

ASHTON, KATHLEEN S., Ph.D. *The Adaptation of New Registered Nurses*. (2012)
Directed by Dr. Susan Letvak. 157 pp.

New registered nurses report they experience work-related stress, multiple challenges, and negative emotional responses during their first year in practice. There are concerns for quality of health care, patient safety, and turnover in nursing when the demands placed on new registered nurses exceed their capacity to respond.

The purpose of this cross-sectional, correlational research study was to explore adaptation in new registered nurses. With the Roy Adaptation Model as the conceptual framework, personal attributes of new registered nurses and characteristics of their work environment were modeled as independent variables with four measures of adaptation: acute occupational fatigue, chronic occupational fatigue, negative affect, and intent to stay in their current position for two years. The New Registered Nurse Questionnaire was mailed to a random sample of 250 new registered nurses in North Carolina with a professional tenure of 52 weeks or less. Data from 88 new registered nurses were included for analyses.

Participants reported a mean acute occupational fatigue score of 64.88 (SD = 19.69) out of a possible zero to 100. The mean score for chronic occupational fatigue was lower at 41.86 (SD = 23.13) with a minimum-maximum of zero to 90. Of the eleven independent variables, only orientation status and perceived adjustment were statistically significant in their relationship with chronic occupational fatigue. The same two variables, orientation status and perceived adjustment, were also statistically significant in their relationship to negative affect. The last research question explored intent to stay

in their current nursing position for two years. Nursing education at the baccalaureate level or higher and orientation status were statistically significant in their relationship with the response variable.

These findings support the concern that new registered nurses are experiencing a compromised adaptive response as they take on the practice of nursing. Our understanding of the personal responses of new registered nurses has had limited exploration and the results of this research study provide a unique contribution in this area.

THE ADAPTATION OF NEW REGISTERED NURSES

by

Kathleen S. Ashton

A Dissertation Submitted to
the Faculty of The Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Greensboro
2012

Approved by

Committee Chair

© 2012 Kathleen S. Ashton

This work is dedicated to my husband and children, my parents, and to new nurses.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of
The Graduate School at The University of North Carolina at Greensboro.

Committee Chair _____
Susan Letvak

Committee Members _____
Eileen Kohlenberg

Carolyn Blue

Michael Perko

Date of Acceptance by Committee

Date of Final Oral Examination

ACKNOWLEDGMENTS

No one accomplishes this level of work by themselves and it is important to recognize and thank all who helped move this research study from a rough idea to an actuality. Thomas Aquinas believed God was the “First Mover” who calls everything, visible and invisible, into motion (Aquinas, 1265-1274, *Summa Theologica*, Part I-II). I couldn’t say it any more eloquently than Aquinas. Amen.

Dr. Susan Letvak, chair of my dissertation committee, encouraged, guided, and supported this work for the past three years. She’s been available and present through the many stages of this research study. Dr. Eileen Kohlenberg, Dr. Carolyn Blue, and Dr. Mike Perko agreed that this topic was important. I’m grateful for their advice, their questions, and their affirmation. Tom McCoy patiently taught, advised, and reviewed this work. His help was invaluable.

My family came with me on this journey. In big ways and small ways, they contributed to this work. There is no doubt that they kept it in motion with their encouragement and support.

TABLE OF CONTENTS

	Page
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER	
I. OVERVIEW	1
Knowledge Gaps	2
Inconsistent Terms	2
Wide Variability Regarding Time Spent in the Role of the Registered Nurse	3
New Nurses' Personal Response to the Challenges	5
Background and Significance	13
Background	13
Significance.....	16
Purpose	19
Conceptual Framework	19
Essential Concepts in the RAM	22
The Nursing Process According to the Roy Adaptation Model.....	29
Specific Aims and Research Questions	33
Specific Aim # 1	33
Specific Aim # 2	33
Operational Definitions.....	34
Assumptions.....	38
Summary	39
II. LITERATURE REVIEW	41
New Registered Nurses' Stressors	43
New Registered Nurses' Strain	51
Literature Based Responses to Work-Related Challenges.....	54
Fatigue.....	54
Affective Well-Being.....	58
Turnover Intent	61
Summary	62

III. METHODS	64
Design	64
Sample	64
Inclusion/Exclusion Criteria	66
Measurement Instruments and Study Variables	66
Demographics	67
Perceived Adjustment	68
Turnover Intent	71
Occupational Fatigue Exhaustion Recovery Scale	72
Job-related Affective Well-being Scale	77
Pilot Study	79
Human Subjects' Protection	80
Procedures	80
Sample and Data Collection Procedures for the	
Full, Main Research Study	82
Human Subjects' Protection	82
Procedures	82
Data Analysis Plan	85
Management of the Data	85
Data Analysis for Specific Aims.....	91
Specific Aim # 1	91
Specific Aim # 2	92
Summary	95
IV. RESULTS	98
Management of the Data	99
Preliminary Examination of the Data	99
Missing Data	100
Reliability of the Instruments	100
Sample Demographics	101
Descriptive Statistics of the Instruments	106
Results for Research Questions	107
Specific Aim # 1	107
Specific Aim # 2	108
Summary	123
V. DISCUSSION	125
Interpretation of the Findings	125
Levels of Acute and Chronic Occupational Fatigue	125
Acute Occupational Fatigue	128

Chronic Occupational Fatigue	131
Negative Affect	137
Intent to Stay in the Current Nursing Position for Two Years	139
Implications for Nursing	142
Importance of Orientation	142
New Nurses Need More Than Clinical Education.....	144
Narrow the Education-Practice Gap	146
Current Study and the Roy Adaptation Model	147
Recommendations for Future Research	148
Strengths of the Study	151
Reflections on the Implications for New Registered Nurses	152
Limitations	154
Summary	155
REFERENCES	157

LIST OF TABLES

	Page
Table 1. Coding for Data Analysis	89
Table 2. Reliability Measurements for Instrument Subscales	101
Table 3. Demographic Statistics of Sample (N=88)	103
Table 4. Descriptive Statistics for Subscales and Intent to Stay in Current Position for Two Years	106
Table 5. Adjusted R ² and Overall Regression Tests for Any Significant Predictors of Acute Occupational Fatigue	111
Table 6. Adjusted R ² and Overall Regression Tests for Any Significant Predictors of Chronic Occupational Fatigue	114
Table 7. Multiple Regression Analysis of Acute Occupational Fatigue	115
Table 8. Multiple Regression Analysis of Chronic Occupational Fatigue	117
Table 9. Multiple Regression Analysis of Negative Affect	120
Table 10. Multiple Regression Analysis for New RNs' Intent to Stay in Their Current Position for Two Years	122

LIST OF FIGURES

	Page
Figure 1. Schematic Representation of Elements of RAM (Roy, 2009)	31
Figure 2. Schematic Representation of Research Study	32

CHAPTER I

OVERVIEW

What is it about the first few months in practice that causes so many new registered nurses to doubt themselves and their ability to be successful in the role of registered nurse? Obviously many nurses overcome the challenges that are common in the early months of professional nursing and go on to long careers as registered nurses. But anecdotally, when in conversation with other nurses, the topic of new graduate nurses often elicits a spontaneous recall of memories and sharing of personal experiences of being a new nurse. Many nurses remember a challenging situation with a patient, a medication error, or an eventful shift. Often, the recollection of these experiences includes an aspect of negativity or an unpleasant feeling, such as fear, or being unable to respond appropriately to an event because of inexperience or insufficient knowledge. Some experiences are indelibly etched in new nurses memories (Olson, 2009). Perhaps these events and the negative emotional reaction that accompanied them heightened some concern within the new nurse that their successful adaptation or their adjustment to the role of being a registered nurse was in jeopardy, and with that, their personal goal of being a nurse was also threatened.

A perusal of the current nursing literature today would indicate that new graduate nurses continue to experience many of the same challenges as their more experienced colleagues. The topic of new graduate nurses' assimilation into professional nursing practice in the United States (US) is extensively addressed in nursing journals. There is a plethora of articles written about new graduate nurses' learning needs or their strengths and weaknesses in the work environment, conveying a sense of the importance of the issue to nurse educators and administrators. Several qualitative and quantitative studies provide some insight into the experience of being a new registered nurse, but little is known about the new nurses' personal and professional adaptation. There are aspects of this experience that have broad implications for the nursing profession and very likely consequences for the new nurses themselves, compelling the need for further inquiry into the adaptation of new registered nurses.

Knowledge Gaps

Inconsistent Terms

It must be acknowledged at this point that there is little consensus in the nursing literature regarding the terms used to describe a nurse in the US who has recently graduated from a nursing education program, passed a state licensing examination, and who has started to work in the role of a registered nurse. Several names are used in the nursing literature to describe the new nurse. Using the term "new graduate nurse" as a search strategy in the Cumulative Index for Nursing and Allied Health Literature (CINAHL) returns hundreds of articles about: the "new graduate nurse" (Berkow, Virkstis, Stewart, & Conway, 2008; Kelly & Courts, 2007; Kramer, Brewer, & Maguire,

2011; Scott, Engelke, & Swanson, 2008); “graduate nurse” (Casey, Fink, Krugman, & Propst, 2004; Fink, Krugman, Casey, & Goode, 2008; Zinsmeister & Schafer, 2009); “new graduate registered nurses” (Kowalski & Cross, 2010); “new registered nurse” (Deppoliti, 2008); “new nurse graduate” (Etheridge, 2007); and, “newly licensed registered nurse” (NLRN) (Kovner et al., 2007; Unruh & Nooney, 2011). The phrase, “nurse residents” has been introduced in the nursing literature and is used to describe new graduate nurses who are participants in a transition support program (Clark & Springer, 2011). For the purposes of this paper, the terms “new graduate nurse”, “new registered nurse”, and “newly licensed registered nurse” will all be used in the review of the literature as the specific research study has applied the terms. Participants in this research study are referred to as new registered nurses (new RNs).

Wide Variability Regarding Time Spent in the Role of the Registered Nurse

The lack of consensus regarding the name used to identify new nurses brings up another problem. Time since licensure or graduation is not equivalent to time spent working as a registered nurse. These distinctions are blurred in current publications. Some researchers sought participants who received their initial nursing license within the previous 18 months (Kovner, et al., 2007). How long the participants in the study worked as a nurse is not clear. In another study, researchers obtained contact information about nurses who were newly licensed in 2006, but at the time the surveys were returned, the nurses in this study had 20-30 months of work experience (Unruh & Nooney, 2011). Other researchers’ collected data from nurses in the work setting and time since licensure was less important than the nurses’ status as new in the role of the registered nurse

(Casey, et al., 2004; Kramer, et al., 2011). Still others included nurses within three years of graduation from nursing school (Deppoliti, 2008).

The term professional tenure has recently emerged in the literature (Unruh & Nooney, 2011). Although they didn't define the term "professional tenure" explicitly, Unruh and Nooney (2011) seem to use "professional tenure" to describe the length of time the new registered nurse has been working in the clinical setting as a registered nurse. This important attribute of the new registered nurse, the amount of time spent in clinical practice as a registered nurse, is quite variable in the nursing journals, and maybe of greater consequence for understanding the experiences of these individuals. In recent years, new nurses have experienced a longer wait between licensure and employment (Hirsch, 2011). While it is not clear when the newly licensed nurses in Hirsch's (2011) study began their search for employment in nursing, nor at what point they were licensed, nearly a third of the participants indicated that their job search lasted from four to 12 months. Quantifying time since graduation or licensure is important to know about new nurses, as it may inform questions about economics or trends in the nursing workforce. However, details of time since licensure and graduation are less important in understanding the new registered nurses' experiences or their professional development than identifying the point at which those experiences begin. Nurses with six months of work experience may have different responses to a researcher than a nurse who graduated or received their nursing license six months prior to participating in a research study.

Exploring this concern of professional tenure highlights the problem. Current literature about new registered nurses describes a professional tenure that ranges from

eight days (Clark & Springer, 2011) to three years (Simons & Mawn, 2010). Nurses with less than six months in practice were the focus of several studies (Burger et al., 2010; Clark & Springer, 2011; Myers et al., 2010). Other researchers' new nurse participants had less than or equal to less than 12 months in practice (Casey, et al., 2004; Dyess & Sherman, 2009; Kramer, et al., 2011; Linder, 2009; Zinsmeister & Schafer, 2009). Still others queried new nurses with a range of six to 18 months in practice (Halfer & Graf, 2006; Schoessler & Waldo, 2006). A cut point at which new nurses are not considered new does not seem to exist, and while such a discrete point may not be advisable, it is difficult to generalize findings from even the most rigorously designed studies when participants' professional nursing experience ranged from days to three years. Nursing science would benefit from a more consistent and focused approach to research regarding new professionals than currently exists.

New Nurses' Personal Response to the Challenges

However limited our understanding of this time in the life of a new graduate nurse is, there is sufficient evidence to claim that new graduate nurses experience multiple challenges and high levels of stress through the first year in nursing practice when expectations for their performance exceed their knowledge and skill level. Further, new graduate nurses experience a variety of negative emotional responses as they take on the practice of nursing, including: disappointment, disillusionment, anxiety, fear, and self-doubt (Casey, et al., 2004; Dyess & Sherman, 2009; Halfer & Graf, 2006; Myers, et al., 2010; Olson, 2009; Schoessler & Waldo, 2006). These negative emotional states have been peripherally discussed in nursing publications, but not since Kramer's (1974)

Reality Shock, have they been a more central focus of the study. For example, a team of researchers explored how nurses with varying levels of experience organized their work and responded to patients' needs, and noted that the newest nurses in the group reported feeling nervous, stressed, and "just hysterical" (Burger, et al., 2010, p. 507).

New nurses have reported feeling confused by information that is vague and conflicts or contradicts prior information they have received (Dyess & Sherman, 2009). They experience frustration at the amount of time they need to find information (Casey, et al., 2004; Clark & Springer, 2011; Dyess & Sherman, 2009; Myers, et al., 2010). Co-workers and preceptors are not always helpful (Clark & Springer, 2011; Dyess & Sherman, 2009; Schumacher, 2007). New nurses have commented that they feel "alone" and isolated (Dyess & Sherman, 2009, p. 407). And yet, they are expected to make prompt decisions and act appropriately (Clark & Springer, 2011; Dyess & Sherman, 2009). New nurses fear they will harm a patient by what they do not know (Clark & Springer, 2011; Dyess & Sherman, 2009; Myers, et al., 2010; Olson, 2009; Pinchera, 2012). Schoessler and Waldo's (2006) publication about new nurses contains a host of descriptors about new graduate nurses' experiences with negative connotations, including: tumult, loss, stress, and anger.

It is important to consider that new graduate nurses perceive high levels of work related stress for at least 12 months (Fink, et al., 2008; Kramer, et al., 2011). The increased stress that lasts for many months is worrisome in that there may be consequences for those involved. What has not been explored is whether or not these experiences and events affect new nurses personally, and what if any implications there

are for the developing professional. Scott, Engelke, and Swanson (2008) agreed with this observation. It is possible that there may be physical, emotional, or cognitive repercussions when an individual is repeatedly exposed to situations that tax their ability to respond appropriately. This is a gap in our understanding of the new RNs' personal and professional adaptation, and as such, it is a much needed area of nursing research.

There are important and timely reasons why the topic of the new graduate nurses' concerns should be addressed by the nursing profession, including a looming nursing shortage, a call for an active nursing presence in health care reform, and the relationship between nursing and safety and quality in health care delivery. In addition, there are sufficient numbers of new nurses to warrant inquiry into the personal response of the new graduate nurse to the concerns reported in the nursing literature. In the United States, between 2004 and 2008, it is estimated that 444, 668 new nurses received their initial nursing license (U.S. Dept. of Health & Human Services, 2010).

The term "preparation-practice gap" has been used to describe the concern that new graduate nurses are not well prepared to take on the role and the work of the registered nurse, and this "gap" has been the focus of many nurse researchers' attention (Berkow, et al., 2008). New nurses have remarked that they feel unprepared for their work (Benner, Sutphen, Leonard, & Day, 2010; Berkow, et al., 2008; Casey, et al., 2004; Clark & Springer, 2011; Etheridge, 2007) and nurse managers and administrators agreed (Berkow, et al., 2008; Oermann, Poole-Dawkins, Alvarez, Foster, & O'Sullivan, 2010). One idea to assist new nurses, employer based, post-licensure programs of support, has proliferated in the United States over the past decade. In fact, The Committee on the

Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine, recommends that all new graduate nurses participate in a transition support program (Institute of Medicine (U.S.), Robert Wood Johnson Foundation, & National Academy of Sciences (U.S.), 2010). Current transition support programs vary widely in curriculum, length, and how they are operationalized. Aspects of the nurse residency curriculum, such as the discussion of experiences among the group, reassure new nurses that others share their concerns and fears (Casey, et al., 2004; Fink, et al., 2008; Kowalski & Cross, 2010). The finding that social support among new nurses reduces their sense of isolation and reassures them that feeling unprepared, worried, or fearful is “normal” or prevalent within the group, highlights the need to explore this phenomenon. That new nurses feel unprepared and others corroborate this, and that recommendations for supporting new nurses are issued from influential stakeholders outside the nursing profession further support the need to learn more about this phenomenon.

