014). With respect to clinical practice and providing patient care, the findings in this study suggest that NRT nurses are able to provide quality patient care across a wide array of patient care areas. In fact, the nurses in this study strongly agreed that NRT nurses are excellent teachers and resources and can easily adapt to the needs of their assigned unit. These findings are consistent with the literature on NRTs as described above and reflect qualities of effective teamwork as per the Salas et al. (2005) framework. While some of the literature suggests that transient team members can pose challenges to team functioning and potentially result in delayed patient care (O’Leary et al., 2011; Rahn, 2016), the perception NRT nurses have of teamwork is that they adapt to the needs of the unit and are valuable members of the healthcare team (whether the unit team recognizes it or not).

As it relates to clinical practice, unit nurses and unit leaders need to be more conscientious about ensuring that NRT nurses are utilized to their full potential. It is important to note that not all NRT nurses have the specialized skills and knowledge that nurses who work on specialized care units have (e.g., administering chemotherapy, monitoring extra-ventricular drains, and cardiac monitoring), but this does not mean that NRT nurses should be assigned the chronic, higher needs patients as a result. Vaughan and Slinger (2013) report that the NRT nurses at their organization feel dissatisfied when they are unable to



meet their patients' needs or uphold their professional practice standards. One of the recommendations that the NRT nurses made was to have a patient assignment that appropriately reflects their competency (Vaughan & Slinger, 2013). Given that Factors 1 and 3 perceived themselves to be assigned the more demanding patient assignments, there is evidence in this study to support the application of workload measurement tools when developing daily patient assignments in order to ensure that patient care needs are met and professional standards upheld.

One such workload measurement tool is the Synergy Model, which is a professional practice framework used to assess patient acuity and to develop patient assignments by balancing patient needs and staff competencies (Curley, 2007; Georgiou, Amenudzie, Ho, and O'Sullivan, 2018). The Synergy Model was applied to an acute hematology inpatient unit at a hospital in Hamilton, Ontario, due to the unit's struggles with teamwork, communication, and making appropriate assignments for nurses. Surveys were administered to unit staff pre- and post-implementation of the Synergy Model in order to evaluate its usefulness and perceptions by staff (Georgiou et al., 2018). Application of the model in developing patient assignments resulted in statistically significant increases in the nurses' perceptions of being involved in determining assignments; matching their skills and expertise to patient care needs; being supported in practice by more experienced nurses; and basing patient assignments on nurses' ability to provide safe, competent, and ethical care ( $p < 0.05$  for each perception).

The NRT nurses in this study have echoed similar struggles to the unit before implementation of the Synergy Model, particularly with regard to inequitable patient assignments. There is a great opportunity to optimize patient care outcomes by aligning nurse competencies with patient needs using the Synergy Model (Curley, 2007). This would ensure that NRT nurses are treated more fairly by unit leaders regarding their assignments. The model has been applied to patient care settings that include hematology, pediatric care, cardiac intensive care, and medicine-surgery (Georgiou et al., 2018; Ho et al., 2017), making it potentially useful across numerous units that NRT nurses would be assigned to work on.

A limitation to using the model is that the unit leader, usually the person making the patient assignments, needs to have an understanding of each nurse's unique competencies. This presents a challenge when NRT nurses are assigned to work on a unit and the unit leader may not know their competencies. As already noted, the NRT nurses in Factors 1 and 3 perceived that they are being under appreciated in terms of their skills and are lacking clear roles and responsibilities. To develop patient assignments appropriate to nurse competencies, the roles and responsibilities of NRT nurses should be clarified, specialized training should be noted, and pertinent information should be made accessible to all unit nurses. When a unit requests an NRT nurse, the NRT office should send a confirmation that includes the name and professional designation of the NRT nurse being assigned as well as years of experience, specialized skills, and areas of care

beyond general roles and responsibilities. The more information that the unit has to judge the competency of the NRT nurse, the more likely it is to match the nurse's competency to the patient assignment appropriately. This would likely result in safer patient care and higher satisfaction among NRT nurses and unit nurses (Georgiou et al., 2018).

Another strategy that could be utilized to ensure adequate matching of patient care needs to nurse competency, including NRT nurses' competencies, would be to have a patient assignment monitoring system in place on a leadership level. The Synergy Model would be an extensive project to implement initially. A more expedient tactic would be to have clinical managers of the units and the NRT manager regularly review patient assignments to ensure they are made appropriately and equitably across the organization. Safe nurse staffing practices also results in less staff turnover, fewer sick days, less stress, less overtime, less fatigue, and higher job satisfaction (CNA, 2015).

A final implication for clinical practice is the possibility that NRT nurses assume a team identity even though they do not always work together. This is evidenced in the agreement between NRT nurses across all the Factors that there is an innate sense of teamwork. A sense of community may be defined as a human association that binds people and has been linked to the retention of nurses (Manion & Bartholomew, 2004). In this study, the mean years working on NRT ranged from 4.25 to 7.79 years, which suggests that NRT nurses are staying in their positions for a long time. Higher retention rates have been associated with

increased job satisfaction and vice versa, with both higher retention rates and levels of job satisfaction being linked to better patient outcomes (Hairr, Salisbury, Johannsson, & Redfern-Vance, 2014; Spence-Laschinger & Fida, 2015). There is evidence in this study to suggest that NRT nurses are capable of providing safe and effective patient care because they are staying longer in their NRT positions and feel a sense of community, or innate sense of teamwork, when working together. With regard to patient safety, these findings reinforce the NRT nurses' perceptions of feeling competent in their practice.

**Policy.** As noted above, workload measurement tools help to ensure nursing assignments match patient needs appropriately. Based on the findings of this study, hospitals may benefit from reviewing their current policies around developing patient assignments, particularly in relation to NRT nurse assignments. It is recommended that organizations consider implementing an organization-wide workload measurement tool with the goal of developing fair and appropriate patient assignments.

Nurse hiring policies may also need to be reviewed. Some of the studies on high functioning teams proposed that team members should be hired strategically so that their personalities and skills integrate well within existing teams (Mulkins et al., 2005). Linzer et al. (2011) identified differences in personality traits between float nurses and unit-hired nurses and also suggested that hiring nurses based on personality traits may help to match nurses to roles more appropriately. In this study, NRT nurses strongly disagreed that nurses who

are carefully selected to work on a unit perform better than NRT nurses. This suggests that NRT nurses perceive themselves to be equally if not more capable of providing safe and effective patient care. Strzalka and Havens (1996) compared quality of patient care of in-house float pools, unit-hired nurses, and agency nurses by reviewing the documentation of clinical indicators for safety monitoring and management of bowel function. The authors found that the in-house float pool nurses documented at 100 percent for four of the nine indicators, and documented more than either than unit-hired or agency nurses on all indicators except motor response (Strzalka & Havens, 1996). NRT nurses in this study share the perception that they are equally as valuable to the team in terms of clinical competency. This has implications for hospital hiring policies because NRT nurses should be hired based on their skills and knowledge, rather than their personality. However, more research needs to be completed in this area with respect to resource nurses' personalities and their perceptions of teamwork.

Although there were no statistically significant differences in NRT nurse demographics between the three Factors, there were some general trends that may have implications for the hiring of NRT nurses into clinical practice. As noted in Chapter 4, the NRT nurses in Factor 2 had the most experience in years nursing overall and the most experience in years working on NRT. Factor 2 NRT nurses perceived themselves to be adaptable and included in the unit teams. Interestingly, this Factor of NRT nurses was neither the oldest nor the youngest. These findings may suggest there is a period in which a nurse works on NRT before feeling more

adaptable and included in the unit teams. The youngest and least experienced NRT nurses belonged to Factor 3, the group that struggled with a lack of role clarity and feeling unintegrated. In this study, there may be a trend toward feeling more adaptable and engaging in more effective teamwork and more experience with NRT. However, further research is required.

Additionally, the only two pediatric and women's health nurses included in this study loaded onto the flexible and confident Factor 2. NRT nurses in the pediatric and women's health cluster work only within one hospital site, whereas the nurses in the other two clusters may be assigned to work across five different hospital sites. There may be an opportunity to explore new policies around how NRT nurses are clustered, such as clustering according to hospital site and patient care unit, as it may have benefits to NRT nurses' perceptions of teamwork. Again, more research needs to be done in this area, particularly around perceptions of teamwork by NRT cluster.

One of the more concerning findings of this study was how the NRT nurses in Factor 3 did not feel comfortable bringing up safety and professionalism issues to the unit team. In clinical practice, nurses have an ethical and professional responsibility to ensure the well-being of patients (CNO, 2009). Although, the methodology for this study did not provide a means to determine whether there was any direct impact to patient care or what factors affected the perceptions of NRT nurses in Factor 3, there are important implications to patient safety if a NRT nurse fails to address safety or professionalism issues on a patient care unit.

The hospital organization used in this study does have a safety reporting tool, but no clear structure exists for reporting certain safety and professionalism issues that do not necessarily result in an error or near miss. In addition, NRT nurses do not have the benefit of working on the same unit for each shift, meaning that their ability to follow up with safety and professionalism issues is dependent on the NRT manager and the manager of the unit they are assigned to work on. Therefore, ongoing engagement with NRT nurses should be a top priority for NRT leadership to ensure that NRT nurses have a safe and reliable method for reporting safety issues on the unit.

The Canadian Patient Safety Institute (CPSI, 2018) developed a patient safety culture bundle for senior leaders in healthcare. This framework outlines strategies in a three-step process: enabling a culture of patient safety through organizational and leadership practices, enacting strategies at the frontline, and learning practices to reinforce safe behaviours (CPSI, 2018). To mitigate the potential compromise to patient safety as a result of NRT nurses not being comfortable reporting a safety issue to the unit team, policy and procedures need to be in place around creating a culture of patient safety. This would help to remove any blame placed on a NRT nurse for reporting safety issues, resulting in a higher likelihood of the NRT nurse reporting safety issues in the first place. Given that NRT nurses strongly agreed that they shared a common purpose with the unit nurses of providing safe and effective patient care, there is a clear

disconnect between having a common goal (which they agreed to) and actually achieving that goal (by reporting safety and professionalism issues).