Despite the growth of formal programs of support, new graduate nurses continue to report a level of discomfort that may be better described as distress during the first year in practice. From moderate to severe anxiety and crying to altered sleep routines, new nurses report physical and emotional responses that they say are related to the work environment (Burger, et al., 2010; Etheridge, 2007; Olson, 2009; Pellico, Brewer, & Kovner, 2009; Schoessler & Waldo, 2006). From understanding why this is, to tailoring support effectively or ultimately to narrowing the gap between preparation and practice, it is imperative that nurse researchers learn more about how one is affected, personally and professionally in the experience of being a new registered nurse.

It is reasonable to expect personal and professional consequences do occur in response to persistent challenges in the work environment. On some level, the challenges are perceived as threatening, especially in the earliest months of work (Kowalski & Cross, 2010). Schoessler and Waldo (2006) remarked that “The first year in practice tests the new nurses’ vision of themselves and their practice” (From Novice to Competent Nurse, para. 2). Unprepared, lacking confidence and fearful of harming someone, challenged, threatened, and tested; who could doubt that new graduate nurses are deeply affected by their experiences? Further, integrating the identity of a professional nurse within one’s self is a dramatic transformation of the self. Taking on the role of the registered nurse involves a re-conceptualization of the self and a desired goal of the individual; to become a registered nurse. Perhaps the experiences new registered nurses encounter cause them to question their ability to be successful in this transformation, and thus the challenges, threats, and tests undermine their confidence about the outcome and raise the fear of failure in this endeavor. This concern is found in the comment of a new graduate nurse; “...I wasn’t quite sure I’d be able to succeed as a nurse...” (Zinsmeister & Schafer, 2009, p. 31). Working towards a successful assimilation and overcoming challenges and limitations then requires a comprehensive giving of oneself to the task of learning to be a registered nurse. Successful adaptation to the role of the registered nurse is a transformation to a new way of being, requiring active participation, engagement, and energy expenditure. Schoessler and Waldo (2006) commented that new graduate nurses need energy and courage during their transition

from student to registered nurse. Delving more deeply into this process is an appropriate and important topic for nursing research.

Occupational Fatigue. New registered nurses may be developing occupational fatigue as they take on the knowledge, attitude, and skills of the registered nurse. Conceptually fatigue is a complex, multi-dimensional concept that is not easily defined (Aaronson et al., 1999; Barker & Nussbaum, 2011; Pasupathy & Barker, 2011; Winwood, Winefield, Dawson, & Lushington, 2005). Occupational fatigue, a notable dimension in the more global concept of fatigue, has been defined as a response in work situations where performance demands exceed capacity (Pasupathy & Barker, 2011). Thus, fatigue is related to work stress (Aaronson, Pallikkathayil, & Crighton, 2003; Barker & Nussbaum, 2011; De Vries, Michielsen, & Van Heck, 2003; Pasupathy & Barker, 2011; Winwood, Lushington, & Winefield, 2006; Winwood, et al., 2005). Occupational fatigue may be physical, mental, or global; acute, or chronic (Aaronson, et al., 1999; Barker & Nussbaum, 2011; Pasupathy & Barker, 2011; Winwood, Lushington, et al., 2006). Acute occupational fatigue is related to the psychological demands of work (Winwood & Lushington, 2006). Acute occupational fatigue may impact performance while chronic occupational fatigue may weaken commitment (Winwood, Lushington, et al., 2006). However, untangling the different dimensions of fatigue is difficult and it seems reasonable to assume that fatigue, whether physical or emotional, acute or chronic, is performance affecting.

Acute and chronic occupational fatigue. Inquiring about new registered nurses' occupational fatigue as a response to the multiple, simultaneous stressors they experience

with occupational fatigue is important. Recently, fatigue in health care professionals has come under scrutiny for its potentially deleterious effects on patient safety and quality of care. The Joint Commission (2011) issued a Sentinel Event Alert on the topic of fatigue. The Committee on the Work Environment for Nurses and Patient Safety at the Institute of Medicine identified a link between fatigue in nurses and patient safety (Committee on the Work Environment for Nurses and Patient Safety, 2004). The Agency for Healthcare Research and Quality also recognized that safety and fatigue in nurses were unavoidably linked (Mason, 2008). Olson (2009) noted that new RNs reported “physical and mental fatigue” (Out of the Blue, para. 1). Currently, this interest in nurses’ fatigue and patient safety relates to acute occupational fatigue and little difference is ascribed to the impact of chronic occupational fatigue on performance. If acute occupational fatigue is unresolved with adequate rest and relief from stressors, Winwood and colleagues (2006) assert that chronic occupational fatigue will result and with it, commitment, interest, and motivation will decline. Both dimensions of fatigue are relevant and important topics. Additionally, negative emotions accompany chronic occupational fatigue (Winwood, Lushington, et al., 2006). Whether or not occupational fatigue has any impact on turnover and retention of new graduate nurses is an area of much needed study in nursing research.

Negative Emotions and Affect. If new graduate nurses are experiencing occupational fatigue in their response to environmental stimuli, then it seems reasonable that this is not happening in isolation of other responses. Winwood, Lushington, and Winefield (2006) link chronic occupational fatigue and negative emotions. New nurses’

emotional responses of fear, worry, isolation, inadequacy, anxiety, and strain in the role are undoubtedly negative and are conservatively, unpleasant to experience. Kovner et al. (2007) expressed concern with the number of newly licensed nurses in their sample who reported “negative attitudes” (p. 69). What is not known at this point is the degree to which new RNs experience these emotions or if there is a predictable pattern that is related to events that commonly occur during the first year in nursing practice.

New nurses may be experiencing negative affect. Affect is a more general state of mind that influences emotional reactions (Fredrickson, 2001; Russell & Feldman Barrett, 1999). Affect is believed to be less complex than an emotion and is a precursor for an emotional response (Reevy, 2010). Emotions and affect have implications for an individual’s sense of well-being, their willingness to be actively engaged with their environment, and their capacity to cope with challenges and difficulty (Fredrickson, 2001). The consequences of a negative affect and emotional responses at work are innumerable, and none of them are easily dismissed, but one of the more important to understand may be employee turnover.

Turnover in Nursing. Turnover among new nurses has been poorly tracked. While some turnover among employees is natural and expected, there is also turnover that is unsettling to co-workers, raises issues of safety and quality, and needlessly distracts human and financial resources. Intent to stay is one aspect of turnover that is significantly related to satisfaction and commitment to the organization (Brewer, Kovner, Greene, Tukov-Shuser, & Djukic, 2011). Jones (2008) estimated the cost of replacing one nurse was between \$82,000 and \$88,000 and the higher costs were

associated with meeting the educational needs of new nurses compared with their more experienced colleagues who likely require fewer resources in their new role. But there are other costs of nursing turnover that are not so easily quantified. Vacancies among nursing staff sometimes lead to the need to pay premium wages for agency – assigned staff nurses or closed beds which could mean a loss of revenue for institutions (Jones, 2008). Staffing shortages impact other nurses, and may be responsible for causing fatigue in other nurses (Jones, 2008). Capturing the hidden costs of turnover on nurses and patients is not easily accounted for (Jones, 2008).

Background and Significance

Background

Nearly 40 years ago, Marlene Kramer wrote a startling account of new graduate nurses' experiences as they began their professional nursing careers. Her book, *Reality Shock: Why Nurses Leave Nursing* (Kramer, 1974) described the negative emotional states new nurses developed as they assumed the role and work of the registered nurse. Kramer (1974) described a “shock” state that new nurses developed in response to the realities of the work environment. Not only did they feel inadequately prepared for the work of the professional nurse, they also experienced ethical conflicts when demands on their time prevented them from providing the level of care they were taught was appropriate for the professional nurse (Kramer, 1974). Expecting meaningful work in the service of others, new nurses were often disappointed by others' expectations for their performance, inefficient systems, and existing social and power structures. Kramer (1974) considered “excessive fatigue” as a likely “physical response” to the rejection

phase of reality shock (p. 7). The use of the word “shock” to describe the new nurses’ reaction to their perception of the realities of their work situation is both accurate and troubling. Nurses understand that when patients are in shock, it is a critical event that requires prompt intervention to limit further deterioration and undesirable consequences. Despite this widely acclaimed and uncontested research study, reality shock in new nurses has received limited attention from nursing leaders, and our understanding of the experience of new graduate nurses taking on the practice of nursing is incomplete.

During the 1980s, Patricia Benner (1982, 2001) first published the results of her qualitative study in which she described new graduate nurses as advanced beginners who require two to three years of familiarity in a setting to become competent nurses. Benner’s work remains a popular and widely used conceptualization of the journey to critical thinking required for professional practice, and is still used to guide research and support programs for new graduate nurses (Altier & Krsek, 2006; Burger, et al., 2010). Despite the popularity of *From Novice to Expert: Excellence and Power in Clinical Nursing Practice* (Benner, 2001) and the ease with which it was adopted as “the” way new nurses took on the practice, new graduate nurses were not and are not given two years of institutional support to achieve competence in nursing. Scott, Engelke, and Swanson (2008) reported that orientation programs for participants in their study lasted on average, 8.6 weeks. While two years of support may not be necessary, some researchers claim that assimilation into the role is not complete at 12 months in practice (Fink, et al., 2008; Schoessler & Waldo, 2006).

The challenges new nurses face as they take on the practice of nursing is not only a concern in the United States, but publications in nursing journals from many different countries indicate that the problem is international. Nurse researchers from Canada, Australia, Japan, China, Ireland, Norway, Denmark, and Sweden have sought to add to our understanding of this experience. More recently, a nurse researcher from Canada, Judy Boychuk Duchscher, expanded Kramer's "reality shock" to "transition shock" (2009). Duchscher (2009) describes the depth of the experience of the new graduate nurse that includes physical, social, intellectual, and emotional responses, all of which are unquestionably negative, including loss, isolation, altered sleep, and fear of failure. A counter argument could be made that some of the events that shape these negative emotions in new graduate nurses are developmental or social, such as finding one's place in an established group. In fact, Duchscher uses the word "developmental". If there were only a few challenges in an otherwise positive experience, there would be little need to explore the phenomenon with a research study. As it is, the cumulative effects of the experience are negative and the descriptor "shock" is accurate for the new graduate nurses in Duchscher's studies.

The challenge for researchers may be in relating the findings of the international research to domestic issues. Cultural norms influence new nurses (Suzuki, Kanoya, Katsuki, & Sato, 2006). Assertiveness, a trait which may reduce burnout in nurses according to the authors, creates tension for new nurses in Japan because it conflicts with a perception of acceptable behaviors in Japanese society (Suzuki, et al., 2006). This one example of a cultural influence on the new nurse demonstrates the problem of

extending this discussion to the international literature. Any discussion of new nurses' challenges and concerns at the global level would be premature because the phenomenon and its related factors are so poorly understood. This is unfortunate because the benefits of an international, engaged, productive nursing workforce are unlimited. There is no lack of topics in health care which might be improved with attention from nurses.

Significance

Nursing's status as a true profession has been a topic of debate (Joel, 2003). Nursing has been found to be lacking in several criteria that have traditionally been used to identify a profession (Joel, 2003). The ongoing acceptance of multiple paths for entry to practice and nurses' inability to self-direct and control nursing practice are examples of such barriers (Joel, 2003). Historically, experienced nurses have not attended to the needs of new nurses (Joel, 2003). However, this previous inattentiveness towards new nurses seems to be changing. In 2002, several nursing leaders began to plant the idea that new graduate nurses needed support as they begin work as a registered nurse (Williams, Goode, Krsek, Bednash, & Lynn, 2007). This commitment of experienced nurses to new RNs is long overdue. There is a need to engage the resources of the nursing profession, especially nurse researchers, to more fully understand the experiences, the challenges, and the opportunities to support new RNs. Demonstrating an interest in new graduate nurses' experiences is an authentic and credible expression of concern for the succession of the nursing profession and its continued relevance to society. On a national level, the expectation for the nursing profession's contribution to the health of society is changing

and the profession is at a critical intersection of opportunity, visibility, and leadership in the national conversation about health care reform.

The Call for a Transformation in the Nursing Profession. Up to this point, while nurses have been central figures in health care delivery, their collective wisdom and voice have been absent in discussions about health care (Institute of Medicine (U.S.), et al., 2010; Lavizzo-Mourey, 2010). Recognizing that their true potential has been untapped, nursing and non-nursing leaders have expressed confidence in professional nurses' capacity to respond to society's health care needs in non-traditional and unprecedented fashion (Institute of Medicine (U.S.), et al., 2010). Indeed, the collaborative effort between the Institute of Medicine and the Robert Wood Johnson Foundation, *The Future of Nursing: Leading Change, Advancing Health*, is a unique opportunity to convey the values of the nursing profession to the development of health care policy. However, professional nurses can only answer this call for leadership with an engaged, committed, and energetic workforce. If unresolved occupational chronic fatigue weakens commitment, as Winwood and colleagues (2006) have suggested, the nursing workforce may be unable to fully participate in health care reform.

Adequate Numbers of Nurses. Now that they have been invited to collaborate with other health care leaders in health care reform, the nursing profession must also ensure its members are able to meet the expectation for guidance, action, and presence. Although there is considerable debate about a nursing shortage, there is reason to be concerned that professional nurses will be limited in number, education, and ability to reach the settings where they are needed, such as long term care (American Association

of Colleges of Nursing, 2011). The demand for registered nurses will only increase owing to the confluence of the needs of an aging society and health care reform, while nurses in their 50s make up nearly 25% of the nursing workforce and look to retire (American Association of Colleges of Nursing, 2011). Compounding the problem are the co-existing problems of a shortage of primary care physicians and the influx of people presenting to the health care system because of the Affordable Care Act (Staiger, Auerbach, & Buerhaus, 2012).

The need for nurses is expected to outpace the number of graduating nursing students, creating a shortfall of more than 500,000 nurses by 2018 (American Association of Colleges of Nursing, 2011). More than 100,00 nurses are predicted to leave the workforce by 2015 as the national economy improves (Staiger, et al., 2012). The Robert Wood Johnson and Institute of Medicine agreed and expressed concern for a nursing shortage that will continue through 2030 (Institute of Medicine (U.S.), et al., 2010). Numbers of nurses are also lost in turnover, which may be related to perceptions of stress in the work environment (Kovner, et al., 2007). Turnover among new graduate nurses is poorly tracked, but the range has been reported to be between 10 and 55% (Kovner, et al., 2007; Scott, et al., 2008). Despite reassuring numbers of nurses from 2005-2010, there is a critical nursing shortage looming (Staiger, et al., 2012).

Nurses: Essential for Quality and Safety in Health Care. Finally, there is widespread agreement among nurses and non-nurses that safety and quality in health care requires an active nursing presence (Benner, et al., 2010; Institute of Medicine (U.S.), et al., 2010). Attending to safety and quality in health care may be one of the most

important duties of the professional nurse. The topic of safety and quality in all aspects of health care has been moved to a public conversation since the startling disclosure that between 44,000 and 98,000 Americans die each year as a result of medical errors (Committee on Quality of Healthcare in America, 2000). Whether providers or recipients of health care, all persons are stakeholders when it comes to safety and quality in health care. The nursing obligation to support safety and quality in health care is non-negotiable.

Purpose

The purpose of this research study was to explore the adaptation of new registered nurses. The outcome of this study provided a basis for a decision about the effectiveness of new registered nurses' adaptive responses to the experiences and events they encounter in the first year of practice. The concepts of occupational fatigue, job-related affective well-being, and turnover intent were amenable to measurement and serve as suitable proxies for adaptation.

Conceptual Framework

The Roy Adaptation Model (RAM) was the conceptual framework used to understand the adaptation of new registered nurses. Roy defined adaptation as the "the process and the outcome whereby thinking and feeling persons... use conscious awareness to create human and environmental integration" (Roy, 2009, p. 29). Nursing knowledge, skills, and values, are new concepts to nursing students and must be internalized or integrated within the person taking on the practice of nursing. This activity of incorporating and assimilating nursing knowledge as one moves from nursing

student to a competent registered nurse provides a useful image of the process of adaptation. Understanding new registered nurses' response to their experiences as they begin their professional nursing career is congruent with Roy's focus on adaptation. Further, the goal of nursing work is to "promote adaptation"(Roy, 2009, p. 28). Adaptation is not the same as health which Roy (2009) defines as a "process and a state of being integrated and whole" (p. 12). Adaptation then, seems to be a prerequisite for health.

The Roy Adaptation Model has been described as a conceptual model (Alligood & Tomey, 2010; DeSanto Madeya & Fawcett, 2009; Roy, 2009). While its description as conceptual indicates a level of abstractness, the RAM, nonetheless is quite popular and has been used to guide research, patient care, and curricula in nursing education (Alligood & Tomey, 2010; DeSanto Madeya & Fawcett, 2009). There are several reasons why the RAM is not only useful but quite appropriate for a study about new registered nurses. First, Roy's believes human beings are "whole", "unified", and "more than the sum of their parts" (Roy, 2009, p. 32). Roy's belief in holism is aligned with the traditional nursing understanding of the continuous, but intangible, invisible, and indivisible domains of the physical, emotional, spiritual, cognitive, and social domains of human beings. In the RAM, these domains translate to the adaptive modes. Roy (2009) comments frequently about the interrelatedness of these domains and the notion that a stimulus in one area has the potential to elicit a response in another area or adaptive mode.

Roy believes that human beings are in constant interaction with their environment and in turn, both people and their environment influence the other (Roy, 2009). In this constant interface with the environment that optimally leads to adaptation, human beings are capable of a range of responses which are diverse, complex, and include those that facilitate or interfere with adaptation or integration (Roy, 2009). This ability to respond to the environment in a wide array of positive and negative responses becomes the framework to begin an inquiry of how new registered nurses are interacting with and responding to their environment. The degree to which a human being's response to the environment facilitates or hinders adaptation is termed an adaptive response (Roy, 2009). For Roy, adaptive responses are either effective or not (Roy, 2009). Nurses assess the adaptive responses of an individual or group of people and intervene when adaptive responses are ineffective (Roy, 2009).

Professional nurses have a genuine, authentic interest in the assessment of human being's adaptation. Adaptation seems to be on a continuum with, and necessary for health. While it may be tempting to use the terms adaptation and health interchangeably, they are conceptually different in the RAM (Roy, 2009). Adaptation precedes health as integration precedes wholeness. The goals of adaptation are fundamentally necessary for health and are targeted towards: "survival, growth, reproduction, mastery, and human and environmental transformation" (Roy, 2009, p. 39). Adaptation allows individuals to transform their environment for a greater good, as Roy believes people have an innate desire for purpose, meaning, and relationship with others in their own lives (Roy, 2009) .

Finally, Roy believes that the most accurate assessment of another human being occurs when the nurse includes the other in the assessment (Roy, 2009). While she credits the professional nurse with knowledge and intuition to make informed assessments of environmental stimuli, Roy believes that people have a personal understanding of their situation that must be considered (Roy, 2009). This aspect of involving the other, the recipient of nursing attention, demonstrates the philosophic assumption of humanism, the deep respect for all people, and the human desire to be in meaningful relationships that is foundational in the RAM. Thus, a research study that takes into account the responses of the participants is philosophically and practically congruent within the RAM.

Essential Concepts in the RAM

Several concepts within the RAM are important enough to warrant attention and discussion, including: environment/stimuli, adaptation level, coping processes, behaviors, adaptive modes, and adaptive responses. The order of these concepts relates to their sequential appearance in the RAM, although it must be noted that these are not the same arrangement of the steps in the “nursing process according to the Roy Adaptation Model” (Roy, 2009, p. 56). Behavior and adaptive modes are two concepts in the RAM, which are notable because they are deeply intertwined and difficult to untangle. Roy (2009) posits that environment/stimuli plus adaptation level produce responses that are not directly observable in the coping processes, but are accessible by observation of behaviors in four adaptive modes (Roy, 2009). These behaviors in the adaptive modes elicit a judgment about the effectiveness of these adaptive responses in supporting the

integrity and adaptation of the “human system” (Roy, 2009, p. 39). There is a complex interplay between these concepts that requires thoughtful consideration to their positioning as independent or dependent variables in this research proposal.

Environment. In constant interaction with the environment, human beings *actively* respond to stimuli in the environment with a behavior (Roy, 2009). In its broadest sense, the environment is the world, with all of its multiple influences on a person or a group of people and can be internal or external (Roy, 2009). In a more narrow description, Roy describes the environment in terms of stimuli in three different dimensions: focal, residual, and contextual (Roy, 2009). Focal stimuli describe a singular stimulus that is “most present in consciousness” that commands the attention and the energy of the individual (Roy, 2009, p. 35). Contextual stimuli are the additional stimuli in the situation which do not command the individual’s attention, but affect how one responds to a focal stimuli (Roy, 2009). The residual stimuli are the remaining factors in the situation which also affect the response but their impact is unknown or unclear (Roy, 2009). Stimuli shift between each of these three dimensions (Roy, 2009). For Roy, the environment is a dynamic interchange between the internal and external, the physical and non-physical, the visible and the invisible, the past and the present.

Adaptation Level. Roy (2009) mentions adaptation level often enough that even the most casual reader of her writings understands it to be an important concept. However, adaptation level may also be one of the most difficult concepts to understand and operationalize. Adaptation level “describes the condition of the “life processes” which support the needs of the person in each of the four adaptive modes (Roy, 2009, p.

38). A preliminary discussion of the adaptive modes can facilitate understanding adaptation level. Roy (2009) describes the four adaptive modes as the venues where the responses (behaviors) of the coping processes are accessible. In each of these four adaptive modes, human beings have basic needs and life processes which support those needs (Roy, 2009). “Life processes” is a term that is not well defined in the RAM, but can be known by its description. For example, in the physical mode of the individual, people have five basic needs: oxygenation, nutrition, elimination, activity and rest, and protection (Roy, 2009). The life processes facilitate these needs. In the basic physical need for nutrition, the associated life processes are: ingestion, digestion, and metabolism (Roy, 2009). In the basic physical need for activity and rest, the life processes include mobility and sleep (Roy, 2009). Adaptation level then is the assessment of these life processes in supporting the basic need of a particular adaptive mode (Roy, 2009). Adaptation level can be integrative, compensatory, or compromised (Roy, 2009). Adaptation level influences how someone responds or copes with the focal stimuli and is itself a stimulus (Roy, 2009).

Adaptation levels are hierarchical and the integrated level is optimal, signifying that the many systems of the individual are operating satisfactorily to meet the needs of the person (Roy, 2009). When a focal stimulus presents a challenge to the human system, the adaptation level is considered to be compensatory, initiating the coping processes of the individual (Roy, 2009). The third adaptation level is compromised, indicating that coping processes are ineffective in maintaining a sense of unity and stability for the

individual (Roy, 2009). Like the shifting environmental stimuli, adaptation levels are dynamic and are themselves a stimulus (Roy, 2009).

Adaptation level has been neglected by many researchers who use the RAM (DeSanto Madeya & Fawcett, 2009). Researchers may be tempted to use adaptation level to describe overall adaptation. But Roy insists adaptation level is an internal stimuli (Roy, 2009). Therefore, while adaptation level is an assessment, to remain congruent within the RAM, it can only be placed as an independent variable in this or any other research proposal.

In this research study, adaptation level was measured using a strategy devised by DeSanto Madeya and Fawcett (2009) who developed a middle-range theory of adjustment level that could serve as a proxy for adaptation level. Adjustment and adaptation are different concepts, but adjustment “captures the essence of adaptation” making it useful to researchers (DeSanto Madeya & Fawcett, 2009, p. 357).

Coping Processes. Individuals’ coping processes are both “innate and acquired”, and are used to “respond to and influence the environment”(Roy, 2009, p. 41). Innate coping mechanisms are physiological and as such, are often beyond the control of the individual (Roy, 2009). Acquired coping mechanisms, on the other hand, are learned through experience or chosen consciously (Roy, 2009). Roy further categorized the innate and acquired coping processes which can be thought of as “subsystems”. The regulator subsystem seems most aligned with the innate coping processes and “neural, chemical, and endocrine” responses to stimuli (Roy, 2009, p. 41). The cognator subsystem is concerned with the coping processes of “four cognitive-emotional channels:

perception and information processing, learning, judgment, and emotion” (Roy, 2009, p. 41). Roy is clear that the coping processes of the regulator and cognator subsystems are not amenable to direct assessment (Roy, 2009). One can only make decisions about the effectiveness of the coping capacity of the individual by observing the responses, or behaviors that the individual demonstrates which are visible in the adaptive modes (Roy, 2009).

Behavior. Behavior(s) is the individual’s response to environmental stimuli (Roy, 2009). Roy (2009) more formally defines behavior as the “internal or external actions and reactions under specified circumstances” (Roy, 2009, p. 39). Behavior(s) may be measured, and may be observable or not (Roy, 2009). When behavior(s) is not observable, it may still be amenable to measurement, and this includes self-report (Roy, 2009). Behavior(s) provide a window to adaptation and allows for a judgment to be made; in that behavior(s) either effectively supports the integrity of the whole person, or not (Roy, 2009). Roy (2009) cautions against oversimplification of this concept, noting that human beings are complex, and behavior is never as “linear” or direct as a “single stimulus initiating a given response” (p. 31).

Adaptive Modes. The behaviors that reflect the integrity of the coping processes are found in the four adaptive modes, and each of these modes represents the needs of the human system (Roy, 2009). Further, these adaptive modes are open, and behaviors in one mode influence behaviors in another (Roy, 2009). Therefore, one can only learn an individual’s adaptation by observing behavior in four adaptive modes which provide information about the effectiveness of the coping processes (Roy, 2009). At the

individual level, the four adaptation modes are: physiological, self-concept, role function, and interdependence (Roy, 2009).

Behaviors associated with the physiological mode represent the individual's interaction with the environment in the functioning of the physical body (Roy, 2009). Roy has identified that observed behaviors in this category aim to meet the five needs and four complex processes required to maintain physiological integrity (Roy, 2009). Individuals' basic needs as it relates to their physical body are: "oxygenation, nutrition, elimination, activity and rest, and protection" (Roy, 2009, p. 43). In addition to these basic needs, "four complex processes" are at work to maintain and support the body: "the senses, fluid and electrolyte/acid base balance, neurological function, and endocrine function" (Roy, 2009, p. 43). A compromised level of adaptation in the physiological mode for a "prolonged" time, can negatively impact the individual (Roy, 2009).

Behaviors that relate to the self-concept adaptive mode reflect the need for "psychic or spiritual integrity", or "the need to know who one is so that one can be or exist with a sense of unity" (Roy, 2009, p. 44). The self-concept adaptive mode reflects an individual's perception of themselves and is influenced by others (Roy, 2009). Our self-concept is determined by several factors including our perceptions of our "physical self" ("sensation and body image") and our "personal self" ("self-consistency, self-ideal, and moral/ethical/spiritual self") (Roy, 2009, p. 44). The life processes of the self-concept adaptive mode are identified as the: "developing self, perceiving self, and the focusing self" (Roy, 2009, p. 325). A person's self-concept is influenced by maturation, personal reflection, a preference for wholeness, and the opinions of others (Roy, 2009).

Individuals have a need for “social integrity” in the role function mode (Roy, 2009, p. 358). People know how to act when they understand their position in relationship with other people (Roy, 2009). People have primary roles, but add secondary and tertiary roles (Roy, 2009). In the role function mode, as individuals add secondary roles, the life process is described as “role transition” (Roy, 2009, p. 365). The goal in this life process is the “effective” incorporation of behaviors that promote the successful taking on of the new role (Roy, 2009, p. 365). Role transition represents a compromised adaptation level (Roy, 2009). Role conflict and failure represent compromised adaptation levels (Roy, 2009).

The interdependence adaptive mode of the person is concerned with relational integrity or the need for security in relationships with others (Roy, 2009). Within this adaptive mode, Roy (2009) describes life processes of affectional and developmental adequacy. Affectional adequacy recognizes that people need to contribute to and receive from their relationships with others (Roy, 2009). People need to give and receive “love, respect, nurturing, knowledge, skills, commitment, time, talents, and material possessions” (Roy, 2009, p. 386). At various points in relationships with others, there are situations when one person needs to receive more before they are able to contribute to the other (Roy, 2009). While this appears to be an imbalance, this “developmental adequacy” may be thought of as a dependency on others that has more to do with “learning and maturation” (Roy, 2009, p. 389).

The interrelatedness of the adaptive modes is evident. A person’s self-concept is related to their physical being. Dependency on others as a function of a person’s

developmental state has implications for people physically and in their relationships. Relationships with others affect a person's self-concept. Pleasant or unpleasant events that produce a response in the self-concept or role function mode have the capacity to cause a response in the physical being. Roy's (2009) assertion that people are adaptive systems, whole, and unified, flows from the an understanding of the connectedness of the adaptive modes.

Adaptive Responses. Whether a response (behavior) is adaptive or not is a judgment call that seems to be at the nurses' discretion. Adaptive responses support wholeness and adaptation (Roy, 2009). Ineffective responses are also considered maladaptive and unless resolved, can provide a serious threat to the well-being and survival of the person (Roy, 2009). Nurses have the responsibility to decide whether behaviors or responses are adaptive or not, but this decision must be made in partnership with the "individual(s) involved" (Roy, 2009, p. 81).

The Nursing Process According to the Roy Adaptation Model

There are two points in the RAM that require a nurse to make a decision about how well adaptation is proceeding and both include the opinion of the "other" or the recipient of the nurses' attention. A "tentative judgment of behavior" is made after an assessment of behavior in the first step of Roy's nursing process" (Roy, 2009, p. 60). The terms used at this step to describe the behavior are: adaptive or ineffective (Roy, 2009, p. 61). Another nursing assessment happens when the adaptation level is determined to be integrated, compensatory, or compromised (Roy, 2009). This assessment occurs during the second step of the nursing process: the assessment of

stimuli (Roy, 2009). Nurses then form a nursing diagnosis that provides a professional interpretation of the data gathered in the first two steps of the nursing process (Roy, 2009). Cooperatively, the nurse and the recipient of nursing attention create goals that enhance adaptation (Roy, 2009). Nurses intervene by manipulating the environment to facilitate positive responses (Roy, 2009). Lastly, an evaluation of the effectiveness of the nursing intervention in facilitating adaptation is necessary (Roy, 2009). Either the nursing intervention was successful in promoting adaptation, or it wasn't, in which case the nursing process is repeated (Roy, 2009).

Roy's nursing process can be initially challenging to understand and apply, but in some ways, it is simple. A behavior (response) is observed and a judgment follows about whether that behavior is helpful or not in promoting adaptation. Adaptation is necessary for: "survival, growth, reproduction, mastery, and human and environment transformation" (Roy, 2009, p. 39). The environment is assessed for its influence on the behavior, these data are interpreted, mutual goals are established with stakeholders, and the nurse seeks to manipulate the environment to enhance adaptation. Finally, a judgment is made about how well the nursing intervention facilitated adaptation, and if necessary, the process is repeated. This research study was an assessment of behavior and several potential influences on that behavior within Roy's Adaptation Model. The outcome of this study is an interpretation of how well new registered nurses are adapting to their professional role, which corresponds to step three of Roy's nursing process.

Figure 1. Schematic Representation of Elements of RAM (Roy, 2009).