One of the most significant findings in this study is that NRT nurses perceive themselves to be competent in providing safe and effective patient care. The use of resource teams has been applauded for its ability to maintain safe nurse staffing levels while also being cost effective for hospitals (Libby & Bolduc, 1994; Linzer et al., 2011; Rainess et al., 2015; Strzalka & Havens, 1996; Vaughan & Slinger, 2013). The acute care hospital organization where this study took place does not utilize any external nursing agencies and only reassigns or “floats” unit-based nurses to other units in need according to the local hospital-union contract. Based on the findings of this study, it is recommended that hospitals that do not currently use a resource team or in-house float pool or that rely on agency nurses and floating unit-based nurses to other areas would benefit greatly from utilizing the expertise of NRT nurses in their setting. Hospitals should review their policies around the use of external nursing agencies to determine whether it is feasible to create an in-house float pool or resource team with the goal of ensuring adequate staffing while reducing the number of nurses floated outside their home unit. Furthermore, hospitals need to have clear policies and procedures related to how and when nurses are floated outside their home unit in order to reduce the nurses’ anxiety and potential distress.

**Education.** There are many implications to improving educational practices at the school and hospital levels using the findings of this study. New



graduate nurses have traditionally been discouraged from applying to float pools by potential employers and educational institutions as floating was viewed as a task for more experienced, senior, and confident nurses (Crimlisk, McNulty, & Francione, 2002). However, NRTs are often grouped with temporary staff (e.g., agency nurses) and float nurses (reassigning a unit-based nurse to another area), which operate under different pretences (Dall’Ora & Griffiths, 2017). NRT nurses are unique in that they are permanent employees of the organization and are usually organized by clinical expertise and specialized care (Dziuba-Ellis, 2006). More education needs to be provided to nurses in school and nurses in the workplace with regard to the different types of staffing strategies and expertise that NRT nurses may possess so that these traditional perspectives of NRTs can be replaced. In addition, some of the positive perceptions of teamwork that NRT nurses displayed in this study, such as having an innate sense of teamwork and being excellent resources and teachers, should be emphasized in nursing programs and in the hospital. This would help nursing students to understand the benefits of becoming an NRT nurse and hospital staff may have greater appreciation and respect for the skills and knowledge of NRT nurses.

The findings in this study suggest that some groups of NRT nurses feel disconnected from the unit team in terms of their roles, patient assignments, interpersonal experiences with the nurses, and a lack of respect. In addition to educating staff on the roles and responsibilities of NRT nurses and ensuring that patient assignments are equitable and appropriate, there is an opportunity for

hospitals to provide a more thorough education around NRTs during the orientation of new employees, including non-nursing members of the interprofessional team. Not all members of the healthcare team may be aware of the skill differences between NRT clusters and the function of NRTs. To engage in effective teamwork, Salas et al. (2005) note the importance of having team leadership, mutual performance monitoring, and back-up behaviour. Each of these characteristics requires an understanding of each team member's role and responsibilities. Therefore, all team members should be aware of different roles, including the unique roles of NRT nurses.

**Research.** Using Q-methodology is one method available for measuring perceptions of teamwork, but diverse methodologies are required to explore these perceptions more in-depth and to compare the perceptions of NRT and unit nurses.

As this is the first study to identify perceptions of teamwork from the NRT nurse perspective, further research needs to be conducted using a larger sample size and NRT nurses from multiple hospital organizations in order to be able to generalize the results. To create a more comprehensive understanding of teamwork, perceptions of teamwork should be explored from the unit-nurse perspective and in the context of working with NRT nurses. The findings of this study have also demonstrated that NRT nurses have different perceptions of teamwork among themselves. Future research should aim to identify some of the factors that lead to differences in the NRT nurse perceptions, which would help to

determine how better to orient NRT nurses and prepare them for years of sustained service with NRT.

There is an overall lack of research related to the impact that NRT nurses have on teamwork and patient care. With NRTs being used more frequently in the acute care setting, future qualitative studies should explore how NRT nurses perceive their impact (positive or negative) on teamwork and subsequent patient care using in-depth interviewing. Future quantitative studies may try to identify an association between NRT nurses' perceptions of teamwork and patient outcomes. This study explored perceptions from only frontline NRT nurse perspectives. Thus, there is an opportunity to utilize other NRT leadership roles such as managers and educators in the samples of future studies.

Finally, using the recommendations for clinical practice, policy, and education, more research needs to be conducted related to the use of workload measurement tools on NRT nurses' perceptions of teamwork, the impact of hiring and orientation policies on the retention and success of NRT nurses, and NRT nurses' perceptions of teamwork compared between clusters. NRTs are identified as a cost-effective staffing strategy compared to agency and float pool nursing (Dziuba-Ellis, 2006). However, as permanent employees, NRT nurses receive benefits, sick pay, and vacation pay in addition to their hourly wage. A rigorous cost-effectiveness analysis is required to provide evidence to support this claim.

### **Knowledge Translation**

The Canadian Institutes of Health Research (CIHR, 2016) defines knowledge translation (KT) as a “dynamic and iterative process that includes synthesis, dissemination, exchange and ethically-sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the healthcare system”. Single studies are not often utilized to provide evidence for practice changes. However, as this is the first study to explore NRT nurses’ perceptions of teamwork, the procedures for disseminating the findings are described below.

The participants of this study were given a choice to receive a summary of the findings of this study on their consent forms (see Appendices H and K). Therefore, the first step in disseminating the findings of this study will be to send an e-mail summary of the results to the NRT nurses who participated. Following this, permission from the NRT manager will be sought to send a summary of the results to all NRT nurses at the acute care hospital organization used in this study.

As the findings of this study have a great impact on the ways in which NRT nurses and unit nurses engage in teamwork, it is of utmost importance that the findings are presented to other units within the hospital organization. A meeting with the Chief of Nursing Practice and Chief of Interprofessional Practice will be arranged so that a high level discussion can take place with regard to how the results of this study may be used to influence practice changes within the hospital organization as per the recommendations made above.

The findings of this study will be disseminated to broader audiences using two main formats. First, abstracts and study findings will be submitted to various conferences over the next year, including *Q-Conference*, the *Southern Ontario Nursing Resource Team Conference*, and the *McMaster Faculty of Health Sciences Research Plenary* and either poster or oral presentations will be conducted. Second, two articles will be written and submitted for peer-reviewed publication: the in-depth scoping review and the overall findings of this study. This thesis will also be published on MacSphere, the McMaster University Institutional Repository for theses, which McMaster students can access.

### **Study Strengths and Limitations**

The findings of this study should be considered in the context of the methodological strengths and limitations. One of the primary strengths of this study is that Q-methodology utilizes both qualitative and quantitative techniques and is effective at turning a subjective statement into an objective outcome (Akhtar-Danesh et al., 2008). Q-methodology is also viewed as a statistically robust technique for measuring subjective topic areas, and the application of a 0.80 effect size in this study helps to contribute to the validity of the distinguishing statements for each Factor (Akhtar-Danesh, 2018; Akhtar-Danesh et al., 2008). In this study, 30 out of the 34 Q-sorts loaded significantly on to one of the three Factors and each Factor was deemed more valuable given that more than five participants loading significantly onto each (Brown, 1980).

Q-methodology usually requires a relatively small sample size of 40-60 participants (Akhtar-Danesh et al., 2008; Brown, 1980). In this study, only 34 participants were recruited, which was less than the minimum recommended number. Due to difficulties with recruitment, convenience sampling was used instead of the intended maximum variation sampling, meaning that the sample was not purposive or random. In Q-methodology, the total number of participants is not as important as the representation of different viewpoints about the topic area (Dennis, 1986). In this study, three salient perceptions about teamwork were identified, suggesting that the sample size of 34 participants was adequate. Furthermore, representativeness of the sample is not the main goal of Q-methodology but rather the emergence of different viewpoints from the sample, which was also achieved (Akhtar-Danesh et al., 2008; Chinnis et al., 2001).

As noted, there was difficulty with the initial e-mail recruitment strategy. As a result, the researcher had to go to the different hospital sites within the organization and recruit NRT nurses working on the unit. During the day shift, the NRT nurses were often too busy to be able to participate, but many were willing to be contacted by the researcher at a later time to set up a meeting to participate. Recruitment during the night shift proved to be the most effective method for this study as the NRT nurses generally had more time to spare for the researcher while the patients were asleep. One of the limitations of recruiting on the night shift was that not all NRT nurses worked night shifts (e.g. nurses on modified duties), meaning that some NRT nurses were removed from the sampling frame. To offset

this limitation, the researcher contacted the NRT manager frequently to identify NRT assignments ahead of time, so that nurses working on a day shift could be recruited as well. The researcher also communicated with NRT nurses personally by e-mail, text message, and social media. These diverse recruitment methods all proved to be effective.

Another strategy that could be used to overcome challenges with recruitment is using online Q-sorting. It may be a more convenient alternative to manual Q-sorting and it would be accessible to a larger number of people than a researcher may be able to meet with in person (Davis & Michelle, 2011). Davis and Michelle (2011) caution that using an online tool may attract more highly motivated respondents who may then express similar perceptions about the topic area. To gain representativeness of viewpoints, a larger sample size may be required than in traditional manual Q-sorting (Davis & Michelle, 2011).

Lastly, the NRT nurse participants were recruited from only one hospital organization. This means that the perceptions of NRT nurses in this study may not be transferable to NRT nurses from other organizations. More research would need to be conducted in order to determine transferability of the results.

## **Conclusion**

The purpose of this study was to identify perceptions of teamwork from NRT nurses at a local acute care multi-hospital organization. NRTs are being used as a staffing strategy progressively more due to increasing patient acuity, nursing sick time, and other natural vacancies in nursing schedules, but their impact and

perceptions of teamwork have not been documented until now. The characteristics of effective teamwork are well known in the literature and this sets the standard for providing safe and effective patient care. Prior to this study, transient team members and a dynamic team membership were viewed as barriers to teamwork in the literature. This study is the first to explore teamwork from the unique perspective of NRT nurses. The findings demonstrate how NRT nurses feel competent, knowledgeable, and as valuable to the patient care team as unit-hired nurses. Some of the challenges faced by NRT nurses include unfair patient assignments, lack of role clarity, and lack of respect, which are validated by similar findings in primary studies of NRTs. Even among NRT nurses in this study, differences in perceptions of teamwork were identified.

Three Factors, or groups of NRT nurses, were revealed in this study with the following themes: (1) Underappreciated; (2) Flexible and confident; and (3) Unintegrated. Each Factor contained numerous statements that were used to distinguish the subtleties among the groups. A list of consensus statements helped provide clarity around perceptions that the NRT nurses had in common. More research needs to be conducted to explore each of these perceptions further and with a larger sample of NRT nurses from other multiple hospital organizations. The interpretation and discussion of the findings helped to isolate some of the common barriers and facilitators of teamwork for NRT nurses using the Salas et al. (2005) framework. There were no statistically significant differences in



demographic variables among the groups of NRT nurses in this study, but there were some trends in the data that merit further investigation.

Overall, this study has provided new information surrounding the effects of NRT nurses on teamwork. The findings have been used to make recommendations for clinical practice, policy, education, and future research.