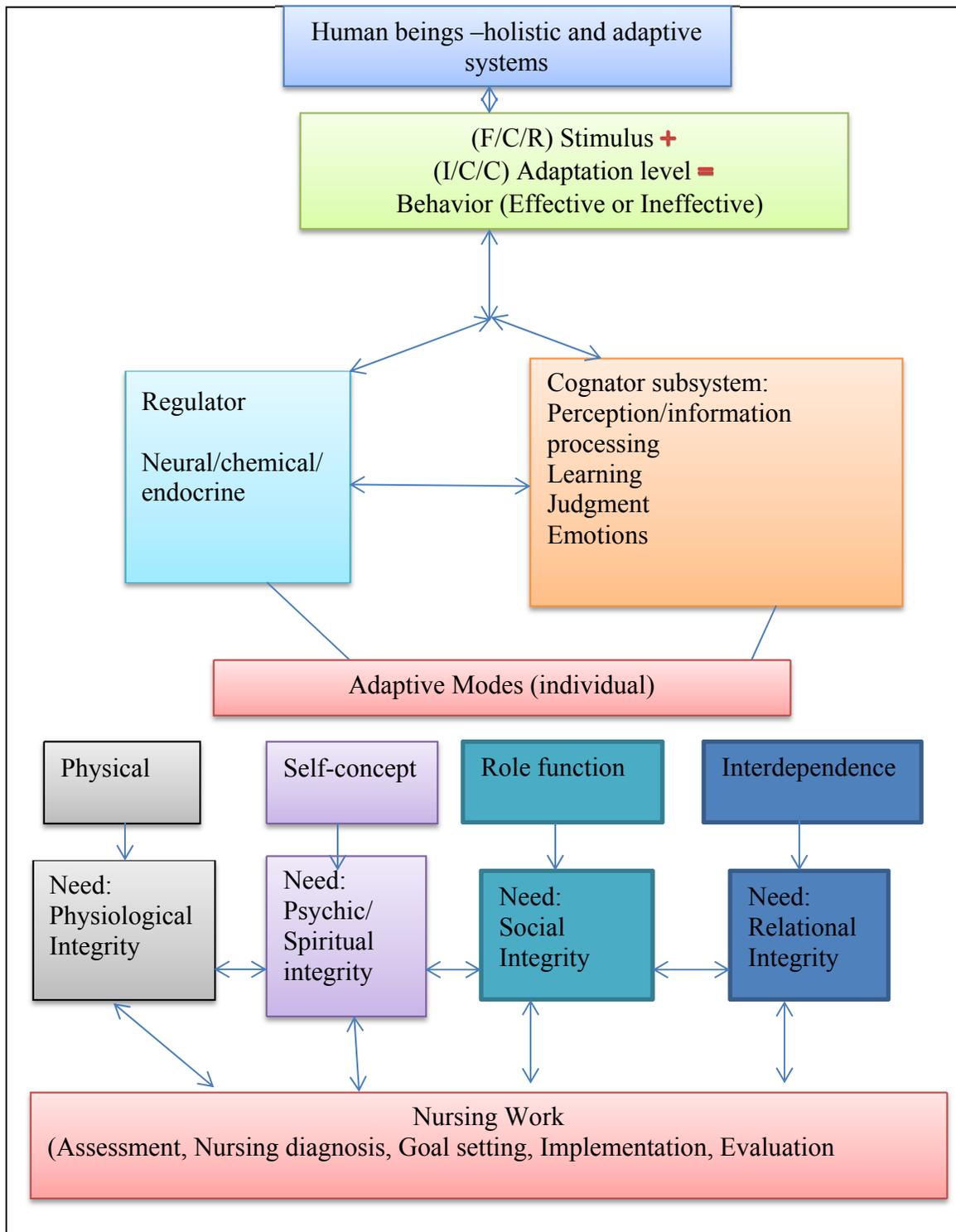
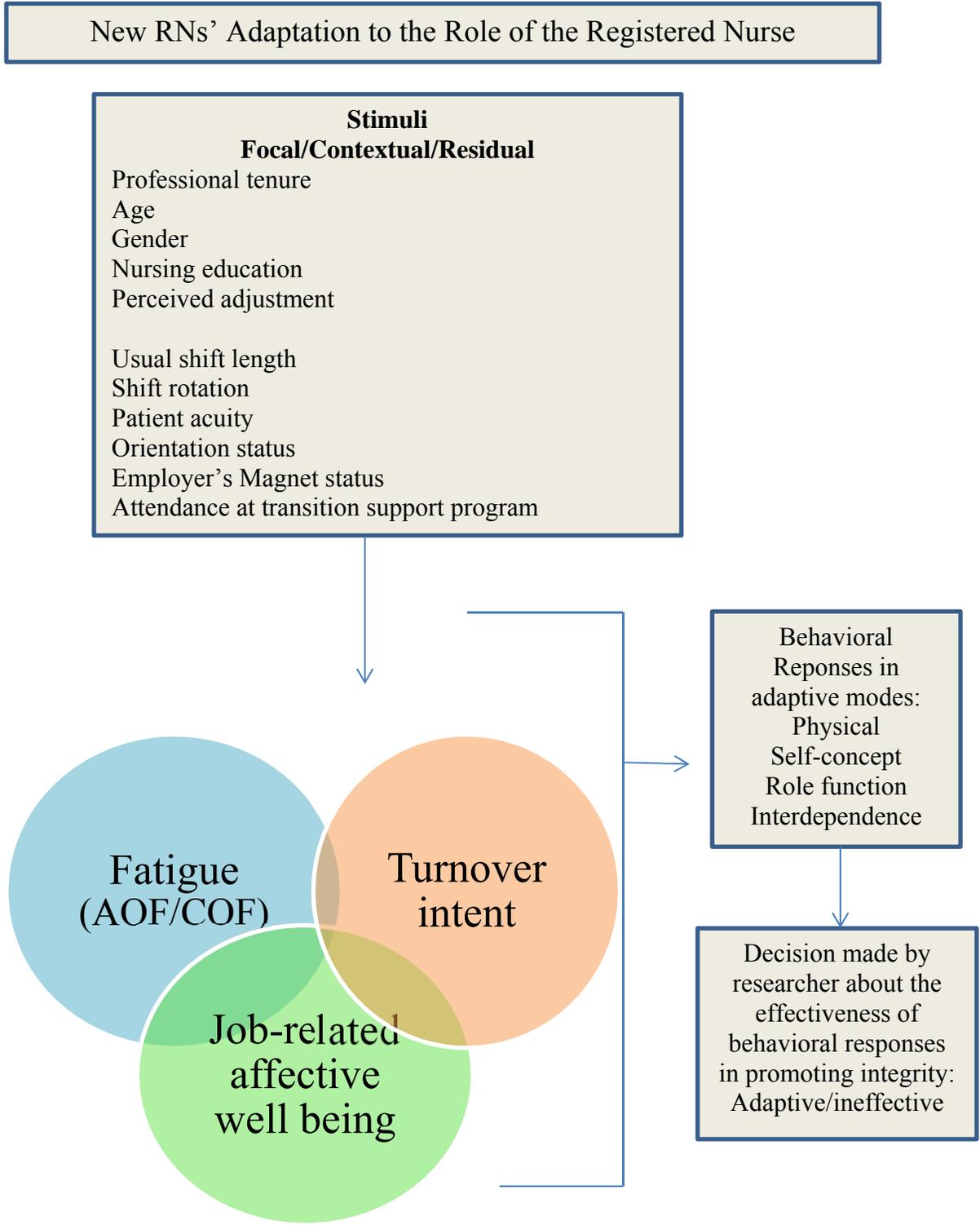


Figure 2. Schematic Representation of Research Study.



Specific Aims and Research Questions

The specific aims and associated research questions for this study are:

Specific Aim # 1

Describe new registered nurses' adaptive behaviors.

Research Question (RQ) 1. What are the levels of acute and chronic occupational fatigue in new registered nurses?

Specific Aim # 2

Explore the relationship between attributes of new registered nurses and the characteristics of their workplaces on adaptive behaviors.

RQ2. What variables are predictive of new registered nurses' acute occupational fatigue?

RQ3. What variables are predictive of new registered nurses' chronic occupational fatigue?

RQ4. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on acute occupational fatigue?

RQ5. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity,

orientation status, employer's Magnet status, and attendance at transition support programs) on chronic occupational fatigue?

RQ6. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on negative affect?

RQ7. What is the relationship between personal attributes of the new RNs characteristics (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace variables (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on new RNs intent to stay in their current nursing position for two years?

Operational Definitions

1. New registered nurses (new RNs): In this study, the term "new RNs" referred to nurses with an initial nursing license that allowed them to work in the role of a registered nurse. Nurses who were newly licensed to work as a registered nurse but had previously held another type of nursing license, such as a licensed practical or vocational nurse, were excluded from this study.
2. Professional tenure: professional tenure is a term used by Unruh and Nooney (2011). In this study, professional tenure was described by the new RNs in weeks or months and was reported in months. Professional tenure referred to the length of time the new

registered nurse has worked as a registered nurse in a clinical setting caring for patients (as opposed to time since graduation or successful completion of licensure examination).

New RNs in this research study had a professional tenure of 52 weeks or less.

Professional tenure was reported in months.

3. Nursing education: New RNs were asked to describe their nursing education. At this time, there are several nursing education programs that prepare a nursing student to qualify for the National Council Licensure Examination for Registered Nurses (NCLEX). These include: a diploma in nursing, Associate Degree (ADN), a baccalaureate degree (BS), an accelerated baccalaureate degree in nursing (ABSN), or a Master's degree in nursing or a health related field (Master's degree).

4. Perceived adjustment: In this study, adaptation level referred to the self-reported perceived adjustment scores on a single-item visual analog scale (VAS) inquiring about new registered nurses perceptions of the personal adjustment to professional nursing with 0 representing "not adjusting well" and 10 representing "adjusting very well". Because Roy (2009) mentions adaptation level as an internal stimuli in several different comments, adaptation level will be treated as an independent variable.

5. Usual shift length: New RNs were asked to describe their usual shift, which may have been eight, ten, or twelve hours long.

6. Shift Rotation: New RNs were also asked if they rotated to other shifts. New RNs may have been required to rotate to other shifts with or without a primary shift assignment.

New RNs responded to this item with a yes/no answer.

7. Attendance at transition support programs: Although there is no uniformity in how new nurse support programs are provided, new RNs who participate may find benefit in the topics discussed or the sharing of experiences among participants. New RNs were asked whether or not their employer offered a transition support program and if so, to estimate their attendance at the sessions.
8. Employer's Magnet status: refers to an accreditation offered by the American Nurses Credentialing Center and is awarded to hospitals that are able to demonstrate institutional respect for and support of professional nursing. It is very likely that a new RN working at a Magnet hospital will be aware of this prestigious award. New RNs responded to this item with a yes/no answer.
9. Orientation status: New RNs were asked if they were currently on orientation or if they have completed their formal orientation period.
10. Patient acuity: For the purposes of this study, patient acuity was a created variable that represented the researcher's attempt to describe the complexity of nursing care required by some patients. If new RNs reported that they cared for patients requiring critical care or a "step-down, intermediate" level of care, which included telemetry monitoring, this was understood to convey a sense, although not specific, of the demands in the work environment which may tax the new nurses' skill and knowledge. Nurses who work in critical care often work in a defined geographic unit, but patients who need an "intermediate" or step-down level of care can be found in many different units and settings. Further, nurses provide critical and intermediate level nursing care across the life span from neonates through geriatrics in a variety of settings including many in acute

care settings and even home care. This variable was thought to be more descriptive of the complex work environment new RNs may find themselves in than just naming their patient population (i.e. mother-baby or medical-surgical). Not all new RNs work with patients requiring critical care or a step down level of care, but as this relates to the working environment of the nurse, patient acuity was an important consideration.

11. Occupational fatigue: is a response in work situations where performance demands exceed capacity (Pasupathy & Barker, 2011). For this study, occupational fatigue referred to scores on the Occupational Fatigue Exhaustion Recovery Scale (OFER; OFER 15) subscales of acute fatigue and chronic occupational fatigue (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). Although the researchers use the terms acute and chronic fatigue when discussing the subscales of the OFER 15 (Winwood, Lushington, et al., 2006; Winwood, et al., 2005), in this study, the terms acute occupational fatigue and chronic occupational fatigue were used to avoid any confusion with acute physical tiredness and/or chronic fatigue syndrome, which are unrelated, but similar sounding concepts.

12. Job-related Affective Well-being: Affective well-being is a general state of mind that influences emotional responses to stimuli in the work setting (Fredrickson, 2001; Russell & Feldman Barrett, 1999). Affect and emotional responses can be thought of as either positive or negative, where negative responses are considered more unpleasant to experience. For the purposes of this study, negative affect was measured with scores on the negative emotional subscale of the Job-Related Affective Well-Being Scale.

13. Turnover intent: the seriousness of thought given to voluntarily leaving the current work situation. Turnover intent can relate to a change in unit (same employer) or a change in employer. Turnover intent may also relate to a desire to leave the nursing profession. For this study, turnover intent was measured by the self-reported scores on a five-point Likert scale response using: “very unlikely; unlikely; undecided; likely; very likely” to the following question: “How likely are you to stay in your current position (same nursing unit) for the next two years? Two other items on the NRNQ address the participants’ likeliness of staying with the same employer for the next two years and in the nursing profession for the next five years, using the same five point Likert scale. The item of interest in this research study was the new RNs intent to stay in the current nursing position for two years.

14. Adaptation response: referred to the judgment made by the researcher about the effectiveness of new nurses’ responses on the OFER 15, JAWS, and turnover intent as either adaptive or ineffective in supporting adaptation to the role of the registered nurse.

Assumptions

There were several assumptions underlying this study. First, new RNs in this study were assumed to represent the target population. The researcher also assumed the literature describing this phenomenon captures many of the challenges experienced by new graduate nurses and that new RNs’ adaptation to the role is a vitally important concept to understand. Further, it was assumed that adjustment level, negative emotional responses, fatigue, and turnover intent were suitable proxies for adaptation, that they were amenable to measurement, and that the judgments made about these concepts could

be interpreted to represent the adaptation of new registered nurses. A fundamental presumption that new registered nurses responded to the survey items with honesty and integrity also existed.

Summary

Nursing journals contain multiple reports that new nurses experience unpleasant, negative emotional and physical responses as they assume the role of a registered nurse. These responses seem to range from discomfort to distress. This phenomenon may be referred to as “reality shock” (Kramer, 1974) or “transition shock” (Duchscher, 2009), but as yet, our understanding of this experience is largely unexplored and is incomplete. It is possible that new graduate nurses are experiencing occupational fatigue in response to the myriad of stressors and challenges they face in the first year in practice. Understanding this experience is essential, given the importance of the nursing profession’s contribution to the health of society, current calls for a reconceptualized nursing practice and leadership in health care reform, and the responsibility nurses have to ensure safety and quality in health care delivery.

This inquiry was appropriately placed within the purview of nursing research. Nursing leaders must be well acquainted with the needs of our newest members and any obstacles that may impact the professional obligation to care for human beings. Additionally, this inquiry was focused on topics of importance to nurses: people and their interaction with the environment. New registered nurses’ experiences compels nurse researchers to look deeper into the phenomenon because nurse researchers understand

human beings to be wholly responsive in this interaction with the environment (Donaldson & Crowley, 1978; Roy, 2009). Adaptation or the thoughtful and emotional incorporation of the environment within one's self is a prerequisite for health in the Roy Adaptation Model (Roy, 2009).

CHAPTER II

LITERATURE REVIEW

Few would argue that there is an important, publicly acknowledged, widely discussed, ongoing, unresolved “gap” in nursing; nursing education, in and of itself, even when successfully completed, does not fully prepare a person to assume the role of a “registered nurse”. In fact, there might be several gaps in nursing related to the pre- and post-licensure environments of the registered nurse. Depending on how the term is used, it is possible to infer a sense of “blame” or finger pointing for the gap. Berkow, Virkstis, Stewart, and Conway (2008) use the term “preparation-practice gap” to describe a new graduate nurses’ “specific shortfalls” (p. 469). Benner, Sutphen, Leonard and Day (2010) commented on an “education-practice gap”, which they described as the concern for practice environments that was out of step with what was being taught in the academic setting (p. 4). A more recent development is the “practice-education gap” which seems to represent the inability of the education system to adequately prepare nurses for the demands of the ever-changing practice environment (Benner, et al., 2010, p. 4).

This tension that exists among stakeholders on both sides of a registered nurses’ license continue today (Slaikeu, 2011). Fully developing as professionals requires one to learn a very broad skill mix, integrate a pre-existing value system, and has been described

as a process of “formation” (Benner, et al., 2010). In conflict with this understanding, Casey, Fink, Krugman, and Probst (2004) described hospitals’ urgent need for nurses to work that is at odds with nurturing their professional growth. The priorities of the health care system seem to be in a state of flux, yielding to the influence of a business mentality (Benner, et al., 2010). The influence of the Affordable Care Act has yet to be fully realized, but there is a pressing need to prepare a health care workforce that is capable of responding to the pending increase in the number of patients (Institute of Medicine (U.S.), et al., 2010). Acknowledging that few entry level employees are really prepared to take on their new role, when that new employee is a nurse, there are important implications for patient safety (Casey, et al., 2004). It seems reasonable to extend this important point to consider that there are also likely consequences for new registered nurses that may affect their adaptation to the role of registered nurse.

While many people, including some nurse researchers, tend to use some form of the word “stress” (i. e. “stressed”) to represent their response to a situation, Hurrell, Nelson, and Simmons (1998) consider a “stressor” to be a stimuli and a “strain” as the response to the stimuli. The distinction between stressor and strain is sometimes blurred in nursing research, but identifying the stressor and the experience of strain is congruent with the assessment of behavior and stimuli in Roy’s nursing process. As often as possible, this review of the literature will attempt to sort the stressors and the strains described by new registered nurses that are found in the nursing literature into stimuli and behaviors, however it is sometimes hard to separate the two in the comments made by new registered nurses. Responses or strains can sometimes be considered as the stimuli

or stressor, which mirrors the conceptual understanding of adaptation level in the RAM. Our current understanding of the stressors and strains described by new registered nurses is found largely found in qualitative research and several quantitative studies that provide glimpses into the experience. This review of the literature focuses primarily on publications addressing new graduate nurses in the United States (US). Although the topic is extensively addressed internationally, generalizability of findings may be problematic for nurse leaders in the US. As such, research from other countries is included as it informs and relates to the experiences of the new registered nurse in the US.

New Registered Nurses' Stressors

Because registered nurses have an expansive skill set, nurses and others may be tempted to dismiss the activities they perform as “routine”. A cautionary word is required. “Routine” may relate to common, but it does not mean “easy”. The most “routine” activities nurses perform are still an assimilation of many separate steps and tasks, and they are not without risk. Risk is imbedded in many medical treatments. Sometimes harm can be minimized when the procedure or treatment is carried out properly, but no matter how skilled the practitioner, the potential for harm exists. Patients can develop a new adverse or allergic reaction to a medication. The risk for infection is a concern when patients experience neutropenia, but require invasive procedures. The dependence on technology has added complexity to the delivery of health care (Benner, et al., 2010). It is not surprising then, that new graduate nurses report they are challenged by an inadequately developed skill set (Casey, et al., 2004;

Fink, et al., 2008; Schoessler & Waldo, 2006). The fear of harming someone because of what they do not know weighs on new graduate nurses (Clark & Springer, 2011; Olson, 2009; Pinchera, 2012).

Although their experiences are limited in scope, nursing students will have had some exposure to clinical situations and likely have practiced some skills during their undergraduate curriculum. Medication administration is an example of a skill that most nursing students practice in a limited manner, but in the role of registered nurse, they may give multiple medications to four, five, or more patients throughout their shifts. Despite their previous experience giving medications as a student, new graduate nurses report that medication administration is challenging (Fink, et al., 2008; Myers, et al., 2010). Safe medication administration is a complex integration of knowledge and skill (Benner, et al., 2010). Nurses are expected to incorporate knowledge of the pharmacokinetics of the medication, the proper route and manner of administration, interactions with other medications, adverse reactions, as well as a screening for possible allergic reactions before administering a medication. Nurses administer many medications that have as much potential to harm as they do to help, such as chemotherapy, insulin, or anticoagulants. Nurses who work in critical care adjust doses of potent medications based on physiological parameters (Benner, et al., 2010). Beyond the critical care unit, nurses who work in progressive care which may also be known as “step-down”, “telemetry”, or “intermediate care” also titrate medications based on a patient’s responses (American Association of Critical Care Nurses, n.d.). Current studies haven’t yet described new nurses’ specific concerns about medication administration, other than to

note that it exists, but one can surmise that the challenge lies in the volume of medications given and the cognitive engagement and level of responsibility required for safe medication administration.

New graduate nurses have identified that caring for patients with chest tubes, invasive lines, complex medical treatments, and tracheotomies tax their skill level (Casey, et al., 2004; Fink, et al., 2008). Fink et al. (2008) noted that even at 12 months in practice, there were more than 100 skills that new graduate nurses reported as challenging. No explanation was given as to why the count was so high, but perhaps it reflected items contributed by new nurses with different patient populations, such as in a neonatal intensive care or an adult cardiac care unit.

Nurses can encounter patients with complex medical needs anywhere in the hospital (American Association of Critical Care Nurses, n.d.). While patients needing a higher level of nursing care may have once been assigned to an intensive or critical care area, a growing demand for critical care beds has resulted in a triaging of those patients to progressive care (American Association of Critical Care Nurses, n.d.). Now, critical care is reserved for patients with the most life-threatening conditions (American Association of Critical Care Nurses, 2012). Patients not requiring critical care or intensive care are likely to be “moderately stable...require moderate resources... and an increased intensity of care” (American Association of Critical Care Nurses, n.d., Progressive Care Fact Sheet; Definition; para. 2). The preferred name for this higher level of care needed by patients is “progressive care” (American Association of Critical Care Nurses, n.d., Definition, para. 2). However, several other names for progressive care continue to be

used today, including: intermediate care, step-down, or “telemetry” (American Association of Critical Care Nurses, n.d., Definition, para. 2).

While there may be dedicated units that house patients needing progressive nursing care, these patients will also be found in the mix with other patients on nursing care units (American Association of Critical Care Nurses, n.d.). The skill level needed to care for patients at the intermediate or step-down level include, but are not limited to: electrocardiogram rhythm interpretation, dysrhythmia recognition, medication titration, management of arterial lines, blood gas interpretation, and nursing care of patients requiring ventilator support (American Association of Critical Care Nurses, n.d.). Nurses caring for patients at this intermediate level will also need to be familiar with peritoneal dialysis, alternative nutritional therapies, artificial airway interventions, and behavioral problems (American Association of Critical Care Nurses, n.d.). Further, this skill level is not isolated to the acute care setting. A search in the Cumulative Index for Nursing and Allied Health Literature (CINAHL) database demonstrates that nurses in home care settings will encounter patients who are: on ventilators, receiving intravenous antibiotics or chemotherapy, managing peritoneal dialysis, or those who are at the end of their lives.

Learning one new skill can be troubling to a new nurse because it probably represents a larger issue. Skill acquisition in professional nursing cannot be considered apart from the context in which the skill is needed. In other words learning a psychomotor skill is not the same as learning to care for a patient who needs a particular skill. A patient with a tracheostomy may also have altered communication and nutrition, respiratory problems, they may require endotracheal suction, and no doubt they are also

at risk for airway and breathing compromise. The skill that needs to be learned is not just how to care for a tracheostomy (“trach care”), but rather how to prioritize the needs and integrate care delivered to a patient who has a tracheostomy.

Beyond specific skills, new graduate nurses will encounter situations that require an integration of skills. For example, caring for patients with end of life needs is difficult for new nurses (Casey, et al., 2004; Olson, 2009). Responding to patients with deteriorating clinical status is also challenging for new graduate nurses (Fink, et al., 2008; Hodges, Keeley, & Troyan, 2008).

New nurses are concerned with a workload that exceeds their experience level (Dyess & Sherman, 2009; Myers, et al., 2010; Pellico, et al., 2009). Li and Kenward (2006) reported that nearly 20% of the registered nurses in their study felt their workload was too difficult. In other quantitative studies, there are hints of this concern but they are not clearly stated. For example, Kovner et al. (2007) reported that 62% of new nurses had to work “hard” at least three days per week. When nurses work 12 hour shifts, they often work three days per week, so this could be interpreted as every shift worked was one in which the nurses worked “hard”. Similarly, approximately one third of the new nurses responded that more than three days per week, they were pressured by too many tasks and too little time (Kovner, et al., 2007). In a qualitative study, nurses described their shifts as “fast-paced and hectic” (Olson, 2009). New graduate nurses have used the word “chaotic” to describe their work environment (Clark & Springer, 2011; Pellico, et al., 2009). New nurses’ attempts to organize their work are mentioned by several authors (Burger, et al., 2010; Fink, et al., 2008; Schoessler & Waldo, 2006). Schoessler and

Waldo commented that even in the fourth to the seventh month of practice, new nurses continue to struggle with managing their workload.

The work environment is also challenging for new nurses. The work environment is a broad concept that represents the dynamic intersection of human and organizational influences on processes, culture, and values, all of which affect one's role (Kramer, et al., 2011). A new graduate nurse's formal entry to the work environment begins during orientation. Orientation programs and transition support programs vary in their length and process and can reflect the culture of the unit and the institution. Turnover among new nurses was found to be significantly associated with the length of the orientation program, in that new nurses who left their positions had, on average, two weeks less orientation than nurses who didn't leave their positions (Scott, et al., 2008) 2008). Orientation length may be a conceptual proxy for work environment in this study, as it is hard to believe that two weeks of orientation could make a difference between someone staying or leaving their employer. Scott et al. (2008) reported that orientation length was 8.6 weeks (SD = 6.43). Once off orientation, new nurse receive the same patient assignment as other, more experienced nursing colleagues (Kovner, et al., 2007; Pellico, et al., 2009).

Even new nurses in "healthy work environments" have reported challenges in the first year in practice (Kramer, et al., 2011). Recognizing the impact of the work environment on the new graduate nurse, Kramer et al. (2011) adopted the term "environmental reality shock" which replaced the former "reality shock". Environmental reality shock is defined as the "impact of misaligned expectations and perceptions of the

professional practice work environment” (Kramer, et al., 2011, p. 3). Environmental Reality Shock (ERS) was operationalized as a score that reflected the difference between the new graduate nurses expectations and their perceptions of the work environment (Kramer, et al., 2011). Experienced nurses in the work environment rated their unit’s “health” based on principles identified in Magnet hospitals (Kramer, et al., 2011). Work environments were rated “very healthy”, “healthy” or “needing improvement” (Kramer, et al., 2011). Kramer et al. (2011) found that the ERS scores were highest (indicating greater ERS) at four months for all groups of nurses in all three work environments (Kramer, et al., 2011). The ERS scores recovered (indicating less ERS) at eight months, but a noteworthy finding was that new nurses who worked on the “very healthy work environments” had significantly higher ERS scores at 12 months (Kramer, et al., 2011). This result lends support to the notion that assimilation into nursing is not complete at 12 months in practice. It also calls into question the validity of the experienced nurses’ assessments and questions what a “healthy work environment” means to a new graduate nurse.

There are other stressors in the work place as well. New nurses continue to experience workplace incivility in the form of rude comments from others (Dyess & Sherman, 2009; Pellico, et al., 2009). Preceptors who were either unavailable or who “hovered” over a new nurse were unsettling to new graduate nurses (Schumacher, 2007). Other new nurses confronted bullying in the form of schedules, workloads, and or having co-workers who were unwilling to help (Simons & Mawn, 2010).

It is possible that our understanding of workplace stressors is not adequately described in the published literature. For example, in a small, qualitative, pilot study of six new registered nurses, Ashton (2012) noted that four of six new nurses were trying to develop strategies for sleeping, eating, exercising, and spending time with family and friends when they worked a schedule that included mandatory nightshift work. Three nurses rotated between nightshift and dayshift, and one worked nightshift because of the “slower pace” which accommodated her learning style. Each of the four nurses who worked some portion of their time on nightshift, talked about the need to plan for sleep, which was something they had little experience with and almost no professional guidance about.

Finally, new nurses have reported that outside of the workplace, they also have personal stressors. This does not come as a surprise, but it is easy to forget that in the midst of the work-related challenges, new graduate nurses also have lifestyle changes (moving, marriage, and pregnancy), debt, and other responsibilities (Fink, et al., 2008). Schoessler and Waldo (2006) identify a grief reaction that new nurses experience in the loss of friends and faculty. Halfer and Graf (2006) commented that new nurses miss the rhythm of the academic calendar and are often unable to participate in church services because of their schedule. Some of these concerns may be considered developmental and transient in their impact on the new graduate nurse, but they are worth consideration because they inform our understanding of the additive stressors that may be experienced by individuals in the first few months of their professional nursing career.

New Registered Nurses' Strain

There can be little doubt that new nurses must have some reaction to the experiences in the first year of practice. The work of qualitative researchers provides a level of detail about this response that is not always captured in quantitative studies. In some cases, words such as general anxiety or nervousness are used (Burger, et al., 2010; Hodges, et al., 2008). Other new nurses described feeling “uneasy” (Myers, et al., 2010) or “stressed” (Pellico, et al., 2009). Kowalski and Cross (2010) provide some quantitative validation of this response of the new nurse when they reported that neither state nor trait anxiety scores were significantly decreased by the second data collection period in their study (12 months in practice).

New nurses feel unprepared to meet the expectations for their performance (Clark & Springer, 2011; Hodges, et al., 2008). In some studies, this sense of inadequacy was described as a lack of confidence (Dyess & Sherman, 2009; Etheridge, 2007; Olson, 2009; Zinsmeister & Schafer, 2009). This lack of confidence in themselves represents their awareness that as beginning practitioners, they have not yet fully integrated the complexities of nursing knowledge, skills, and values and they are unable to respond as competent professionals. They are aware that they may cause harm to a patient, either by their action or their inattention to an important patient clue (Clark & Springer, 2011; Etheridge, 2007; Myers, et al., 2010; Olson, 2009). Yet, their patient assignments and work load do not reflect their evolving professional development (Kovner, et al., 2007; Pellico, et al., 2009). New graduate nurses are surprised at the level of responsibility they have that exceeds their capacity to respond (Deppoliti, 2008; Etheridge, 2007; Fink, et al.,

2008; Pinchera, 2012). Adding to this, new graduate nurses have been taught to value perfection and excellence in nursing practice (Deppoliti, 2008). That perfection and excellence in nursing practice are worthy goals is not in dispute, but when the demands for one's performance exceed their capacity to deliver, perfection and excellence in nursing practice becomes a shared responsibility of group members. The strain new nurses report suggests that this important safety net is missing in today's practice environments.

New nurses describe their inability to respond to changing and demanding clinical situations (Dyess & Sherman, 2009; Hodges, et al., 2008; Linder, 2009; Myers, et al., 2010). Hodges and colleagues' qualitative study includes a comment from a new nurse who seemed to be nearly paralyzed in her inability to respond to a patient in an emergency situation, the effect of which was to cause this nurse to doubt whether or not she would be successful in nursing.

There are occasional references to physical symptoms that demonstrate the level of distress some new nurses feel, such as vomiting before work or crying (Pellico, et al., 2009). Schoessler and Waldo (2006) described new nurses' comments that they were wakened from their sleep with thoughts of work. Olson (2009) included comments of a new nurse who reported their inability to relax and sleep after a particularly busy shift, because they were worried about an error that might have occurred, and all 12 participants in this study reported feeling exhausted. Ashton's (2012) pilot study with six new graduate nurses, found half describing themselves as "tired" or "exhausted." One nurse commented that she had heard that after working as a nurse for some time, one gets

in “nursing shape.” According to this new nurse, arriving at some point when nurses are not too tired to cook or to go for a walk after work was the hallmark of being in “nursing shape.” At 23 years of age, and no apparent health problems, this new graduate nurse said she “couldn’t wait for that day” when she had enough energy to go for a walk after her shift (Ashton, 2012).

New graduate nurses’ experiences affect their personal relationships. One new nurse demonstrated this when she remarked that her husband “understood” that her personal life was “going to have to take a back seat” as she adjusted to working as a nurse (Ashton, 2012). Another new nurse described an isolation of sorts, when his girlfriend told him he was not to speak of any work related event, as she was tired of hearing about how unhappy he was (Ashton, 2012). Kovner et al. (2007) reported that more than 3000 new nurses, who had initial nursing licenses for 18 months or less, responded to a question about how often work interfered with family-related issues. Using a Likert scale response system, with 1 indicating “never” and 6 indicating “five or more days per week, the mean score was 3.3 (SD = 1.3) indicating work had a moderate impact on familial responsibilities (Kovner, et al., 2007). When the question was re-phrased to ask about how often family life interfered with work related issues, using the same scale, the mean score was 1.7 (SD = 0.8) indicating there was less of an impact of family life on work, especially as it related to getting to work on time or attending to other family tasks (Kovner, et al., 2007). The scores were higher for the effect of work on family life than family life affecting work, but it is possible that new graduate nurses prioritize work over family life in an effort to focus their energy in their professional lives.

Literature Based Responses to Work-Related Challenges

Fatigue

At first glance, fatigue seems like a most ordinary concept, one that is easily understood, and is so commonly experienced that little explanation is required. It seems safe to state that all people have experienced fatigue. But the commonness of the experience of fatigue does not bring clarity or consensus to the use of the term. Fatigue has many dimensions, is experienced by people in different contexts, and is actually quite challenging to define (Aaronson, et al., 1999; Barker & Nussbaum, 2011; Winwood, et al., 2005). This lack of conceptual clarity means that fatigue is also difficult to measure (Aaronson, et al., 1999; Winwood, et al., 2005).

Aaronson et al. (1999) offered a general definition of fatigue as: “The awareness of a decreased capacity for physical and/or mental activity due to an imbalance in the availability, utilization, and/or restoration of resources needed to perform activity” (Defining Fatigue, para. 6.). The imbalance Aaronson et al. (1999) refer to seems to be the fundamental problem with fatigue in that demands overwhelm available resources. Whether fatigue is expected from a strenuous physical task or develops in response to a non-physical event or experience, fatigue is a barrier to taking on or continuing in an activity.

More often, fatigue is described rather than defined. Fatigue has been described as acute or chronic (temporary or permanent; normal or pathological), physical and psychological, and is noted in healthy people and those diagnosed with an illness (Aaronson, et al., 1999; Winwood, et al., 2005). Often, fatigue is described as an

unpleasant feeling and it has been linked to depression (Aaronson, et al., 1999). Fatigue may be characterized by a withdrawal of interest or attention that can affect performance (De Vries, et al., 2003).

Occupational fatigue. Since fatigue is such a broad topic, it is important for researchers to describe their interest in fatigue with more detail. Within the writings on fatigue, a more specific fatigue that affects workers emerges. Although many researchers didn't use the term "occupational fatigue" they described the experience of fatigue "among working people" (De Vries, et al., 2003) or "healthy working adults" (Aaronson, et al., 2003). Kramer (1974) considered "excessive fatigue" as a likely "physical response" to the rejection phase of reality shock (p. 7). She may not have identified it as such, but in this statement, Kramer (1974) seemed to be referring to an occupational fatigue.

Work-related fatigue is not any less complicated to understand than other kinds of fatigue. Workers can still be healthy or not, and even work related fatigue is described as acute and chronic, physical and psychological (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). The term exhaustion creeps into discussions about work-related fatigue suggesting that researchers might consider fatigue on a continuum with exhaustion (Aaronson, et al., 2003; De Vries, et al., 2003; Winwood, et al., 2005). But fatigue and exhaustion, especially as exhaustion is understood and measured in workers, are different concepts that are not interchangeable (Winwood, et al., 2005).

For the purposes of this research study, occupational fatigue was a focus of the study and was discussed with an understanding of the work of Australian researchers

Peter Winwood, Kurt Lushington, and colleagues who accept a definition of fatigue as a work-related “relative incapacitation”, a term they adopted from a researcher named Bartley (Winwood, et al., 2005). Winwood and colleagues agree that occupational fatigue is important to understand because it is related to safety, productivity, the cost of health care, and employee “well-being”(Winwood, et al., 2005). Workplace stressors have been implicated as a source of fatigue (Nixon, Mazzola, Bauer, Krueger, & Spector, 2011).

Acute and chronic occupational fatigue. Nurses engage in very physical work, but Winwood and Lushington (2006) extended the understanding of acute occupational fatigue, focusing on the “mental effort” and “emotional demands” of nursing work which together constitute “psychological demands” (p. 680). Winwood and Lushington (2006) noted that physical fatigue was not a significant factor in their modeling of acute occupational fatigue. There is no doubt that nursing work is accurately described as “mental effort” as nurses “concentrate on several things at once”, administer many medications to multiple patients, integrate technology into patient care, and assess and respond to patients’ changing condition (Winwood & Lushington, 2006, p. 680). The mental effort coupled with the emotional demands inherent in nursing work place nurses at high risk for acute occupational fatigue (Winwood & Lushington, 2006). These “psychological demands” that work places on a person, significantly contribute to acute occupational fatigue (Winwood & Lushington, 2006, p. 680). The challenges new nurses report in the published literature are appropriately described as the “psychological demands” noted by Winwood and Lushington (2006, p. 680).