### References

- Akhtar-Danesh, N. (in press). Qfactor: A Stata command for Q-methodology analysis. *Stata Journal*.
- Akhtar-Danesh, N. (2016). An overview of the statistical techniques in Q methodology: Is there a better way of doing Q analysis? *Operant Subjectivity: The International Journal of Q Methodology*, 38(3-4), 29-36. doi:10.15.133/j/os.2016.007
- Akhtar-Danesh, N. (2017a). A comparison between major factor extraction and factor rotation techniques in Q-methodology. *Open Journal of Applied Sciences*, 7(4), 147-156. doi:10.4236/ojapps.2017.74013
- Akhtar-Danesh, N. (2017b). QCONVERT: Stata module to convert a raw Q-sort file into a new Q-sort file which is ready for analysis by QFACTOR program [Statistical Software]. *EconPapers*. Retrieved from <https://econpapers.repec.org/software/bocbarcode/S458325.htm>
- Akhtar-Danesh, N. (2018). Using Cohen's effect size to identify distinguishing statements in Q-methodology. *Open Journal of Applied Sciences*, 8(2), 73-79. doi:10.4236/ojapps.2018.82006
- Akhtar-Danesh, N., Baumann, A., & Cordingley, L. (2008). Q-methodology in nursing research: A promising method for the study of subjectivity. *Western Journal of Nursing Research*, 30(6), 759-773. doi:10.1177/0193945907312979

- Akhtar-Danesh, N., Baumann, A., Kolotylo, C., Lawlor, Y., Tompkins, C., & Lee, R. (2013). Perceptions of professionalism among nursing faculty and nursing students. *Western Journal of Nursing Research*, 35(2), 248-271. doi:10.1177/0193945911408623
- Andregard, A.C., & Jangland, E. (2014). The tortuous journey of introducing the nurse practitioner as a new member of the healthcare team: A meta-synthesis. *Scandinavian Journal of Caring Sciences*, 29(1), 3-14. doi:10.1111/scs.12120
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19-32. doi:10.1080/1364557032000119616
- Ballangrud, R., Hall-Lord, M.L., Persenius, M., & Hedelin, B. (2014). Intensive care nurses' perceptions of simulation-based team training for building patient safety in intensive care: A descriptive qualitative study. *Intensive & Critical Care Nursing*, 30(4), 179-187. doi:10.1016/j.iccn.2014.03.002
- Barbosa, V.M. (2013). Teamwork in the neonatal intensive care unit. *Physical & Occupational Therapy in Pediatrics*, 33(1), 5-26. doi:10.3109/01942638.2012.729556
- Barrett, A., Piatek, C., Korber, S., & Padula, C. (2009). Lessons learned from a lateral violence and team-building intervention. *Nursing Administration Quarterly*, 33(4), 342-351. doi:10.1091/NAQ.0b013e3181b9de0b

- Bates, K.J. (2013). Floating as a reality: Helping nursing staff keep their heads above water. *MedSurg Nursing*, 22(3), 197-199.
- Beck, C.T. (1999). Quantitative measurement of caring. *Journal of Advanced Nursing*, 30(1), 24-32. doi:10.1046/j.1365-2648.1999.01045.x
- Bellury, L., Hodges, H., Camp, A., & Aduddell, K. (2016). Teamwork in acute care: Perceptions of essential but unheard assistive personnel and the counterpoint of perceptions of registered nurses. *Research in Nursing & Health*, 39(5), 337-346. doi:10.1002/nur.21737
- Brown, S.R. (1980). *Political subjectivity: Applications of Q-methodology in political science*. New Haven, CT: Yale University Press.
- Brown, S.R. (1991). *A Q-methodological tutorial*. Retrieved from: <http://facstaff.uww.edu/cottlec/QArchive/Primer1.html>
- Brown, S.R. (1993). A primer on Q methodology. *Operant Subjectivity*, 15(3/4), 91-138.
- Brown, S.R. (1996). Q methodology and qualitative research. *Qualitative Health Research*, 6(4), 561-567. Doi:10.1177/104973239600600408
- Buck, J. (2015). *Using appreciative inquiry to improve RN retention in a clinical float pool* (Doctoral dissertation). Retrieved from [scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=2253&context=dissertations](http://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=2253&context=dissertations)
- Bunnel, C.A., Gross, A.H., Weingart, S.N., Kalfin, M.J., Partridge, A., Lane, S.,... Mann, S. (2013). High performance teamwork training and systems

redesign in outpatient oncology. *BMJ Quality & Safety*, 22, 405-413.

doi:10.1136/bmjqs-2012-000948

Canadian Institutes of Health Research. (2016). *Knowledge translation -*

*Definition*. Retrieved from: <http://www.cihr-irsc.gc.ca/e/29418.html>

Canadian Nurses Association. (2015). *Practice environments: Maximizing*

*outcomes for clients, nurses and organizations*. Retrieved from

[https://www.cna-aiic.ca/~media/cna/page-content/pdf-en/practice-](https://www.cna-aiic.ca/~media/cna/page-content/pdf-en/practice-environments-maximizing-outcomes-for-clients-nurses-and-organizations_joint-position-statement.pdf?la=en)

[environments-maximizing-outcomes-for-clients-nurses-and-](https://www.cna-aiic.ca/~media/cna/page-content/pdf-en/practice-environments-maximizing-outcomes-for-clients-nurses-and-organizations_joint-position-statement.pdf?la=en)

[organizations\\_joint-position-statement.pdf?la=en](https://www.cna-aiic.ca/~media/cna/page-content/pdf-en/practice-environments-maximizing-outcomes-for-clients-nurses-and-organizations_joint-position-statement.pdf?la=en)

Canadian Patient Safety Institute. (2018). *Patient safety culture “bundle” for*

*CEOs/senior leaders*. Retrieved from

[www.patientsafetyinstitute.ca/en/toolsResource/Patient-Safety-Culture-](http://www.patientsafetyinstitute.ca/en/toolsResource/Patient-Safety-Culture-Bundle/Pages/default.aspx)

[Bundle/Pages/default.aspx](http://www.patientsafetyinstitute.ca/en/toolsResource/Patient-Safety-Culture-Bundle/Pages/default.aspx)

Castner, J., Foltz-Ramos, K., Schwartz, D., & Ceravolo, D. (2012). A leadership

challenge: Staff nurse perceptions after an organizational TeamSTEPPS

initiative. *Journal of Nursing Administration*, 42(10), 467-472.

doi:10.1091/NNA.0b013e31826a1fc1

Cavalieri, V. (2013). *Preceptors’ role modeling of senior B.Sc.N. students*

*explored through reflections of faculty* (Master’s thesis). Retrieved from

MacSphere at <http://hdl.handle.net/11375/13409>

- Chinnis, A.S., Summers, D.E., Doerr, C., Paulson, D.J., & Davis, S.M. (2001). Q-methodology: A new way of assessing employee satisfaction. *Journal of Nursing Administration, 31*(5), 252-259.
- Cleary, M., Hungerford, C., Lopez, V., & Cutcliffe, J.R. (2015). Towards effective management in psychiatric-mental health nursing: The danger and consequences of micromanagement. *Issues in Mental Health Nursing, 36*(6), 424-429. doi:10.3109/01612840.2014.968694
- College of Nurses of Ontario. (2002). *Practice standard: Professional standards, revised 2002*. Retrieved from [www.cno.org/globalassets/docs/prac/41006/profstds.pdf](http://www.cno.org/globalassets/docs/prac/41006/profstds.pdf)
- College of Nurses of Ontario. (2009). *Practice standard: Ethics*. Retrieved from [www.cno.org/globalassets/docs/prac/41034\\_ethics.pdf](http://www.cno.org/globalassets/docs/prac/41034_ethics.pdf)
- College of Nurses of Ontario. (2014). *Competencies: For entry-level registered nurse practice*. Retrieved from [www.cno.org/globalassets/docs/reg/41037\\_entrytopractic\\_final.pdf](http://www.cno.org/globalassets/docs/reg/41037_entrytopractic_final.pdf)
- Coogan, J., & Herrington, N. (2011). Q methodology: An overview. *Research in Secondary Teacher Education, 1*(2), 24-28.
- Courtenay, M., Nancarrow, S., & Dawson, D. (2013). Interprofessional teamwork in the trauma setting: A scoping review. *Human Resources for Health, 11*(1), 57-66. doi:10.1186/1478-4491-11-57

- Crimlisk, J.T., McNulty, M.J., & Francione, D.A. (2002). New graduate RNs in a float pool: An inner-city hospital experience. *Journal of Nursing Administration, 32*(4), 211-217.
- Curley, M.A. (Ed.). (2007). *Synergy: The unique relationship between nurses and patients*. Indianapolis: Sigma Theta Tau International.
- Dall’Ora, C., & Griffiths, P. (2017). Flexible nurse staffing in hospital wards: The effects on costs and patient outcomes? *Health Work Evidence Brief, 3*(1).
- Davis, C.H., & Michelle, C. (2011). Q methodology in audience research: Bridging the qualitative/quantitative ‘divide’. *Participations: Journal of Audience & Reception Studies, 8*(2), 559-593.
- Deneckere, S., Euwema, M., Lodewijckx, C., Panella, M., Mutsvari, T., Sermeus, W., & Vanhaect, K. (2013). Better interprofessional teamwork, higher level of organized care, and lower risk of burnout in acute health care teams using care pathways: A clustered randomized controlled trial. *Medical Care, 51*(1), 99-107. doi:10.1097/MLR.0b013e3182763312
- Dennis, K.E. (1986). Q methodology: Relevance and application to nursing research. *Advances in Nursing Science, 8*(3), 6-17.
- DeWitt, L. (2009). Licensed practical nurses in the PACU. *Journal of PeriAnesthesia Nursing, 24*(6), 356-361. doi:10.1016/j.jopan.2009.10.004
- Dykstra, J.G., Sendelbach, D., & Steege, L.M. (2016). Fatigue in float nurses: Patient, nurse, task, and environmental factors across unit work systems.

- Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 60(1), 623-627. doi:10.1177/1541931213601142
- Dziuba-Ellis, J. (2006). Float pools and resource team: A review of the literature. *Journal of Nursing Care Quality*, 21(4), 352-359.
- Fink, A. (2005). *Conducting research literature reviews: From the internet to paper* (2<sup>nd</sup> ed.). London: Sage.
- Georgiou, G., Amenudzie, Y., Ho, E., & O'Sullivan, E. (2018). Assessing the application of the Synergy Model in hematology to improve care delivery and the work environment. *Canadian Oncology Nursing Journal*, 28(1), 13-16. doi:10.5737/236880762811316
- Gillespie, B.M., Chaboyer, W., Longbottom, P., & Wallis, M. (2010). The impact of organisational and individual factors on team communication in surgery: A qualitative study. *International Journal of Nursing Studies*, 47(6), 732-741. doi:10.1016/j.ijnurstu.2009.11.001
- Good, E., & Bishop, P. (2011). Willing to walk: A creative strategy to minimize stress related to floating. *The Journal of Nursing Administration*, 41(5), 231-234. doi:10.1097/NNA.0b013e318217c7e
- Grace, S.M., Rich, J., Chin, W., & Rodriguez, H.P. (2014). Flexible implementation and integration of new team members to support patient-centered care. *Healthcare*, 2(2), 145-151. doi:10.1016/j.hjdsi.2014.02.003



- Hairr, D.C., Salisbury, H., Johannsson, M., & Redfern-Vance, N. (2014). Nurse staffing and the relationship to job satisfaction and retention. *Nursing Economics*, 32(3), 142-147.
- Ho, E., Principi, E., Cordon, C.P., Amenudzie, Y., Kotwa, K., Holt, S., & MacPhee, M. (2017). The Synergy tool: Making important quality gains within one healthcare organization. *Administrative Sciences*, 7(3), 32-39. doi:10.3390/admsci7030032
- Kalisch, B.J. (2009). Nurse and nurse assistant perceptions of missed nursing care: What does it tell us about teamwork? *The Journal of Nursing Administration*, 39(11), 485-493. doi:10.1097/NNA.0b013e3181bd61ac
- Kalisch, B.J., & Lee, H. (2009). Nursing teamwork, staff characteristics, work schedules, and staffing. *Health Care Management Review*, 34(4), 323-333. doi:10.1097/HMR.0b013e3181aaa920
- Kane-Urrabazo, C. (2006). Said another way: Our obligation to float. *Nursing Forum*, 41(2), 95-101. doi:10.1111/j.1744-6198.2006.00043.x
- Landeen, J., Pierazzo, J., Akhtar-Danesh, N., Baxter, P., van Eijk, S., & Evers, C. (2015). Exploring student and faculty perceptions of clinical simulation: A Q-sort study. *Journal of Nursing Education*, 54(9), 485-491. doi:10.3928/01484834-20150814-02
- Larson, N., Sendelbach, S., Missal, B., Fliss, J., & Gaillard, P. (2012). Staffing patterns of scheduled unit staff nurses vs. float pool nurses: A pilot study. *MedSurg Nursing*, 21(1), 27-39.

- Leary, J., Gallagher, T., Carson, J., Fagin, L., Bartlett, H., & Brown, D. (1995).  
Stress and coping strategies in community psychiatric nurses: A Q-  
methodological study. *Journal of Advanced Nursing*, *21*(2), 230-237.  
doi:10.1111/j.1365-2648.1995.tb02519.x
- Lebanik, L., & Britt, S. (2015). Float pool nurses coming to the rescue.  
*Nursing2015*, *45*(3), 50-53. doi:10.1097/01.NURSE.0000460715.73128.ea
- Levac, D., Colquhoun, H., & O'Brien, K.K. (2010). Scoping studies: Advancing  
the methodology. *Implementation Sciences*, *5*(1), 1-9. doi:10.1186/1748-  
5908-5-69
- Libby, D., & Bolduc, P.C. (1994). Budgeted float pool: Creativity in staffing.  
*Nursing Management*, *25*(8), 81-82.
- Linzer, P., Tilley, A.M., & Williamson, M.V. (2011). What floats a float nurse's  
boat? *Creative Nursing*, *17*(3), 130-138.
- Lobo, V., Fisher, A., Baumann, A., & Akhtar-Danesh, N. (2012). Effective  
retention strategies for midcareer critical care nurses: A Q-method study.  
*Nursing Research*, *61*(4), 300-308. doi:10.1097/NNR.0b013e31825b69b1
- Mahoney, J.S., Ellis, T.E., Garland, G., Palyo, N., & Greene, P.K. (2012).  
Supporting a psychiatric hospital culture of safety. *Journal of the American  
Psychiatric Nurses Association*, *18*(5), 299-306.  
doi:10.1177/1078390312460577
- Manion, J., & Bartholomew, K. (2004). Community in the workplace: A proven  
retention strategy. *The Journal of Nursing Administration*, *34*(1), 46-53.

- McKeon, L.M, Oswaks, J.D., & Cunningham, P.D. (2006). Safeguarding patients: Complexity science, high reliability organizations, and implications for team training in healthcare. *Clinical Nurse Specialist* 20(6), 298-304.
- McKeown, B., & Thomas, D. (1988). *Q Methodology*. Newbury Park, CA: Sage Publications, Inc.
- Mulkins, A.L., Eng, J., & Verhoef, M.J. (2005). Working toward a model of integrative healthcare: Critical elements for an effective team. *Complementary Therapies in Medicine*, 13(2), 115-122.  
doi:10.1016/j.ctim.2005.04.002
- Nicholls, D.J., Duplaga, E., & Meyer, L.M. (1996). Nurses' attitudes about floating. *Nursing Management*, 27(1), 56-58.
- Nowrouzi, B., Giddens, E., Gohar, B., Schoenenberger, S., Bautista, M.C., & Casole, J. (2016). The quality of work life of registered nurses in Canada and the United States: A comprehensive literature review. *International Journal of Occupational and Environmental Health*, 22(4), 341-358.  
doi:10.1080/10773525.2016.1241920
- O'Leary, K.J., Sehgal, N.L., Terrell, G., & Williams, M. (2011). Interdisciplinary teamwork in hospitals: A review and practical recommendations for improvement. *Journal of Hospital Medicine*, 7(1), 48-54.  
doi:10.1002/jhm.970
- Patton, M. (1990). Purposeful sampling. In *Qualitative evaluation and research methods* (pp.169-186). Beverly Hills, CA: Sage.

- Piquette, D., Reeves, S., & Leblanc, V.R. (2009). Interprofessional intensive care unit team interactions and medical crises: A qualitative study. *Journal of Interprofessional Care, 29*(3), 273-285. doi:10.1080/13561820802697818
- Qureshi, Y., & Dhaliwal, K. (2016). High performance team - Necessary in a healthcare setting. *Bangladesh Journal of Medical Science, 15*(1), 10-14. doi:10.3329/bjms.v15i1.27138
- Rahn, D.J. (2016). Transformational teamwork exploring the impact of nursing teamwork on nurse-sensitive quality indicators. *Journal of Nursing Care Quality, 31*(3), 262-268. doi:10.1097/NCQ.0000000000000173
- Rainess, N., Archer, W., Hoffman, L., & Nottingham, E. (2015). Empowering float nurses. *Nursing Management, 46*(2), 15-19. doi:10.1097/01.NUMA.0000460046.94309.d0
- Rudy, S., & Sions, J. (2003). Floating: Managing a recruitment and retention issue. *The Journal of Nursing Administration, 33*(4), 196-198. doi:10.1097/00005110-200304000-00002
- Salas, E., Sims, D.A., & Burke, C.S. (2005). Is there a “big five” in teamwork? *Small Group Research, 36*(5), 555-599. doi:10.1177/1046496405277134
- Schmolck, P. (2014). *PQMethod manual*. Retrieved from: <http://schmolck.userweb.mwn.de/qmethod/pqmanual.htm>
- Severson, M.A., Maxson, P.M., Wroblewski, D.S., & Dozois, E.J. (2014). Simulation-based team training and debriefing to enhance nursing and

- physician collaboration. *The Journal of Continuing Education in Nursing*, 45(7), 297-303. doi:10.3928/00220124-20140620-03
- Simmons, D., & Sherwood, G. (2010). Neonatal intensive care unit and emergency department nurses' descriptions of working together: Building team relationships to improve safety. *Critical Care Nursing Clinics of North America*, 22(2), 253-260. doi:10.1016/j.ccell.2010.03.007
- Smith, M.L. (1981). Resource team: A staffing solution: A well-organized float staff draws nursing talents not otherwise available. *Nursing Management*, 12(11), 39-41.
- Spence Laschinger, H.K., & Fida, R. (2015). Linking nurses' perceptions of patient care quality to job satisfaction: The role of authentic leadership and empowering professional practice environments. *The Journal of Nursing Administration*, 45(5), 276-283. doi: 10.1097/NNA.0000000000000198
- Stephenson, W. (1935). Correlating persons instead of tests. *Character and Personality*, 4(1), 17-24. doi:10.1111/j.1467-6494.1935.tb02022.x
- Stephenson, W. (1936). The foundations of psychometry: Four factor systems. *Psychometrika*, 1(3), 195-209. doi:10.1007/BF02288366
- Stephenson, W. (1953). *The study of behaviour: Q-technique and its methodology*. Chicago, IL: University of Chicago Press.
- Strayer, N., & Daignault-Cerullo, E.M. (2008). Closed staffing: A staff nurse strategy. *Critical Care Nurse*, 28(6), 51-57.

- Strzalka, A., & Havens, D.S. (1996). Nursing care quality: Comparison of unit-hired, hospital float pool, and agency nurses. *Journal of Nursing Care Quality, 10*(4), 59-65.
- Thomas, D.M., & Watson, R.T. (2002). Q-sorting and MIS research: A primer. *Communications of the Association for Information Systems, 8*(9), 141-156.
- Valaitis, R., Akhtar-Danesh, N., Eva, K., Levinson, A., & Wainman, B. (2007). Pragmatists, positive communicators, and shy enthusiasts: Three viewpoints on web conferencing in health sciences education. *Journal of medical Internet Research, 9*(5), 1-12. doi:10.2196/kmir9.5.e39
- Valenta, A.L., & Wigger, U. (1997). Q-methodology: Definition and application in healthcare informatics. *Journal of the American Medical Informatics Association, 4*(6), 501-510. doi:10.1136/jamia.1997.0040501
- Vaughan, L., & Slinger, T. (2013). Building a healthy work environment: A nursing resource team perspective. *Nursing Leadership, 26*, 70-77. doi:10.12927/cjnl.2013.23322
- Verma, J., Petersen, S., Samis, S., Akunov, N., & Graham, J. (2014). *Healthcare priorities in Canada: A backgrounder*. Retrieved from: [www.cfhi.fcass.ca/sf-docs/default-source/documents/harkness-healthcare-priorities-canada-backgrounder-e.pdf](http://www.cfhi.fcass.ca/sf-docs/default-source/documents/harkness-healthcare-priorities-canada-backgrounder-e.pdf)
- Wakeam, E., Hyder, J.A., Ashley, S.A., & Weissman, J.S. (2014). Barriers and strategies for effective patient rescue: A qualitative study of outliers. *The*

*Joint Commission Journal on Quality and Patient Safety*, 40(11), 503-513.

doi:10.1016/S1553-7250(14)40065-5

Watts, S., & Stenner, P. (2005). Doing Q-methodology: Theory, method and interpretation. *Qualitative Research in Psychology*, 2(1), 67-91.

doi:10.1191/1478088705qp022oa

World Health Organization. (2012). *To err is human: Being an effective team player*. Retrieved from

[http://www.who.int/patientsafety/education/curriculum/course4\\_handout.pdf](http://www.who.int/patientsafety/education/curriculum/course4_handout.pdf)

f

## Appendix A

### Definitions of Key Terms

**Agency Nursing:** nurses employed by an external organization who are called in to fill gaps in staffing on a temporary basis (Dall’Ora & Griffiths, 2017).

**By-person Factor Analysis:** the method of data analysis used in Q-methodology, through which groups of participants who rank statements similarly on a Q-sort table are identified.

**Cohen’s effect size:** in Q-methodology, is used to identify distinguishing statements independent of the number of Q-sorts loaded on a factor. Effect size of 0.2 is small, 0.5 is medium, and 0.8 is large (Akhtar-Danesh, 2018).

**Consensus statement:** a statement that is mutually agreed/disagreed, or felt neutrally about, by all the participants in the identified factors in Q-methodology.

**Concourse:** a list of statements that reflect all potential opinions, attitudes, and/or perspectives about the topic area of interest (Akhtar-Danesh, Baumann, & Cordingly, 2008).

**Distinguishing statement:** a statement that loads significantly on to a factor as the participants in that factor all ranked that statement similarly to each other and differently from the participants in other factors (Coogan & Herrigan, 2011).

**Factor:** in Q-methodology, groups of participants who share a common perception about the topic of interest.

**Factor rotation:** process by which unrotated factors are rotated above their origin to produce a simple structure and to enhance interpretability (Akhtar-Danesh, 2016).

**Float Pool:** a group of nurses who have a home unit, but who can also be called upon to work on other on other units for urgent or intermittent needs (Dziuba-Ellis, 2006).

**Nursing Resource Team (NRT):** a group of permanently employed nurses who are hired directly into the position and therefore do not have a home unit. NRT nurses float to units to fill natural vacancies in staffing due to sick time, vacation, and patient acuity (Dziuba-Ellis, 2006).

**P-Set (person-set):** group of participants who participate in the Q-sort of a Q-methodology study (McKown & Thomas, 1988).



**Q-methodology:** a research method that uses both quantitative and qualitative approaches to systematically explore perceptions about a topic area with the most prominent viewpoints and relationships being explored in-depth using factor analysis (Akhtar-Danesh et al., 2008; Brown, 1993).

**Q-sample:** a smaller sample of representative statements from the concourse, which participants are asked to rank during the Q-sort (Brown, 1993)

**Q-sort:** the process by which participants rank the statements from the Q-sample into the Q-sort table (Akhtar-Danesh et al., 2008)

**Q-sort table:** a quasi-normal distribution table with a Likert scale across the top. There is one cell per statement in the Q-sample (Akhtar-Danesh et al., 2008).

**Scoping Review:** a literature review method in which the aim is to rapidly map key concepts underpinning a research area, especially when an area has not been reviewed comprehensively before (Arskey & O'Malley, 2005).

**Team:** a group of two or more individuals who are interdependent and share a common purpose (Kalisch, 2009).

**Teamwork:** a collective effort of a number of individuals in a team who come together to perform a series of specific tasks (Gillespie, Chaboyer, Longbottom, & Wallis, 2010).

**Unit team:** the group of people assigned to work on the same patient care area.

## Appendix B

### Arksey and O'Malley (2005) Scoping Review Framework with Levac et al. (2010) Recommendations

Arksey and O'Malley Framework Stage	Description	Levac et al. (2010) Recommendations
1. Identifying the research question	Identifying the research question provides the roadmap for subsequent stages. Relevant aspects of the question must be clearly defined as they have ramifications for search strategies. Research questions are broad in nature as they seek to provide breadth of coverage.	<ul style="list-style-type: none"> <li>• Clearly articulate the research question that will guide the scope of inquiry. Consider the concept, target population, and health outcomes of interest to clarify the focus of the scoping study and establish an effective search strategy</li> <li>• Mutually consider the purpose of the scoping study with the research question. Envision the intended outcomes (e.g. framework, list of recommendations) to help determine the purpose of the study.</li> <li>• Consider rationale for conducting the scoping study to help clarify the purpose</li> </ul>
2. Identifying relevant studies	This stage involves identifying the relevant studies and developing a decision plan for where to search, which terms to use, which sources are to be searched, time spent, and language. Comprehensiveness and breadth is important in the search. Sources include electronic databases, reference lists, hand searching of key journals, and organizations and conferences. Breadth is important; however,	<ul style="list-style-type: none"> <li>• Research questions and purpose should guide decision-making around the scope of the study.</li> <li>• Assemble a suitable team with content and methodological expertise that will ensure successful completion of the study.</li> <li>• When limiting scope is unavailable, justify decisions and acknowledge the potential limitations to the study.</li> </ul>

---

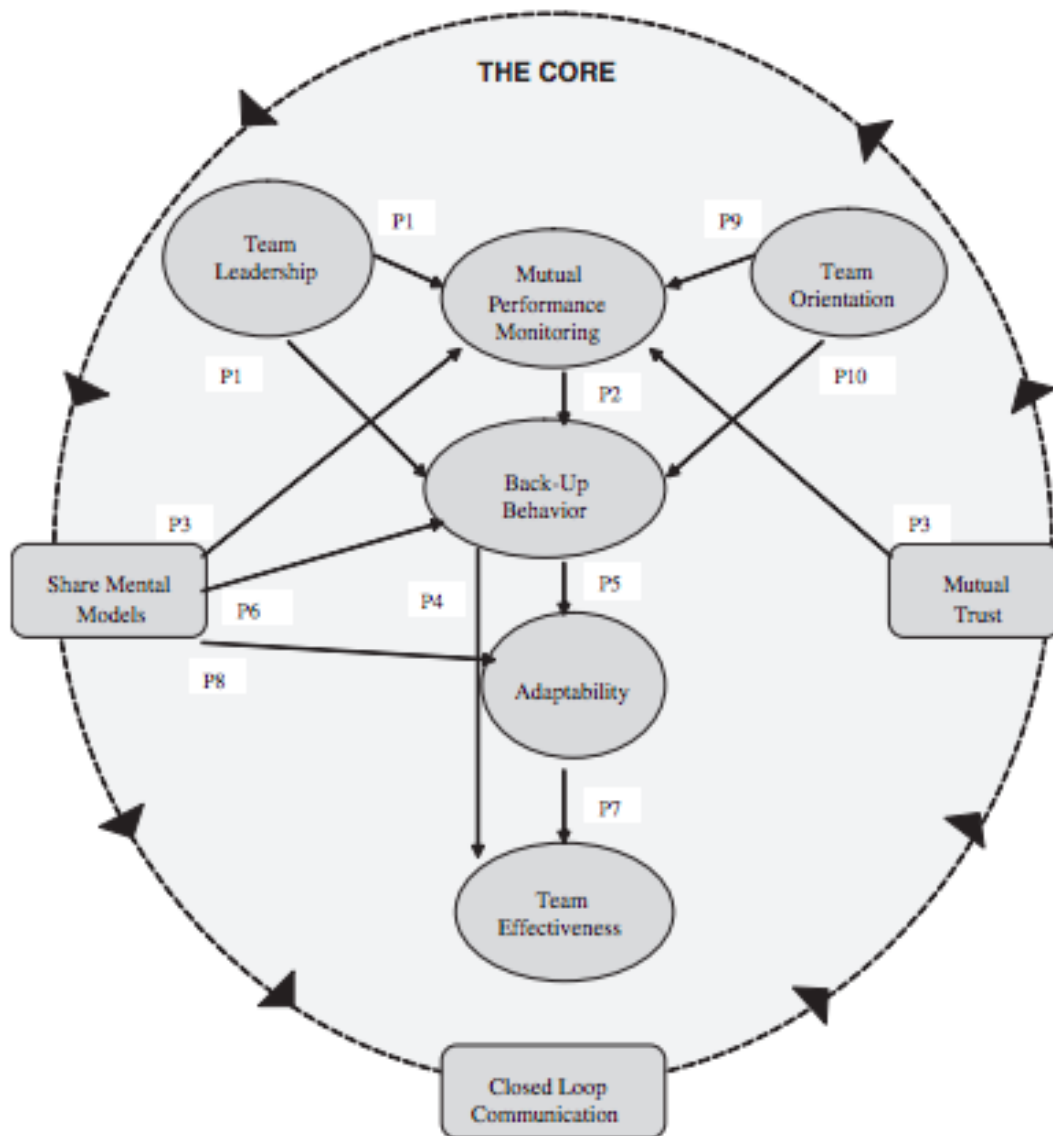
	<p>practicalities of the search are as well. Time, budget and personnel resources are potential limiting factors and decisions need to be made upfront about how these will impact the search.</p>	
3. Study selection	<p>Study selection involves <i>post hoc</i> inclusion and exclusion criteria. These criteria are based on the specifics of the research questions and on new familiarity with the subject matter through reading the studies.</p>	<ul style="list-style-type: none"> <li>• This stage should be considered an iterative process involving searching the literature, refining the search strategy, and reviewing articles for study inclusion.</li> <li>• At the beginning of the process, the team should meet to discuss decisions surrounding study inclusion and exclusion. At last two reviewers should independently review abstracts for inclusion.</li> <li>• Reviewers should meet at the beginning, midpoint, and final stages of the abstract review process to discuss challenges and uncertainties related to study selection and to go back and refine the search strategy if needed.</li> <li>• Two researchers should independently review full articles for inclusion.</li> <li>• When a disagreement on study inclusion occurs, a third reviewer can determine final inclusion.</li> </ul>
4. Charting the data	<p>A data-charting form is developed and used to extract data from each study. A “narrative review” or “descriptive analytical” method is used to extract contextual or process-oriented information from each study.</p>	<ul style="list-style-type: none"> <li>• The research team should collectively develop the data-charting form and determine which variables to extract in order to answer the research question.</li> <li>• Charting should be considered an iterative process in which researchers continually extract data and update the data-charting form.</li> <li>• Two authors should independently extract data from the</li> </ul>