Despite this, acute occupational fatigue may not be deleterious and the progression to chronic occupational fatigue is not inevitable if workers have the opportunity to rest and fully recover from episodes of acute fatigue (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). Acute occupational fatigue occurs at the “end of the work period” and may involve an inability to stop thinking about events at work and an prodromal sense that the next work period will be just as challenging as the previous one (Winwood & Lushington, 2006, Introduction, para. 8). The problem with acute occupational fatigue is the persistent activation of the complex interplay between the neurological, endocrine, and psychological processes that may alter the actual brain structure and lead to the development of chronic occupational fatigue (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). Recovery from the episodes of acute occupational fatigue is necessary to allow the body time to “repair” from the exposure to “high levels of cortisol”; the effects of which can last for several hours (Winwood & Lushington, 2006, Introduction, para. 9, 11). Work-related psychological strain interferes with restful and restorative sleep (Winwood & Lushington, 2006). New nurses have reported an inability to rest after a difficult shift at work and altered sleep patterns (Olson, 2009; Schoessler & Waldo, 2006). When recovery is impaired, fatigue itself is an additive stressor (Winwood, Lushington, et al., 2006).

The development of chronic occupational fatigue is accompanied by a host of negative or unpleasant emotional states, including: “doubt and despair”, decreased motivation, withdrawal of commitment and interest, and feelings of “persistent tiredness” (Winwood, Lushington, et al., 2006; Winwood, et al., 2005, Materials and Methods, para.

2). The nature of this process and the progression from a state of acute occupational fatigue to the more consequential chronic occupational fatigue are not well understood. Chronic occupational fatigue represents a maladaptive trait (Winwood, Lushington, et al., 2006).

Affective Well-Being

The nature of emotions have been the topic of discussion and debate since the time of the Greek philosophers (de Sousa, 2012). Affect is a term that is sometimes used interchangeably with emotion but some researchers see important differences between the two (Russell & Feldman Barrett, 1999). Affect and emotion are intricately bound concepts which are hard to separate. Emotional or affective wellness is essential for human beings' overall wellness (Daniels, 2000; Diener, Suh, Lucas, & Smith, 1999; Fredrickson, 2001).

For the purposes of this study, attention was focused on affective well-being. For some, affect is identified as mood and emotion (Diener, et al., 1999). Russell and Feldman Barrett (1999) did not necessarily disagree, but they argued that there were important differences that were worth discussing in an attempt to provide clarity to the concepts. Emotions are complex events that involve affect, but also involve other processes as well, including: an object, attention toward the object that produces a response, a host of physiological responses which are not necessarily under the control of an individual, a beginning and an end point, and an awareness of some feeling for the event (Russell & Feldman Barrett, 1999). Russell and Feldman Barrett (1999) offer the example of encountering a bear and the multiple responses that occur as a result of the

encounter which assist an individual to respond: the threat is recognized and appraised, the body responds in ways that allow a person to remove themselves from the threatening situation, the encounter ends, and an individual is aware of their response. The emotional reaction to flee from a threatening situation is necessary for survival and while “negative” in the sense that fear is not a pleasant emotion to experience, it is necessary for safety and protection. Not all emotions are negative and involve fear or threats to survival (Russell & Feldman Barrett, 1999).

Love is an emotion that also has an object, produces some physiological responses, and allows people to connect a feeling to the experience. Russell and Feldman Barrett (1999) offer the description of two people kissing as an example of a more positive emotional experience. Affect, on the other hand is more general than the emotional experience, although affect is a component of emotion (Fredrickson, 2001; Russell & Feldman Barrett, 1999). Affect influences and sets the tone for how an individual appraises an emotion as positive or negative, good or bad (Reevy, 2010).

Using the term “core affect”, Russell and Feldman Barrett (1999) describe affect as a more general state of mind, that no doubt influences one’s emotions, but usually does not have an object that attention is directed toward. Affect is influenced by many factors including weather or circadian rhythms and despite always being present to one degree or another, an individual may not be aware of all the influences on their affect (Russell & Feldman Barrett, 1999). Examples of core affect include feelings of joy, sadness, pleasure or displeasure, or tension and affect is always present but varies in the level of intensity (Russell & Feldman Barrett, 1999). Affect has two dimensions: pleasantness

which represents “how well one is doing” and activation, which represents a sense of energy or mobilization (Russell & Feldman Barrett, 1999, p. 809). This dimension of affect, activation, is sensitive to external stimuli and neurochemical processes and subjectively describes an individual’s physical response when activated (Russell & Feldman Barrett, 1999). Activation can be understood with descriptors like: “arousal, energy, tension, or activity” (Russell & Feldman Barrett, 1999, p. 809).

Positive and negative affect. Affect can also be described as positive or negative which seems to relate to pleasantness or unpleasantness (Watson & Tellegen, 1985). Russell (1980) used the terms pleasure and displeasure to represent the descriptors pleasant or unpleasant. Researchers have reported that the plotting out of both dimensions of affect demonstrates that pleasantness and activation, or the absence of these are highly correlated and cluster in the quadrants on a circle (Watson & Tellegen, 1985) or a circumplex (Russell, 1980). In other words, a particular level of pleasure has a corresponding level of arousal (Warr, 1990).

All of this discussion is necessary to understand the importance of affect in the new registered nurse. Positivity and negativity in emotions and affect are important markers and facilitators of well-being and human “flourishing” (Fredrickson, 2001, p. 218). Daniels (2000) cited Diener and Larson’s (1993) writings that affective well-being is enhanced when one experiences more positive affective states than negative. Positive affect and positive emotions foster an active engagement with one’s environment (Fredrickson, 2001). Additionally, a positive affect and emotional state promotes open mindedness and growth (Fredrickson, 2001). Affective well-being is a critically

important component of psychological well-being (Daniels, 2000). Well-being is a broad term that may relate to health, but can also capture how “well” things may be “going” for a person (Crisp, 2008). Well-being is different than happiness and despite being oriented in the positive or optimal state of “wellness”, the term “well-being” can also be used to describe a lack of well-being (Crisp, 2008).

The relationship between emotions and affect with work has been an evolving area of research that is linked to well-being (Van Katwyk, Fox, Spector, & Kelloway, 2000; Warr, 1990). Affective well-being is a component of mental health and when optimal, supports adequate coping with difficulties and challenges (Warr, 1990). Affectivity in new registered nurses has had limited exploration. Kovner (2007) reported on new nurses’ positive and negative affectivity using a five-point Likert-scale response to two statements: “I have a very interesting life” and “Often I get irritated at minor annoyances” (2007). The brevity and very general nature of these two items illustrate how little is really known about new RNs affect and highlight the need for further inquiry.

Turnover Intent

Turnover, actual or intended, among new nurses is not well understood. Estimates of turnover among new nurses vary widely and range from 10-55% (Kovner, et al., 2007; Scott, et al., 2008). Actual turnover is difficult to capture but turnover intent presents a greater challenge to nurse researchers. But intent to turnover is important to understand because it is related to actual turnover (Brewer, Kovner, Greene, & Cheng, 2009).

Actual turnover is costly to institutions (Jones & Gates, 2007). Not only does turnover impact finances, there are also other considerations for employees' morale and when turnover leads to insufficient staffing, quality and safety in health care are jeopardized. In addition, turnover among new nurses limits nurse researchers' capacity to capture new nurses' experiences. Halfer and Graf (2006) noted that attrition affected the results of their survey. While decreased participation in surveys does not always represent turnover among the participants, it's seems likely that the two are related. Capturing the many dimensions of actual turnover is elusive, but understanding the effects of turnover intent on the individual, other employees, patients, and the delivery of health care remains an understudied topic. Describing turnover intent is an appropriate beginning to understanding this phenomenon.

Summary

Nursing education inadequately prepares students for the realities of the clinical setting (Benner, et al., 2010). The practice environment is demanding and there are concerns for nursing's current and future readiness to respond to the changing needs of a complex health care system (Benner, et al., 2010). Caught in the tension between the two systems are the new registered nurses who despite success in their academic programs and assurances of institutional support as they take on the practice of nursing, may come to feel let down by both. It is very likely that new registered nurses experience the preparation-practice gap in personal ways that affect their adaptation to the role, but the topic has been inadequately explored. This research study sought to understand new nurses' responses to the work-related challenges they experienced. More specifically, if

new nurses are experiencing occupational fatigue, negative affect, or intend to leave their work unit within two years, these responses indicate their coping processes are minimally activated and perhaps even insufficient for challenges that last more than one year. This inquiry was long overdue and quite personal for the nursing profession, given what Marlene Kramer told us nearly 40 years ago.

CHAPTER III

METHODS

Design

This research study was proposed as a non-experimental, correlational, cross-sectional design. Cross sectional studies are an appropriate beginning to gather information about the characteristics and prevalence of a phenomenon (Hulley, Cummings, Browner, Grady, & Newman, 2007). Correlational studies allow researchers to explore relationships among the variables (Tabachnick & Fidell, 2007). At this point, there have been hints in quantitative studies and more direct comments in qualitative studies that suggest new registered nurses may be experiencing negative physical and emotional consequences related to events and experiences as they take on the practice of nursing. However, the prevalence and characteristics associated with this phenomenon are not well understood. Exploring this topic with the rigor of a research study is a prerequisite to an informed professional response and focused intervention.

Sample

While the target population was new registered nurses at the beginning of their nursing career, the accessible population was new registered nurses with initial licensure to practice in North Carolina from May 2011 through May of 2012. Several factors

influenced this decision. First, neither the National Council of State Boards of Nursing (NCSBON) nor many individual boards of nursing have the ability to sort registered nurses' names by dates of original licensure (Alabama Board of Nursing, n.d.; CA.gov, 2012; Illinois Center for Nursing, n.d.; Maryland Board of Nursing, n.d.; National Council of State Boards of Nursing, 2012a; South Carolina Department of Labor, n.d.; State of Connecticut, 2011; Tennessee Government, n.d. ; Texas Board of Nursing, n.d.; Virginia Board of Nursing, n.d.). Some states, such as Kentucky, Pennsylvania, and Florida allow nurses to work under a provisional license before they obtain their full nursing license (Florida Department of Health, n.d.; Kentucky Board of Nursing, 2012; Pennsylvania Department of State, 2011). This has important implications for supervision and independent practice that limit generalizability to new registered nurses in other states. One possibility, Georgia, offered rosters of professionals which included issue date, but this does not necessarily mean initial licensure and may include experienced nurses who are applying for licensure in Georgia (Georgia Secretary of State, 2008).

The NCSBON noted there are 33 workforce centers in the US, (National Council of State Boards of Nursing, 2012c). However, these workforce centers do not provide access to nurses who are licensed in the state, and generally summarize workforce data for each particular state. Kovner et al. (2007) also noted some of these same limitations that affected their sampling strategy. The infrastructure to contact new RNs across the US does not currently exist. Additional support for the decision about the accessible sample was found in the nursing literature, specifically a recent publication where the

authors, Letvak, Ruhm, and Gupta (2012), noted that the participants in their study of a random sample of nurses who were from North Carolina had demographics resembling those of the nurses at the national level.

Inclusion/Exclusion Criteria

Inclusion criteria for this research study were new registered nurses with an initial nursing license obtained from the North Carolina Board of Nursing (NCBON) with a professional tenure of 52 weeks or less. Participants educated in nursing programs outside of the US, those who held a previous nursing license (licensed practical or vocational nurse or any other registered nursing license) or a professional tenure of 53 weeks or greater were excluded. As was expected, participants in this study were both male and female and represented a diversity of age and nursing education programs. Questions about race or ethnic background were not asked, as no studies of new nurses have indicated that these attributes have influenced outcomes. More often, researchers who are interested in new graduate nurses are concerned with the age (Olson, 2009) or the educational preparation of the nurse (Oermann, Alvarez, O'Sullivan, & Foster, 2010; Scott, et al., 2008).

Measurement Instruments and Study Variables

The following measures were integrated into one document, the New Registered Nurse Questionnaire (NRNQ) which was used to collect study data, and included: an instrument developed by the researcher with items asking the participants to describe themselves, the characteristics of their workplace, their perceived adjustment level, their intent to stay in their current position or with their current employer for two years, and

their intent to stay in nursing in five years. The NRNQ also included measures for the acute and chronic Occupational Fatigue Exhaustion Recovery (OFER/OFER 15) Scale and the Job-Related Affective Well-Being Scale (JAWS). Permissions to use the OFER was received in an e-mail (P. Winwood, personal communication, October 31, 2011). The JAWS was used with permission of Paul Spector as noted on the JAWS website (P. E. Spector, 2011).

Demographics

The first 37 questions on the NRNQ ask new registered nurses about their age, gender, marital status, and nursing education. The word “partnered” was included in the options available to describe marital status to enhance inclusivity by using a term that may be more acceptable in the gay and lesbian community. Three questions asked for the month and year participants completed their nursing education program, when they successfully completed the National Council Licensure Examination (NCLEX) and obtained their nursing license, and when they began working as a registered nurse. Of these events, the most important was the amount of time, reported in weeks or months that the new registered nurse began working in their professional role which was operationalized as “professional tenure”. Participants were asked about previous education and degrees obtained in other fields, and prior experience working in a health care setting. Several questions asked participants about their work setting, including whether or not their employer had achieved Magnet status, characteristics about their patient population (pediatric vs. adult), the nature of the unit (critical care, step-down, etc.). New registered nurse participants were asked if they were currently on orientation

and how long their orientation period is or was. They were also asked if their employer offered a transition support program. If so, they were asked about their attendance at these programs or to identify any barriers that precluded their attendance at these programs. All of these items constituted the environment of the new registered nurse. Recalling that the environment in the Roy Adaptation Model (RAM) is the term used for all the stimuli that influence an individual's adaptation which are dynamic and shift from being fore most in the consciousness (focal) to those of unknown influence (contextual) and those that are not even in conscious awareness (residual) (Roy, 2009). In an effort to gain insight about new nurses' reports that they work hard and have insufficient time to carry out their tasks more than three days per week (Kovner, et al., 2007) an item was included asking new RNs about how often they were unable to leave work within 15 minutes of the end of their shift due to unfinished work. This item contributed to the description of the new RNs' work environment.

Perceived Adjustment

In addition to the items asking new RNs to describe themselves and their work environment, the participants were asked to describe their perception of how well they were adjusting to the role of the registered nurse. Perceived adjustment was measured using a single-item visual analog scale (VAS), using 0 to indicate "not adjusting well" and 10 representing "adjusting very well". This item is congruent with the Roy Adaptation Model (RAM) in that it asks the participant to describe their own experience, reflecting the philosophic value of humanism that is foundational in the RAM. However,

adaptation level has been a challenge for nurse researchers (DeSanto Madeya & Fawcett, 2009).

Adaptation level is not often discussed in the studies that use the RAM as a conceptual framework (DeSanto Madeya & Fawcett, 2009). DeSanto Madeya and Fawcett (2009) noted several obstacles that interfered with researchers' application of adaptation level, including a lack of clarity about whether the concept was rightfully placed as an independent or a dependent variable. Noting that Roy modified adaptation level over the course of several editions of her writing, DeSanto Madeya and Fawcett (2009) made a decision to measure adaptation level with a VAS measuring self-reported adjustment to a situation and to refer to the data as a response to stimuli, which seems to suggest they were advocating using adjustment level as an dependent variable. However, in the 2009 publication of the Roy Adaptation Model, the theorist is very clear that adaptation level is not an outcome, but it is itself a stimuli (Roy, 2009). Both DeSanto Madeya and Fawcett's article and Roy's latest edition of her theory were published in 2009.

Despite Roy's insistence of how to use adaptation level in the conceptual framework, she did not provide any more detail about how to measure adaptation level. DeSanto Madeya and Fawcett (2009) offered that adjustment level using a VAS was an acceptable strategy, and they developed a middle range theory of adjustment level to provide researchers with a way to measure adaptation level. Adaptation level and adjustment level while similar are still different concepts, which explained the correlation coefficients of .48 and .40 in two studies using RAM as a conceptual framework

(DeSanto Madeya & Fawcett, 2009). Despite this DeSanto and Madeya (2009) stated that the single-item Adjustment Scale using a VAS format is an acceptable measure which is congruent with the RAM, and allows researchers to begin to assess a participants' adaptation level.

Although further psychometric testing of adjustment using a single-item VAS is necessary (DeSanto Madeya & Fawcett, 2009), Patrician (2004) provided several advantages of this format for researchers to consider. Concepts which are unambiguously operationalized are appropriate for single-item measures (Patrician, 2004). Single-item measures are simple and easy for participants to use, which can enhance validity (Patrician, 2004). This ease of use may be more convenient for participants (Patrician, 2004). Visual analog scales or Likert-scale responses are two frequently used methods of formatting responses for single-item measures (Patrician, 2004). The use of single-item measures can provide information about the intensity of an experience, such as pain, but they are also appropriate for attitudes in the work-setting and have been used to assess concepts such as job satisfaction (Patrician, 2004). Barrone, Roy, and Frederickson (2008) support the use of visual analog scales in conjunction with the RAM.