---

		<p>first five to ten included studies using the data-charting form and meet to determine whether their approach to data extraction is consistent with the research question and purpose.</p> <ul style="list-style-type: none"> <li>• Process-oriented data may require extra planning for analysis. A qualitative content analysis approach is suggested.</li> </ul>
5. Collating, summarizing, and reporting results	<p>Analytic framework or thematic construction is used to provide an overview of the breadth of the literature but not a synthesis. A numerical analysis of the extent and nature of studies using tables and charts is presented. A thematic analysis is then presented. Clarity and consistency are required when reporting results.</p>	<ul style="list-style-type: none"> <li>• Researchers should break this stage into three distinct steps: <ul style="list-style-type: none"> <li>○ 1. Analysis (including descriptive numerical summary analysis and qualitative thematic analysis);</li> <li>○ 2. Reporting the results and producing the outcome that refers to the overall purpose or research question;</li> <li>○ 3. Consider the meaning of the findings as they relate to the overall study purpose; discuss implications for future research, practice and policy.</li> </ul> </li> </ul>
6. Consultation (optional)	<p>Provides opportunities for consumer and stakeholder involvement to suggest additional references and provide insights beyond those in the literature.</p>	<ul style="list-style-type: none"> <li>• Consultation should be an essential component of scoping study methodology.</li> <li>• Clearly establish a purpose for the consultation.</li> <li>• Preliminary findings can be used as a foundation to inform the consultation.</li> <li>• Clearly articulate the type of stakeholders to consult and how data will be collected, analyzed, reported and integrated within the overall study outcome.</li> <li>• Incorporate opportunities for knowledge transfer and exchange with stakeholders in the field.</li> </ul>

### Appendix C

Visual Representation of the Big Five and the Coordinating Mechanisms of Teamwork by Salas et al. (2005)



## Appendix D

### Summary of Articles Included in Scoping Review

Type of Source	No.	Authors (Year)	Methodology	Purpose of Article and Findings Relevant to Scoping Review Question
Primary	1.	Ballangrud, Hall-Lord, Persenius, & Hedelin (2014)	Qualitative descriptive study; interviews with 18 nurses.	Purpose was to describe nurses' perceptions of simulation-based team training for building patient safety in intensive care unit (ICU). ICU teams have changing team membership and this can lead to failure in team performance. Team training helped to define team performance and create awareness of team structures, roles and responsibilities.
	2.	Bunnel et al. (2013)	Mixed methods	Primary aim was to evaluate the effectiveness of a pilot adult oncology team training program used to reduce the risk of error. Secondary aim was to improve practice environment and team satisfaction. One of the characteristics of this outpatient clinic was that there were many transient team members, including physicians, nurses, and NPs. Members were often "virtual" or off-site. One of the findings was that team training led to the development of streamlined communication methods, shared mental model, situational awareness, roles of leadership, and communication techniques, which reduced the number of errors made despite the transient and virtual team environment.
	3.	DeWitt (2009)	Quality improvement study focused in a Magnet hospital in United States.	Purpose was to describe strategy of staffing a Phase 1 post-anesthetic care unit with a mix of RNs and licensed practical nurses. A finding was that misconceptions about scope of practice are a barrier to collaborative teamwork when introducing a new level of care provider.

4.	Grace, Rich, Chin, & Rodriguez (2014)	Qualitative descriptive study using 22 semi-structured interviews with healthcare professionals	Examined the facilitators and barriers to the implementation of a primary care team redesign intended to augment physician-medical assistant dyads by adding 2 new care team members – RN case managers and patient health coaches. Authors recognize that the integration of new team members into routine care is a complex social change that is challenging for all. Findings indicate that clear understanding of each team member’s roles and responsibilities, and leaders who can adapt to membership, helps to provide better patient care overall.
5.	Mulkins, Eng, & Verhoef (2005)	Qualitative descriptive study with 16 interviews	Purpose was to assess what factors the Tzu Chi Institute practitioners identified as supports and barriers to providing care within an integrative healthcare setting. There were many part-time workers in this setting so it was uncommon for everyone to work together. To ensure patient care was uninterrupted, it was important to have effective communication tools, personal attributes that fit with the team, satisfactory compensation, and supportive organizational structure. Team members must also be open to change, open to new ideas, and continual learning.
6.	Piquette, Reeves, & Leblanc (2009)	Qualitative study with 25 interviews	Purpose was to investigate the perceptions of ICU healthcare professionals about how acute medical crises affects their team interactions. ICU teams are constantly changing, and this is recognized as a problem for team functioning. Physician membership is more dynamic than nursing membership and physicians vary in terms of their motivation to work on team development and maintain team effectiveness. Findings indicate that nurses and physicians perceive post-crisis events differently, with nurses responding more emotionally than physicians. Authors recommend using a structured system for providing

			interprofessional feedback immediately after a crisis in order to facilitate learning and maintain health professional emotional well-being.
	7.	Rahn (2016)	Non-experimental descriptive survey design
			Purpose was to investigate relationship between nursing teamwork and nurse-sensitive quality indicators. Recognized that nursing team membership is transitory and there are frequent changes to team membership. Changing team membership hinders team membership and may be associated with poorer patient outcomes.
	8.	Simmons & Sherwood (2010)	Qualitative descriptive
			Purpose was to identify nurses' perceptions of working together on high-performance teams in a neonatal ICU and on trauma teams in the emergency department. Importance placed on developing and maintaining relationships among team members. Integrating new team members noted as an important aspect of developing and maintaining relationships but little description is given on how this is done or what the impact is when it's not being done effectively.
	9.	Wakeam, Hyder, Ashley, & Weissman (2014)	Case study series
			Purpose was to examine barriers and strategies for effective patient rescue. Staff discontinuity is a result of frequent rotation of staff members and is viewed as a problem for teamwork. This study focused more on changes in mid-level staffing like NPs and physician groups, as opposed to frontline staffing like nurses. Authors suggesting using three strategies to overcome barriers to patient rescue: (1) creating effective escalation mechanisms; (2) employing standardized postoperative protocols; and (3) redefining how failure-to-rescue is measured and tracked.
Secondary	10.	Andregard & Jangland (2015)	Systematic review of 26 qualitative studies using meta-
			Purpose of was to explore the obstacles to and opportunities for achieving optimal interprofessional team collaboration with the introduction of the nurse practitioner (NP). Introduction of NP



		ethnographic approach.	resulted in perceived threats to professional boundaries (lack of role clarity); lack of trust or respect from NP toward existing nurses; and nurses felt skills/knowledge would not be used to full potential. NPs eventually became resource for nurses once they were no longer a threat and communication was enhanced. Findings were that new team members initially feel alone and lost, and this is reinforced by a lack of role clarity. Authors recommend that employers create conditions to support new members and that nurses and new members need to be cognizant of common goal of providing best patient care.
11.	Courtenay, Nancarrow, & Dawson (2013)	Scoping review including 24 articles	Purpose was to identify the extent and nature of the literature on interprofessional teamwork in the trauma setting. One of the findings was that transient team membership to trauma team had negative effect on the team unless communication strategies were adapted to meet the needs of these transient team members and others. Dynamic team membership also affected adaptive capacity or ability to predict team member's needs. Statistic provided that a change in 1 team member leads to a 7-minute increase in procedure time in the operating room.
12.	McKeon, Oswaks, & Cunningham (2006)	Literature review with unclear methods	Purpose was to better understand concepts from diverse fields of complexity science, high reliability organizations, and team training, and the challenges to integrating this knowledge into healthcare practice. When team membership is fluid, it is important that team members show a willingness to jump in when needed and accept help without fear of being perceived as weak. In relation to transient team members, authors note that team members who identify with each other, but do not routinely work together, demonstrate less error.

---

13.	O’Leary, Sehgal, Terrel, & Williams (2011)	Literature review	Purpose was to summarize the current understanding of teamwork, to describe interventions designed to improve teamwork, and to make practical recommendations for hospitals to assess and improve teamwork-related performance. Authors note that team membership in hospitals is ever-changing because of shifts and differing rotations. References Salas et al. (2005) and says that changing membership hinders teamwork.
14.	Qureshi & Dhaliwal (2016)	Analysis of literature reviews	Purpose was to analyze the literature on the major components of high performing teams (HPTs) in healthcare setting. One of the strengths of HPTs was the ties that people have to one another. One finding was that loose connections between team members is not as good as having close ties and being loyal to your team.

---

**Appendix E**

## Demographic Questionnaire

1. Gender:  Female  Male
2. Age: \_\_\_\_\_ years
3. Please indicate your highest level of education in nursing:  
 College diploma  University degree  Masters  Doctorate  
 Other (please explain):
4. What is your professional designation?  RPN  RN
5. How many years have you been nursing in total?  
 Less than 1 year  Greater than 1 year (please specify) \_\_\_\_\_ years
6. How many years have you worked on the Nursing Resource Team?  
 Less than 1 year  Greater than 1 year (please specify) \_\_\_\_\_ years
7. What is your current level of employment?  
 Full-time  Regular Part-time  Casual Part-time  
 Other (please explain):
8. What cluster of the Nursing Resource Team do you work in primarily?  
 Medical-surgical  Critical care  Women's health and pediatrics

## Appendix F

### Focus Group Recruitment E-mail Script Sent on Behalf of the Researcher by the Holder of the Participants' Contact Information

**Erin Eggleton, RN, BScN  
Masters of Science in Nursing Candidate  
Study Title:**

**Perceptions of Teamwork from Nursing Resource Team Nurses**

---

**Sample E-mail Subject line:** McMaster study about teamwork from the NRT nurse perspective.

Dear Nursing Resource Team nurses,

Erin Eggleton, a McMaster student, has contacted the Nursing Resource Team (NRT) of Hamilton Health Sciences (HHS) asking me to tell our NRT nurses about a study that she is conducting on teamwork in acute care. This research is part of her Master of Science in Nursing program at McMaster University. The following is a brief description of her study.

If you are interested in getting more information about taking part in Erin's study please read the brief description below and or **CONTACT ERIN EGGLETON DIRECTLY** by using her telephone number or McMaster email address. **Tel: 905-807-4561** or [eggletea@mcmaster.ca](mailto:eggletea@mcmaster.ca). The researcher will not tell me or anyone else at HHS who participated or not. Taking part or not taking part in this study will not affect your status or any services you receive here at HHS.

Erin is inviting you to take part in a 60-minute focus group (a group discussion made up of about 5 people) from the NRT at HHS and will take place at a convenient time and place. She will work out those details with you. Erin hopes to learn about your perceptions of teamwork, which will help her and the research community to better understand the characteristics of effective teamwork, specifically from the NRT nurse perspective.

Erin has explained that you can stop being in the study at any time during the focus group or not answer questions but still be in the focus group. She has asked me to attach a copy of her information letter to this email. That letter gives you full details about her study.