Given these considerations, asking new nurses about their perceived adjustment level is important to know, appropriate and congruent with the RAM, and amenable to measurement with the single-item VAS. Currently, no cut scores have been identified to note integrated, compensatory, or compromised life processes (DeSanto Madeya & Fawcett, 2009). However, data about adaptation level is essential for the researcher to

consider in the evaluation of new registered nurses' adaptation. In this study, new RNs' perceived adjustment to the role of the registered nurse, an independent variable grounded in the conceptual framework, was measured with a single item visual analog scale ranging self-reported score. Possible responses ranged from zero to 10 with higher values indicating better adjustment to the role of the registered nurse.

Turnover Intent

Three questions in the NRNQ asked participants about turnover intent using a single-item, five-point Likert scale asking participants to rate their intent to stay in their current position for two years, their intent to stay with their current employer for two years, and their intent to stay in the nursing profession for five years. The scale for these three items used a five point Likert scale response from "very likely, likely, undecided, unlikely, and very unlikely". This item and response method has been used by other nurse researchers, such as Letvak and Buck (2008) and by researchers in the social sciences, such as Jex, Spector, Gudanowski, and Newman (1991). Other single-item measures for turnover intent in new nurses have been used by several nurse researchers (Beecroft, Dorey, & Wenten, 2008; Brewer, Kovner, Yingrengreung, & Djukic, 2012; Kovner, et al., 2007; Scott, et al., 2008). In this study, new RNs' intent to stay in their current nursing position for two years, a response variable, was measured with a single item Likert-scale response of one through five with one representing "very unlikely" and five describing "very likely".

Occupational Fatigue Exhaustion Recovery Scale

The Occupational Fatigue Exhaustion Recovery (OFER; OFER 15) Scale was developed by researchers in Australia to measure aspects of occupational fatigue, namely: acute fatigue, chronic fatigue, and intershift recovery (Winwood, et al., 2005). The instrument contains both positively and negatively worded items which were theoretically grounded and offer face validity (Winwood, et al., 2005). Although the researchers don't name their theoretical alliance that was used in the development of the OFER and OFER 15 explicitly, the frequent references to theories about stress in their publications seem to suggest stress theories as their foundation (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). The original 30 item instrument demonstrated via a pilot study that 20 of the original 30 items formed the three subscales and the instrument was shortened to a 20-item scale (Winwood, et al., 2005). The 20-item scale was then tested in a sample of 770 acute care nurses at an Australian hospital (Winwood, et al., 2005). Cronbach's alpha, a measure of internal consistency, was 0.93 for the chronic fatigue subscale, 0.82 for the acute fatigue subscale, and 0.75 for the intershift recovery subscale (Winwood, et al., 2005). The use of Cronbach's alpha as a measure of internal consistency was important to gauge how well the instrument was measuring one construct, in this case, each of the subscales was a single construct (Gliner, Morgan, & Leech, 2009). Further, because the responses to the subscales were designed in a six- point Likert scale format, the use of Cronbach's alpha was appropriate (Gliner, et al., 2009). The authors of this publication noted scores for the acute and chronic fatigue subscales were negatively correlated, providing reassurance that the constructs were indeed different (Winwood, et

al., 2005). After the items were modified according to confirmatory factor analysis, the goodness of fit index improved to .94 (Winwood, et al., 2005). Discriminant validity was assessed as satisfactory by comparing scores on the acute fatigue subscale with subscales for emotional and energy health on the Nottingham Health Profile (Winwood, et al., 2005). Test/retest reliability was evaluated at 2 months after the initial study, with reliability coefficients of 0.84 (chronic fatigue), 0.64 (acute fatigue), and 0.62 (intershift recovery)(Winwood, et al., 2005). Gliner et al.(2009) report that an acceptable test/retest coefficient is .70 indicating that test/retest scores for the acute fatigue and intershift recovery subscales may fall short.

The research team continued to modify the instrument and by their 2006 publication, the OFER had been revised. New psychometric data had been obtained in a research study with data supplied by more than 500 nurses. The acute fatigue subscale and the intershift recovery subscale had been revised after consultation with experts (Winwood, et al., 2006). This represented an attempt to enhance content validity as described by Gliner et al. (2009). Although the revised form of the OFER contained 22 items, it was eventually reduced to 15 items after confirmatory factor analysis (Winwood, et al., 2006). In subsequent publications, the acronym OFER is used even when the researchers used the 15 item (Winwood & Lushington, 2006; Winwood, Lushington, et al., 2006; Winwood, Winefield, & Lushington, 2006). The names OFER and OFER 15 seem to be used interchangeably.

The goodness of fit indices for the revised OFER 15 exceeded those of the first 30-item version (Winwood, et al., 2006). Cronbach's alpha for the revised OFER 15 was

0.86 (chronic fatigue), 0.84 (acute fatigue), and 0.84 (intershift recovery)(Winwood, et al., 2006). These coefficients for internal consistency were adequate.

Two months later, 132 nurses who initially responded to the revised OFER 15, participated in a follow up study providing the researchers with data to perform test/retest reliability (Winwood, Lushington, et al., 2006). The resulting Cronbach's alpha was: 0.64 (chronic fatigue), 0.61 (acute fatigue), and 0.62 (intershift recovery) (Winwood, et al., 2006). Despite these scores, the researchers noted there were no differences in responses from time 1 to time 2 using paired-item t-tests (Winwood, et al., 2006). Content validity was demonstrated in several findings: statistically significant positive correlations with the Nottingham Health Profile scores on emotional and energy subscales ($r = 0.50$ and $r = 0.40$ respectively) and a negative correlation with between the chronic fatigue subscale of the OFER 15 and the Nottingham Health Profile sleep health subscale ($r = -.31$, $p < 0.001$) (Winwood, et al., 2006). The authors noted sleep disturbances have been reported in people with higher scores on the chronic fatigue subscale of the OFER and an inverse relationship between scores on these subscales was not surprising (Winwood, et al., 2006). Ultimately, the psychometric tests on the revised OFER 15 were reassuring enough to the research team that they recommended use of the tool to assess fatigue in workers with the caveat that there was a need to test the OFER 15 in other populations (Winwood, et al., 2006).

Psychometric data for the OFER 15 was obtained from two other studies with nurses from Australia as participants. Each of these studies demonstrated that the OFER 15 had good acceptable internal reliability with a Cronbach's alpha of 0.83-0.89

(Winwood & Lushington, 2006) and 0.80 to 0.85 (Winwood, Winefield, et al., 2006). In addition, the researchers noted a statistically significant result supporting construct validity of the chronic fatigue subscale of the OFER in a one way analysis of variance with a created measure for patterns of shift work (Winwood, Winefield, et al., 2006).

The OFER 15 was used as part of a battery of instruments that made up the Fatigue in Nursing Survey Set, described in a recent publication that focused on fatigue in registered nurses in the US (Barker & Nussbaum, 2011). In this research study, 1006 nurses in the US responded to an invitation to participate in an online survey through convenience sampling of nursing organizations. The OFER 15 demonstrated satisfactory psychometrics in this study with a Cronbach's alpha of 0.91 (chronic fatigue), 0.87 (acute fatigue), and 0.87 (intershift recovery) (Barker & Nussbaum, 2011). Data on 874 nurses in this study found that acute fatigue scores were higher than chronic fatigue, a finding that was statistically significant (Barker & Nussbaum, 2011). Acute fatigue scores were related to hours of sleep and shift assignment, with lower acute fatigue scores reported by nurses who worked a regular steady schedule as opposed to more erratic schedules (Barker & Nussbaum, 2011).

Advantages of using the OFER are ease of use, simple items that enhance face validity, and that it can be used for many different populations (P. Winwood, personal communication, October 31, 2011). Per the author's instructions, the order of the items on the OFER 15 has been scrambled (P. Winwood, personal communication October 31, 2011). Several items were reverse scored following the scoring instructions, then the OFER 15 was scored by summing the items for each of the subscales, dividing by 30, and

multiplying by 100. The first five items represented the chronic fatigue subscale, followed by items six through 10, which represented the acute fatigue subscale, and finally the last five items represented intershift recovery (P. Winwood, personal communication, October 31, 2011). Higher scores indicate the construct is present to a greater degree (P. Winwood, personal communication, October 31, 2011). Researchers can also choose to divide the scores into four quartiles and assign values to the groups indicating: “low, low/moderate, moderate/high, or high” on the construct being measured. The OFER 15 is useful as a warning system that there is a work/recovery mismatch that may have consequences for individuals or groups (P. Winwood, personal communication, October 31, 2011).

The trait version of the OFER 15 was used in this study. New RNs were asked to consider their responses to the OFER 15 since beginning their work as an RN. The trait version of the OFER 15 is the most common version (P. Winwood, personal communication, October 31, 2011) and is appropriate for use with nurses with schedules that often group shifts together and who may have several days off from work at a time. The state version of the OFER 15 asks participants to consider their responses “today” or since they worked “yesterday” and the concern for the temporality of the items supported the use of the trait version as the most appropriate for this study.

The acute and chronic subscales of the OFER are made up of five items each. Participants in this study were asked to respond in Likert scale format with responses ranging from zero through six which represented strongly disagree (0) to strongly agree (6). Two items were reverse scored for the acute occupational fatigue subscale. Items

for the acute occupational fatigue subscale asked participants about their fatigue, exhaustion, and energy levels after they finish a day or a shift at work, inquiring about fatigue as a more temporary “state”. Items inquiring about chronic occupational fatigue ask participants about their readiness to return to work for the next shift and their perceptions that others may have unrealistic expectations for their workload. A lack of eagerness to return to work or the inability to achieve a satisfactory work/life balance is suggestive of a trait of maladaptation that may be represented by higher scores of chronic occupational fatigue (Winwood, et al., 2005). Scores on the OFER subscales could range between zero and 100, with higher scores indicating higher levels of the construct being measured (P. Winwood, personal communication, October 31, 2011).

Job-related Affective Well-being Scale

The Job-related Affective Well-being Scale (JAWS) was developed to build on previous researchers’ work that explored people’s emotional responses, specifically their affect, in the context of work (Van Katwyk, et al., 2000). Instruments were available that assessed affect very generally, or inquired about worker’s attitudes, such as job satisfaction, but the authors of the JAWS indicated the need for a tool that measured “pure affect... experienced in response to the job” (Van Katwyk, et al., 2000, p. 221). Additional benefits of the JAWS include the ability to discriminate between positive and negative affect (indicating pleasure states), arousal states, and a variety of potential responses that could be used to describe one’s affect (Van Katwyk, et al., 2000). The JAWS has been used by many researchers but its application differs widely.

The JAWS is offered as a 20 or 30 item survey asking about “emotional reactions” to work (P. E. Spector, 2011). Items ask about a variety of positive and negative emotional reactions which are equally distributed throughout the items on each version of the survey (P. E. Spector, 2006). Responses are chosen from a five point, Likert scale like format, ranging from “never, rarely, sometimes, quite often, and extremely often/always”(P. E. Spector, 2006). Researchers also have an option to score the positive and negative subscales separately, and report two scores instead of one overall score (P. E. Spector, 2007). For those who are interested in the four subscales that include pleasure and arousal, instructions are provided (P. E. Spector, 2007). For the purposes of this proposed research study, scores were calculated only for the negative affect subscale.

Researchers have also used total positive and negative subscale scores and some have been interested in the arousal/pleasure subscales. Using the positive and negative subscales of the 30-item version, researchers reported reliability coefficients of .95 for the positive subscale and .91 for the negative subscale of the JAWS (Fox, Spector, & Miles, 2001). Using only 15 items from the negative subscale of the 30-item JAWS, researchers reported the reliability coefficient for their study was .88 (Meier, Semmer, Elfering, & Jacobshagen, 2008). Although the authors did not clearly state whether or not their participants responded to an English speaking form of the JAWS or if it was translated into French, Guerrero and Herrbach (2008) used the 20-item version of the JAWS and reported reliability coefficients of .80 for the positive subscale and .81 for the negative subscale.

One of the authors of the JAWS, Paul Spector, provides a summary of the psychometrics of the instrument on his website. From the initial testing in the development of the instrument, through a revision that allowed researchers to choose from either the 30-item original tool or a 20-item version, the tool demonstrates reliability coefficients above .80 for all subscales (P. E. Spector, 2006). The coefficient for internal consistency of the negative subscale of the 20-item version is .88 (P. E. Spector, 2006).

For this study, the negative affect subscale of the JAWS was calculated from 10 items asking participants to rate how often their job causes them to experience negative emotions (anxious, frightened, depressed, discouraged, etc.). The responses were also in Likert-scale format ranging from one through five corresponding to “never (one), rarely (two), sometimes (three), often (four), and quite often (5). Scores on the negative emotional subscale were summed for a total score per the scoring instructions (Spector, 2007). Based on these instructions, scores on the negative emotional subscale of the JAWS could range from ten to 50, with higher scores indicating a more negative emotional state

Pilot Study

Sample sizes in publications about the Occupational Fatigue and Exhaustion Recovery (OFER) Scale exceeded 500 participants (Winwood, et al., 2006; Winwood, et al., 2005). Achieving this level of participation seemed difficult given available resources. A statistician advised a pilot study that could be beneficial in gathering data for a subsequent power analysis and that data from 20-30 new RNs would be sufficient for the power analysis (T. McCoy, personal communication, February 10, 2012).

Human Subjects' Protection

In order to ensure protection for human subjects, the Institutional Review Board at the University of North Carolina at Greensboro approved this pilot study prior to data collection.

Procedures

An electronic version of the New Registered Nurse Questionnaire (NRNQ) was used in the pilot study. The electronic version of the NRNQ was developed using a Qualtrics program available to students and faculty through The University of North Carolina at Greensboro (UNCG). Following approval from the student researcher's dissertation committee, an e-mail was sent to five colleagues of the student researcher who were likely to know new RNs. Four e-mails were sent on Wednesday, April 18th 2012 and one was sent on Friday, April 20th 2012. The e-mail provided a brief description of the study, a flier noting UNCG IRB approval for the study, and a link to the study. The e-mail and flier also provided contact information for the student researcher and the chair of the dissertation committee. Colleagues of the researcher were asked to forward the e-mail to new RNs they knew who might be interested in participating. The researcher did not personally contact any new RNs to invite them to participate in the online pilot study. Exactly how many new RNs received the e-mail invitation to participate in the pilot study is not known, but based on several conversations with colleagues, it is possible that approximately 200 new RNs received the forwarded e-mail.

New RNs were able to complete the electronic version of the NRNQ in any setting of their choosing that provided access to a computer with an Internet connection. The introductory letter to the NRNQ contained the elements of informed consent and that participating in the electronic version of the NRNQ conveyed consent to participate. In addition, the introductory letter contained IRB required cautions about privacy issues and advised participants to close all browsers when they were done with the survey.

For this pilot study, participants were advised that after completing the online NRNQ, they could send their contact information to the student researcher's UNCG e-mail account if they wished to be included in a drawing for a \$25.00 Target gift card. At no time could any identifying information be linked to the survey or data on the Qualtrics website. Nine new RNs did contact the student researcher about this raffle drawing and two names were randomly drawn from the list of these names. The numbers for the random drawing were supplied by the student researcher's advisor. The two winners were notified May 19, 2012 and the gift cards were mailed out as soon as the winners responded to the student researcher's e-mail requesting their addresses. This list of new RNs asking to be included in this drawing was then deleted from the researcher's e-mail.

The researcher assumed the responsibility for transferring data from the pilot study on the Qualtrics website within UNCG to SPSS for Windows version 19.0 (SPSS Inc., Chicago, Illinois). The pilot study concluded when a week went by without any new RNs completing the electronic version of the NRNQ. Data from 36 new RNs was entered via the electronic version of the NRNQ. At that point, the researcher consulted with a statistician who provided the results of the power analysis. Using nQuery v7.0

(Statistical Solutions Ltd., Saugus, MA) an a priori power analysis demonstrated that a sample size of 98 participants would be needed for 80% power to observe an increase in R^2 of 0.1020 as six additional work-related covariates were added to the personal characteristics of the new RNs in the data analysis, given a two sided alpha = 0.050 (T. McCoy, personal communication, May 10, 2012).

The decision to rely on a mailed, paper version of the NRNQ was based on the enhanced rigor of random sampling over convenience sampling. In addition, mailed surveys remain a viable option for researchers, even when dealing with Internet-savvy participants (Millar & Dillman, 2011). Millar and Dillman (2011) advocated for several strategies that might improve response rates, including: advance cash token incentives, multiple contacts, and mailed surveys. As new RNs e-mail addresses are not currently available through the NCBON, it was necessary to consider other strategies to remind participants about the survey. Millar and Dillman's (2011) comments were given serious consideration and were useful in the design of this study.