In addition, this study has been reviewed and cleared by the Hamilton Integrated Research Ethics Board (HiREB). If you have questions or concerns about your rights as a participant or about the way the study is being conducted you may contact:

Office of the Chair  
Hamilton Integrated Research Ethics Board  
Telephone: (905) 521-2100 ext. 42013

Sincerely,  
Marie Reynolds  
Manager, Nursing Resource Team  
Hamilton Health Sciences (HHS)

## Appendix G

### P-Set Recruitment E-mail Script Sent on Behalf of the Researcher by the Holder of the Participants' Contact Information

**Erin Eggleton, RN, BScN  
Master of Science in Nursing Candidate**

**Study Title:  
Perceptions of Teamwork from Nursing Resource Team Nurses**

---

**Sample E-mail Subject line:** McMaster study about teamwork from the NRT nurse perspective.

Dear Nursing Resource Team nurses,

Erin Eggleton, a McMaster student, has contacted the Nursing Resource Team (NRT) of Hamilton Health Sciences (HHS) asking me to tell our NRT nurses about a study that she is conducting on teamwork in acute care. This research is part of her Master of Science in Nursing program at McMaster University. The following is a brief description of her study.

If you are interested in getting more information about taking part in Erin's study please read the brief description below and/or **CONTACT ERIN EGGLETON DIRECTLY** by using her telephone number or McMaster email address. **Tel: 905-807-4561** or [eggletea@mcmaster.ca](mailto:eggletea@mcmaster.ca). The researcher will not tell me or anyone else at HHS who participated or not. Taking part or not taking part in this study will not affect your status or any services you receive here at HHS.

Erin is inviting you to take part in a 60-minute session where you will be asked to rank a series of pre-determined statements about teamwork on a scale. The location of this session will take place at a convenient time and place for you. Erin hopes to learn about your perceptions of teamwork, which will help her and the research community to better understand the characteristics of effective teamwork, specifically from the NRT nurse perspective.

Erin has explained that you can stop being in the study at any time during the session. She has asked me to attach a copy of her information letter to this email. That letter gives you full details about her study.

In addition, this study has been reviewed and cleared by the Hamilton Integrated Research Ethics Board (HiREB). If you have questions or concerns about your rights as a participant or about the way the study is being conducted you may contact:

Office of the Chair  
Hamilton Integrated Research Ethics Board  
Telephone: (905) 521-2100 ext. 42013

Sincerely,  
Marie Reynolds  
Manager, Nursing Resource Team  
Hamilton Health Sciences (HHS)

## Appendix H

### Consent Form for Focus Group and One-on-One Interview



#### LETTER OF INFORMATION and CONSENT

Inspiring Innovation and Discovery

#### A STUDY ABOUT PERCEPTIONS OF TEAMWORK FROM NURSING RESOURCE TEAM NURSES (PHASE I)

**Local Principal Investigator:**

Dr. Andrea Baumann  
Nursing Health Services Research Unit  
McMaster University  
Hamilton, Ontario, Canada  
(905) 525-9140 ext. 26631  
E-mail: baumanna@mcmaster.ca

**Student Investigator:**

Erin Eggleton  
School of Nursing, Faculty of Health Sciences  
McMaster University  
Hamilton, Ontario, Canada  
(905) 807-4561  
E-mail: eggletea@mcmaster.ca

Dear Nursing Resource Team nurse:

You are invited to take part in this study on perceptions of teamwork from the Nursing Resource Team (NRT) perspective because you are a member of the NRT in a nursing role.

**Purpose of the Study:**

The purpose of this research study is to identify NRT nurses' perceptions of teamwork. I am also doing this research for my thesis, which is part of my degree requirements for a Master of Science in Nursing degree at McMaster University.

**What will happen during the study?**

We will ask you to participate in a focus group discussion and to provide at least five statements about teamwork. You will be asked a series of open-ended questions of which there are no right or wrong answers. The whole process will take about one hour. Approximately five NRT nurses will be included in the focus group.

**Are there any risks to doing this study?**

It is not likely that there will be any harm or discomfort associated with the focus group. There will be no medicines to take and no experimental treatments to undergo. I will also be taking measures (described below) to protect your privacy.

**Are there any benefits to doing this study?**

The research will not benefit you directly. I hope to learn more about the teamwork as a result of this study and to better understand the unique perspectives that NRT nurses bring to teams.

**Are any costs or payments involved?**

It does not cost you anything to participate in this study. Fifty (50) dollars will be given to you for participating.

**How will information about me be kept private?**

No personal identification is recorded. I will keep all files in a locked cabinet or in a password protected computer file in a secure location. Only myself and my thesis committee members will be able to access your information. No one who reads or hears about this study will be able to identify you. No information that might identify you will appear when we present this study or publish its results.

**What if I change my mind about being in the study?**

Your participation in this study is voluntary. If you decide to be part of the study, you may withdraw from the study at any time, even after signing the consent form or part-way through the study or up until approximately **January 31, 2018**, when I expect to be submitting my thesis.

If you decide to withdraw, there will be no consequences to you. You must contact me either by phone or by e-mail in order to withdraw from the study. In cases of withdrawal, any data you have provided will be destroyed unless you indicate otherwise. You will receive a copy of the consent form to keep for your records.

**How do I find out the results of this study?**

I expect to have this study completed by approximately January of 2018. If you would like a brief summary of the results, please let me know how you would like it sent to you.

**Questions about the Study:**

If you have questions or need more information, please contact me at:

<p><b>Erin Eggleton</b> <b>eggletea@mcmaster.ca</b> <b>905-807-4561</b></p>
---

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HiREB) and received ethics approval. The HiREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please call the Office of the Chair, HiREB, at (905) 521-2100 x 42013.

---

**PERCEPTIONS OF TEAMWORK STUDY CONSENT FORM**

**Student Principal Investigator:** Erin Eggleton, RN, BScN, MScN(c)  
School of Nursing, Faculty of Health Sciences  
McMaster University

- I have read the information presented in the information letter about a study being conducted by Erin Eggleton, Student Principal Investigator, of McMaster University.
- I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.
- I understand that if I agree to participate in this study, I may withdraw from the study at any time or up until approximately January 31, 2018.
- I will be given a signed copy of this consent form.
- I agree to participate in the study.

\_\_\_\_\_  
Participant Name (Printed)                      Participant Signature                      Date

**I would like to receive a summary of the study’s results:**     Yes     No

**If yes, please indicate where you would like the results sent:**

E-mail: \_\_\_\_\_

Mailing address:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I explained the process of consent in-person. The prospective participant read this form, was given the chance to ask questions, appeared to accept the answers and signed to enrol in this study.

\_\_\_\_\_  
Person Obtaining Consent                      Signature                      Date  
(Name and Role, Printed)



## Appendix I

### Focus Group Interview Question Guide

1. I would like to take a few moments for each of you to tell me your name, your role (RN/RPN), a little bit about your professional experience and what NRT cluster you work in.
2. What is your experience working on teams? What types of teams do you work on? How many teams do you work with?
3. Please tell me about your understanding of teamwork from the NRT nurse perspective.  
*(Probe: definition of a team; types of team; is NRT a team?; What roles do you play as a team member? What constitutes a team from your point of view?)*
4. As a NRT nurse, you enter into a different team every shift. What is your experience entering into a team and being the “new” team member?  
*(Probe: What has been a positive experience? What made it positive? Did you do anything to make the experience positive? What has been a negative experience? What made it negative? Did you do anything to help overcome the negative experience? If you are more experienced as a nurse or as a member of NRT, how do you think your experience has an impact on teamwork?)*
5. How many times do you go in to a team and work as an individual versus being incorporated into the team?  
*(Probe: What contributes to working as an individual versus being incorporated as a team member?)*
6. Sometimes you may work with other NRT nurses on the same unit. How is your experience of teamwork the same or different when another NRT nurse is present? Please explain  
*(Probe: Do you feel more like a team when another NRT nurse is around? Does it even matter? Do you and the other NRT nurse(s) work as a team separately from or within the unit team?)*
7. How much time do you think it takes to become a fully functioning team member? How is this time frame different or the same for a NRT nurse?  
*(Probe: Does this transition occur over the course of a shift? Several shifts on the same unit? Several shifts on different units? Does your past experience affect this transition? Is there even a transition for you?)*
8. Describe some barriers and enablers to effective teamwork.

*(Probe: How were these barriers overcome? How were the enablers implemented?)*

9. Think about a positive experience about being a NRT nurse on a team. What made it positive or rewarding? What did you do to make it positive or rewarding?
10. Think about a negative experience about being a NRT nurse on a team. What made it negative or frustrating? What would you do differently if you could go back and do it over?
11. Please write down at least five (more is better) statements on a piece of paper that describes your perceptions of effective teamwork as a NRT nurse (including some of the barriers and enablers discussed).

**Appendix J**

## Finalized Q-Sample (n=41)

No.	Statement	Category
1	As a NRT nurse, I always feel like the “new” team member.	Teamwork/ Being part of the team
2	I believe that NRT staff do not have enough opportunities to work together, which means that the NRT is not a high functioning team.	Teamwork/ Being part of the team
3	I am less likely to feel accountable for adverse events, such as a patient fall, when I do not trust my team members.	Accountability/ Professionalism
4	I need to have a clearly identifiable leader on the unit (e.g. charge nurse, manager, clinical leader, educator) in order to function as a member of the team.	Leader vs. Follower
5	I am comfortable bringing up safety and professionalism issues to the unit team.	Accountability/ Professionalism
6	I know that I am not the most knowledgeable person on a specialized unit, and therefore I do not want to step on anyone’s toes.	Experience/ Knowledge/ Skills/ Competency/ Judgment
7	I feel that building personal relationships with my NRT coworkers helps me to be a more resilient NRT nurse.	Survival/ Resiliency/ Adaptability
8	I think that NRT nurses can experience conflict, but it is in their best interests to resolve it because they are going to go back to that unit again.	Conflict/ Conflict resolution
9	I believe that NRT nurses follow hospital policies and procedures strictly.	Accountability/ Professionalism
10	I feel that being able to stay out of the “politics” on a ward is better for teamwork.	Conflict/ Conflict resolution
11	I believe that nurses who are carefully selected to work on a unit team will perform better than individuals who are not. For example, nurses hired to a specific unit perform better than NRT nurses.	Facilitation of teamwork/ Workload/ Asking for help

12	I need to be able to ask for help because this opens doors to better teamwork. If I don't ask for help, the other nurses on the unit may not include me in the team.	Facilitation of teamwork/ Workload/ Asking for help
13	It is important for me to have recent experience in the area of care that I am sent to work on in order to be a valuable team member.	Experience/ Knowledge/ Skills/ Competency/ Judgment
14	I feel that my ability to function as a team member is affected by the existing relationships of the unit or team I am assigned to work on.	Relationships
15	I feel that NRT and unit nurses share a common purpose at work, which is to provide safe and effective nursing care to our patients.	Job Expectations
16	I feel like NRT nurses are not as respected by the unit nurses as they should be.	Friendship/ Trust/ Respect/ Support/ Helpfulness/ Mentorship
17	I think that having confidence in your skills is a unique attribute to NRT nurses. Therefore, NRT nurses need to describe themselves, and communicate their strengths and weaknesses to the team they are assigned to.	Roles
18	I take on more of a leadership role on units that have a higher turnover of nurses.	Leader vs. Follower
19	I feel that NRT nurses need to have certain characteristics in order for the units to perceive me as a "good" team member. Some of these characteristics include "going with the flow", being easy-going, and being outgoing.	Personality
20	I feel that some units do not perceive NRT nurses as part of their team, and this is why we get the heavier patient assignments.	Facilitation of teamwork/ Workload/ Asking for help
21	I think that NRT nurses are able to identify gaps in team member roles and then fill that gap by taking on whatever role is needed the most.	Roles
22	I feel I should be able to do everything that the nurses on the unit do because I need to be able to function at the same, high-level, in order to reduce role confusion.	Roles
23	I think that having good relationships in a team is dependent on knowing the role of each team member rather than who each team member is.	Relationships
24	The type of unit and patient population is less important to me than the actual nurses	Relationships

	working on that unit.	
25	Teamwork requires people to respect each other's roles and skills.	Roles
26	Whoever I am making decisions with is considered to be a part of the team	Teamwork/ Being part of the team
27	You have to be humble to be able to get along with different personalities, especially as a floater.	Personality
28	I feel like the units assign us the patients who are chronic, have high needs, are a lot of work, and are challenging, in order to give their own unit staff a break.	Survival/ Resiliency/ Adaptability
29	I feel that NRT nurses require more time to complete patient assignments because we need to be more conscientious about patient safety and hospital policies.	Job Expectations
30	I need to prove my skills and knowledge to the staff on the units that I am assigned to until the staff get to know me.	Survival/ Resiliency/ Adaptability
31	I believe teamwork works best when NRT nurses' unique skills are recognized and utilized.	Facilitation of teamwork/ Workload/ Asking for help
32	My perception of the members of a team fluctuates based on who I work most closely with on a unit.	Teamwork/ Being part of the team
33	I easily adapt to the needs of the unit I am assigned to work on.	Roles
34	I think that NRT nurses have clear roles and responsibilities that all units need to understand and adhere to.	Roles
35	I feel that twelve hours is enough time to develop a professional relationship with my nursing colleagues.	Relationships
36	I think that NRT nurses are more likely to utilize the expertise of other members of the healthcare team as a resource because NRT nurses know who to go to.	Teamwork/ Being part of the team
37	I think that NRT nurses are excellent teachers and resources for a team because we have knowledge from across the hospital sites and can speak to a variety of topics.	Experience/ Knowledge/ Skills/ Competency/ Judgment
38	I take on more of a follower role on units that I perceive as being a high functioning team.	Leader vs. Follower

---

39	I feel that there is an innate sense of teamwork among NRT nurses who are working together on a unit: “I got your back, you’ve got mine” is implied.	Teamwork/ Being part of the team
40	I feel that NRT nurses should not be formal leaders on the unit because they are not as familiar with the unit routines as the regular staff.	Leader vs. Follower
41	It is important to have a senior team member from the unit that I am assigned to, who acts as a mentor and a resource for me.	Friendship/ Trust/ Respect/ Support/ Helpfulness/ Mentorship

---

## Appendix K

### Consent Form for Q-Sort



#### LETTER OF INFORMATION and CONSENT

#### A STUDY ABOUT PERCEPTIONS OF TEAMWORK FROM NURSING RESOURCE TEAM NURSES (PHASE 2)

**Local Principal Investigator:**

Dr. Andrea Baumann  
Nursing Health Services Research Unit  
McMaster University  
Hamilton, Ontario, Canada  
**(905) 525-9140 ext. 26631**  
E-mail: baumanna@mcmaster.ca

**Student Investigator:**

Erin Eggleton  
School of Nursing, Faculty of Health Sciences  
McMaster University  
Hamilton, Ontario, Canada  
**(905) 807-4561**  
E-mail: eggletea@mcmaster.ca

Dear Nursing Resource Team nurse:

You are invited to take part in this study on perceptions of teamwork from the Nursing Resource Team (NRT) perspective because you are a member of the NRT in a nursing role.

**Purpose of the Study:**

The purpose of this research study is to identify NRT nurses' perceptions of teamwork. I am also doing this research for my thesis, which is part of my degree requirements for a Master of Science in Nursing degree at McMaster University.

**What will happen during the study?**

You will be asked to rank a series of statements about teamwork, at a location of your choice (e.g. the hospital, McMaster University campus, or another quiet space). I will be present to facilitate this process and answer any of your questions. It will take you approximately 1 hour to finish the ranking, but you will be given as much time as you require. You will also be asked to complete a short demographic questionnaire, which will ask for information including your age, professional designation, experience as a nurse and with NRT, and education level. I will record the order in which you rank your statements as well as the completed demographic survey. The full study will include approximately 50 individual nurses from the NRT.

**Are there any risks to doing this study?**

It is not likely that there will be any harm or discomfort associated with ranking the statements or completing the survey. There will be no medicines to take and no experimental treatments to undergo. I will also be taking measures (described below) to protect your privacy.

**Are there any benefits to doing this study?**

The research will not benefit you directly. I hope to learn more about teamwork as a result of this study and to better understand the unique perspectives that NRT nurses bring to teams.

**Are any costs or payments involved?**

It does not cost you anything to participate in this study. A \$20 coffee card will be given to you for participating.

**How will information about me be kept private?**

No personal identification is recorded. I will keep all files in a locked cabinet or in a password protected computer file in a secure location. Only myself and my thesis committee members will be able to access your information. No one who reads or hears about this study will be able to identify you. No information that might identify you will appear when we present this study or publish its results.

**What if I change my mind about being in the study?**

Your participation in this study is voluntary. If you decide to be part of the study, you may withdraw from the study at any time, even after signing the consent form or part-way through the study or up until approximately **January 31, 2018**, when I expect to be submitting my thesis.

If you decide to withdraw, there will be no consequences to you. You must contact me either by phone or by e-mail in order to withdraw from the study. In cases of withdrawal, any data you have provided will be destroyed unless you indicate otherwise. You will receive a copy of the consent form to keep for your records.

**How do I find out the results of this study?**

I expect to have this study completed by approximately January of 2018. If you would like a brief summary of the results, please let me know how you would like it sent to you.

**Questions about the Study:**

If you have questions or need more information, please contact me at:

<p><b>Erin Eggleton</b> <b>eggletea@mcmaster.ca</b> <b>905-807-4561</b></p>
---

This study has been reviewed by the Hamilton Integrated Research Ethics Board (HiREB) and received ethics approval. The HiREB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please call the Office of the Chair, HiREB, at (905) 521-2100 x 42013.



**PERCEPTIONS OF TEAMWORK STUDY CONSENT FORM**

**Student Principal Investigator:** Erin Eggleton, RN, BScN, MScN(c)  
School of Nursing, Faculty of Health Sciences  
McMaster University

- I have read the information presented in the information letter about a study being conducted by Erin Eggleton, Student Principal Investigator, of McMaster University.
- I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.
- I understand that if I agree to participate in this study, I may withdraw from the study at any time or up until approximately January 31, 2018.
- I will be given a signed copy of this consent form.
- I agree to participate in the study.

\_\_\_\_\_  
Participant Name (Printed)

\_\_\_\_\_  
Participant Signature

\_\_\_\_\_  
Date

**I would like to receive a summary of the study’s results:**     Yes     No

**If yes, please indicate where you would like the results sent:**

E-mail: \_\_\_\_\_

Mailing address:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

I explained the process of consent in-person. The prospective participant read this form, was given the chance to ask questions, appeared to accept the answers and signed to enrol in this study.

\_\_\_\_\_  
Person Obtaining Consent  
(Name and Role, Printed)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Appendix L

### Ethics Approval



Hamilton Integrated Research Ethics Board

July 21 2017

**Project Number:** 3548

**Project Title:** Perceptions of Teamwork from Nursing Resource Team Nurses

**Student Principal Investigator:** Ms Erin Eggleton

**Local Principal Investigator:** Ms. Andrea Baumann

We have completed our review of your study and are please to issue our final approval. You may now begin your study.

The following documents have been approved on both ethical and scientific grounds:

Document Name	Document Date	Document Version
Demographic Survey V2, July 13, 2017	Jul-13-2017	2
Email Recruit Script -Holder of Partic Contact Info - Phase 1 Version 1 June 21, 2017	Jun-21-2017	1
Email Recruit Script -Holder of Partic Contact Info - Phase 2 Version 1 June 21, 2017	Jun-21-2017	1
Ethics Proposal_Erin_Eggleton_June 22_2017	Jun-22-2017	1
Focus Group Questions June 22, 2017 V1	Jun-22-2017	1
Letter of Information-Consent Form Focus Group Phase 1 -Ethics Proposal July 13,2017 V2	Jul-13-2017	2
Letter of Information-Consent Form Q-sort Phase 2-Ethics Proposal July 13,2017 V2	Jul-13-2017	2

Any changes to this study must be submitted with an Amendment Request Form before they can be implemented.

This approval is effective for 12 months from the date of this letter. Upon completion of your study please submit a **Study Completion Form**.

If you require more time to complete your study, you must request an extension in writing before this approval expires. Please submit an **Annual Review Form** with your request.

**PLEASE QUOTE THE ABOVE REFERENCED PROJECT NUMBER ON ALL FUTURE CORRESPONDENCE**

Good luck with your research,

Kristina Trim, PhD, RSW  
Chair, HiREB Student Research Committee  
McMaster University

The Hamilton Integrated Research Ethics Board (HiREB) represents the institutions of Hamilton Health Sciences, St. Joseph's Healthcare Hamilton, and the Faculty of Health Sciences at McMaster University and operates in compliance with and is constituted in accordance with the requirements of: The Tri-Council Policy Statement on Ethical Conduct of Research Involving Humans; The International Conference on Harmonization of Good Clinical Practices; Part C Division 5 of the Food and Drug Regulations of Health Canada, and the provisions of the Ontario Personal Health Information Protection Act 2004 and its applicable Regulations; for studies conducted at St. Joseph's Healthcare Hamilton, HiREB complies with the health ethics guide of the Catholic Alliance of Canada