Sample and Data Collection Procedures for the Full, Main Research Study

Human Subjects' Protection

In order to ensure protection for human subjects, the Institutional Review Board at the University of North Carolina at Greensboro approved this research study prior to data collection.

Procedures

The NRNQ was mailed to 250 new RNs from North Carolina in late May 2012, in the hopes of reaching a 40% response rate. Contact information for the new RNs was

provided by the North Carolina Board of Nursing (NCBON). A representative from the NCBON was able to create a subset of 1,285 new RNs from all 3,857 newly licensed registered nurses from May 2011 through May 2012, by choosing every third name via a computer program (C. Thomas, personal communication, May 7, 2012). The researcher then chose every fourth name from the contact information provided by the NCBON until 250 surveys were addressed.

In addition to the NRNQ, new nurses also received a letter explaining the research study and all required elements of informed consent, including a statement that consent to participate was conveyed in returning the completed survey to the researcher.

Anonymity and confidentiality of all responses were specifically addressed in the letter accompanying the NRNQ. The introductory letter of the NRNQ also advised new RNs that their names and contact information were provided by the North Carolina Board of Nursing, another strategy that may also improve response rates as recommended by Dillman, Smythe, and Christian (2009). New RNs were also supplied with contact information for the researcher, advisor, and the Institutional Review Board at The University of North Carolina at Greensboro in the packet containing the NRNQ.

Additional contents included a stamped and self-addressed envelope to return the NRNQ to the researcher and a two dollar bill which served as an advanced cash token incentive, a strategy recommended by Millar and Dillman (2011). All documents included with the paper form of the NRNQ were carefully organized in a manner that was expected to reassure participants about the professionalism of the researcher, another strategy which may improve response rates (Dillman, et al., 2009).

Labels with names and addresses of the new RNs in the sample were created by the researcher and were used to mail reminder/thank you post cards one week after the surveys were mailed. This thank you/reminder post card represented the researcher's ongoing effort to communicate with the participants, another strategy that may improve response rates by Millar and Dillman (2011).

New RNs participating in the full, main research study were able to complete the paper version of the NRNQ in any setting of their choosing. Data collection ensued as completed surveys were returned to the researcher and continued for five weeks. Initially, surveys were returned to the researcher steadily and several days after the thank you/reminder post card was mailed, there was a noticeable increase in the number of surveys returned to the researcher. The rate with which surveys were returned to the researcher was sporadic and began to dwindle in late June. One survey was returned during the first week in July and after a period of two weeks with no additional surveys returned, data collection closed. Of the 250 packets mailed to new RNs, 10 were returned to the researcher as undeliverable. All surveys were examined for violations of exclusion criteria. Eight surveys were excluded from data analysis. These included five surveys from participants who had experience as a Licensed Practical Nurse (LPN), two surveys from participants with a professional tenure of 13 and 14 months respectively, exceeding the upper limit of 52 weeks or less for inclusion, and one survey from a nurse who described some work experience as an RN intern, but was unclear about current working status. Data from 88 new RNs were included in the final analysis, for a response rate of 37%.

As the number of surveys returned to the researcher decreased in late June, it became apparent that achieving a final sample size of 98-100 participants was not likely to occur with this first mailing. Consultation with a statistician led to another power analysis. This subsequent power analysis demonstrated that a sample size of 85 participants would still yield 80% power to detect an increase in R^2 of 0.1161 with the addition of work-related covariates to the personal characteristics of the new RNs, given a two sided alpha = 0.050 (T. McCoy, personal communication, June 29, 2012).

Data Analysis Plan

Management of the Data

The researcher was solely responsible for manually entering all data into SPSS for Windows version 19.0 (SPSS Inc., Chicago, Illinois). The data were anonymous as no identifying information was asked for on the paper surveys. The responses were kept confidential. Immediately after initial data entry, all data from each survey were rechecked for accuracy. Additional checks of data occurred as data collection was drawing to a close in early July and each survey was again rechecked for accurate entry by the researcher. Approximately 40 randomly picked questions were also rechecked for correct entry. Finally, the presence of outliers and missing data in univariate analysis and analysis of residuals in statistical analysis prompted a review of the survey and data entry to ensure accuracy.

Transforming and Recoding Variables. To prepare the data for analysis, several variables were recoded as categorical values. The variables were not recoded in the reporting of sample demographics. These included nursing education, patient acuity,

usual shift, and attendance at a transition support program. For example, options for describing nursing education included: diploma, Associate's degree, Baccalaureate, or accelerated Baccalaureate and Master's degree. As only one person in this study had an entry to practice Master's degree, it was decided that combining both routes to a baccalaureate degree with the Master's degree was reasonable. Likewise, as only seven new RNs began their nursing careers with a diploma, for the purposes of data analysis, these participants were grouped with participants with an Associate's degree. A measure was created to accommodate those new RNs with a baccalaureate degree or higher as their nursing education, which was assigned a "1". New RNs with a diploma or Associate's degree were assigned a "0" and are the reference category.

New RNs who attended one or more employer sponsored transition support program gatherings were assigned a "1" in an indicator variable for attendance. Nurses who didn't have access to a transition support program or who did not attend any of the meetings if their employer did provide this support became the reference category and were assigned a "0" for the purposes of data analysis.

Most participants in this study worked a 12 hour shift which seemed better described as a categorical variable. New RNs who worked a 12 hour shift were assigned a "1" and those who worked eight or ten hours were assigned a "0" for the purposes of data analysis. In a similar fashion, new RNs who were female were assigned a "1" under the variable gender and male nurses became the reference category with a "0".

Another measure was created in an effort to understand the demands of the working situation on the new RN. In the NRNQ, new RNs were asked several questions

about the level of care required by the patients on their units. One item asked participants very generally whether they cared for children or adults, but other items were more focused and specific, asking if the new RN cared for patients in a critical care area. Responses were either yes or no. If new RNs answered no to the item asking about working in a critical care unit, they were then asked whether or not they cared for patients requiring a step-down or intermediate level of care. Nurses who provide critical care and step-down care to patients have similar responsibilities, including: managing invasive lines, titrating medications, and responding to unstable or deteriorating clinical patient situations (American Association of Critical Care Nurses, 2012, n.d.; Benner, et al., 2010). As previously noted, step-down care happens across all patient populations and in non-traditional settings, such as home care (American Association of Critical Care Nurses, 2012, n.d.). For the purposes of this research study, new RNs who work in either critical care or step down were assigned a “1” in the variable created for data analysis and those who answered “no” to both questions about critical care or step down are the reference category with a dummy code of “0”.

Several questions on the NRNQ asked new RNs about their employer’s Magnet status, whether or not the new RN was on orientation, and if they rotated shifts. Since these variables were categorical, indicators with appropriate reference groups were created as the data were prepared for analysis. New RNs who were on orientation were assigned a value of “1” and those who reported they were no longer on orientation were given a value of “0”. New RNs who worked in Magnet accredited facilities were given a

value of “1” and all others were coded as “0”. New RNs who rotated shifts were given a value of “1” while others who worked straight shifts were coded as “0”.

Finally, several variables were recoded for uniformity. One item asked new RNs about their professional tenure or how long they had been caring for patients in the role of a registered nurse. Some new RNs might have responded to this question in “weeks” while others might have chosen to answer in “months”. Indeed, while most new RNs framed their response in months, there were some that chose to answer in “weeks” (i. e. 3 weeks). Two measures were created to reflect all participants’ professional tenure in both weeks and months. In the change from months to weeks, it was noted that several new RNs with 12 months professional tenure were described as having a professional tenure of 48 weeks, although it’s likely that this could also have been interpreted as 52 weeks. At this point, two additional measures for professional tenure in weeks and months were created using the formula for 365.25 days per year, divided by seven for the number of days per week, and then divided again by 12 months per year, resulting in 4.3 weeks per month. However, little change was noted in most of the participants’ professional tenure. For the purposes of data analysis, professional tenure will be reported in months which reflect the participants’ own description, is easily understood by readers, and is in keeping with the inclusion criteria.

Similarly, some participants reported the length of their orientation in weeks while others reported months. A measure for the length of orientation in weeks was created to facilitate a common understanding of the length of orientation programs new RNs were experiencing. Orientation programs that were described in months by

participants on the NRNQ were converted to weeks by the student researcher (i.e. 6 months orientation is reported as 24 weeks). Table 1 summarizes the operationalization of the derived measures.

Table 1.

Coding for Data Analysis

Variable	Entered Data	Coding
Gender		
Male	1	0
Female	2	1
Nursing education		
Diploma	1	0
Associate's Degree	2	0
Baccalaureate	3	1
Associated Baccalaureate	4	1
Master's Degree	5	1
Patient acuity		
Employed in critical care		
Yes	1	1
No	2	0
Care for patients requiring step – down, intermediate level of care, or remote telemetry		
Yes	1	1
No	2	0
Usual shift length		
8 hour days	1	0
8 hour evenings	2	0
8 hour nights	3	0
12 hour days	4	1
12 hour nights	5	1
10 hour shifts	6	0
Other	7	0
Employer's Magnet status		
Yes	1	1

No	2	0
Rotate shifts		
Yes	1	1
No	2	0
Currently on orientation		
Yes	1	1
No	2	0
Attend transition support program (TSP)		
Does your employer offer a transition support program		
Yes	1	1
No	2	0
Do you attend the program sessions?		
I attend 100% of the sessions	1	1
I attend 75% of the sessions	2	1
I attend 50% of the sessions	3	1
I rarely attend the sessions (attended 1 or 2)	4	1
I never attend the sessions	5	0
	0	0

Initial Data Analysis. Descriptive statistics were calculated on all the variables. Frequencies and percentages were assessed for categorical variables. Continuous variables were assessed with measures of central tendency, and graphic analysis box plots, histograms, and normal P-P plots. The one sample Kolmogorov-Smirnov test was calculated for each of the continuous variables that were used in statistical analysis and results were cautiously considered, but ultimately, graphic analysis of normal distribution and values for skewness and kurtosis were used to support decisions regarding the normal distribution of the data. Data were considered to be normally distributed if the values for skewness and kurtosis were between -1.0 to +1.0 (Huck, 2008).

Two outliers were noted on the boxplot for age. The data were checked for accuracy and found to be congruent with participants' responses. The ages of these two

outliers were 55 and 57 respectively and the data were not transformed as analysis of the residuals from modeling did not indicate assumptions were violated.

Variables Created for Data Analysis. It was necessary to create the scores for acute and chronic occupational fatigue and negative affect scales. For each of these, instrument scoring instructions were followed with attention paid to variables requiring reverse scoring. The subscales were created using the SPSS software. Cronbach's alpha was calculated for each of the instruments.

Most of the research questions required multiple linear regression for data analysis. For these research questions, residuals were assessed for linearity, independence, homoscedasticity, and normality. Multicollinearity was assessed using the variance inflation statistic.

Data Analysis for Specific Aims

The plan for data analysis follows each specific aim.

Specific Aim # 1

Describe new registered nurses' adaptive behaviors.

Research question # 1. What are the levels of acute and chronic occupational fatigue in new registered nurses?

To determine the levels of acute and chronic occupational fatigue in new RNs, the OFER 15 was scored following scoring instructions. Univariate analysis included graphic assessments of boxplots and histograms. Outliers prompted the student researcher to check the data for accuracy. Descriptive statistics and measures of central

tendency were calculated. In addition, measures of variability in scores, such as standard deviations and minimum-maximum ranges were calculated and reported.

Specific Aim # 2.

Explore the relationship between characteristics of new registered nurses and adaptive behaviors.

Research question # 2. What variables are predictive of new registered nurses' acute occupational fatigue?

The researcher had a conceptual interest in the personal attributes of the new RN (age, gender, nursing education, professional tenure, and perceived adjustment) and several characteristics of the workplace (usual shift length, shift rotation, attendance at a transition support program, the employer's Magnet status, whether or not the new RN was currently in their formal orientation period, and patient acuity). Descriptive statistics and measures of central tendency were calculated for each of these measures. Initially, the attributes of the new RN were entered into a simultaneous linear regression model with acute occupational fatigue as the dependent variable. Following this regression analysis, these variables were removed from the model and characteristics of the workplace were modeled with acute occupational fatigues as the response variable in a simultaneous linear regression. The final linear regression model in the analysis for this research question included both personal attributes of the new RN and characteristics of the workplace. After this analysis, the variables representing the characteristics of the new RNs and the workplace variables were all included in a simultaneous linear regression model with acute occupational fatigue as the dependent variable. The focus of

this regression analysis was the relationship between the independent and dependent variables, specifically on the adjusted R^2 value which according to Polit (1996) provides some insight into this relationship at the population level.

In each of the three steps of this data analysis, the assumptions of the residuals were assessed for linearity, independence, homoscedasticity, and normality.

Multicollinearity was assessed by examining the variance inflation factors (VIFs).

Research question # 3. What variables are predictive of new registered nurses' chronic occupational fatigue?

Research question 3 was analyzed in a similar fashion to the previous research question, except that the dependent variable was the new RNs' scores on the chronic occupational fatigue subscale of the OFER. The process for data analysis including the variables entered into the simultaneous linear regression, the steps in the analysis, a focus on the adjusted R^2 , was the same for research question 3 as it was for the preceding research question. Assumptions of the residuals and multicollinearity were assessed.

Research question # 4. What is the relationship between new registered nurses' characteristics (age, gender, nursing education, perceived adjustment level, and professional tenure) and workplace variables (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on acute occupational fatigue?

The data were assessed for normal distribution with graphic analysis and measures of central tendency. In this research question, measures for the personal attributes of the new RN and characteristics of the workplace were entered in a

simultaneous linear regression for analysis. This analysis attempted to provide an understanding of the effects of the independent variables on the response variable, acute occupational fatigue, thus the focus of this analysis was the regression coefficients.

The assumptions of multiple linear regression were checked, including: independence, linearity, homoscedasticity, and normality. Variance inflation factors were examined for evidence of multicollinearity

Research question # 5. What is the relationship between new registered nurses' characteristics (age, gender, nursing education, perceived adjustment level, and professional tenure) and workplace variables (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on chronic occupational fatigue?

Data analysis for this question followed the plan for question four with the variables of interest modeled in a simultaneous linear regression with the response variable of chronic occupational fatigue, and a focus on the regression coefficients. The assumptions of multiple linear regression were checked, including: independence, linearity, homoscedasticity, and normality. Variance inflation factors were examined for evidence of multicollinearity

Research question # 6. What is the relationship between new registered nurses' characteristics (age, gender, nursing education, perceived adjustment level, and professional tenure) and workplace variables (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on negative affect?

Data analysis for this question followed the same plan for the previous two research questions about acute and chronic occupational fatigue. The variables of interest were modeled in a simultaneous linear regression with the response variable of negative affect, with a focus on the regression coefficients. The assumptions of multiple linear regression were checked, including: independence, linearity, homoscedasticity, and normality. Variance inflation factors were examined for evidence of multicollinearity.

Research question # 7. What is the relationship between new registered nurses' characteristics (age, gender, nursing education, perceived adjustment level, and professional tenure) and workplace variables (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on new RNs' intent to stay in their current nursing position for two years?

Data analysis for this question proceeded in similar fashion to that of the previous three questions. The variables of interest were modeled in a simultaneous linear regression with the response variable of intent to stay in their current nursing position for two years, with a focus on the regression coefficients. The assumptions of multiple linear regression were checked, including: independence, linearity, homoscedasticity, and normality. Variance inflation factors were examined for evidence of multicollinearity.

Summary

The aim of this research study was to explore and describe the adaptation of new RNs. The New Registered Nurse Questionnaire (NRNQ) included demographic items, several questions about the characteristics of new RNs and their work environment, following the Roy Adaptation Model as a conceptual foundation. Additionally, the

NRNQ included the Occupational Fatigue Exhaustion Recovery Scale and the Job-Related Affective Well-Being Scale. In this study, the researcher hoped to accurately describe the personal impact of this experience on the new RNs' adaptation by assessing acute and chronic occupational fatigue, negative affect, and intent to stay in their current nursing position for two years.

An online pilot study with new RNs was carried out using a convenience sampling strategy. Data from this pilot study facilitated data collection that was used to inform a power analysis for the subsequent full, main research study, which was administered via a paper, mailed survey. The NRNQ was identical in both the online and paper surveys. The online pilot study was approved by the Institutional Review Board (IRB) at The University of North Carolina at Greensboro (UNCG).

This research study included elements of a tailored survey design described by Dillman, Smyth, and Christian (2009). Unruh and Nooney (2011) described this approach in their study. Tailored survey design indicates the researcher is aware that decisions about study design are made with in consideration of characteristics of the accessible population that might "increase rewards and trust and minimize costs" (Dillman, et al., 2009, p. 33). The elements of a tailored survey design in this study were found in the invitation to participate that provided participants with background information about the study and contact information for the student researcher, advisor, and the UNCG IRB. In addition, the student researcher identified the North Carolina Board of Nursing (NCBON) as the agency where contact information for the participants was obtained. The mailed, paper version of the NRNQ was included in a packet that

contained all the required elements of informed consent, IRB approval for the study, a self-addressed stamped envelope for mailing the completed survey back to the student researcher, and a two-dollar bill, the advance cash token incentive described by Millar and Dillman (2011).

Participants in both the pilot study and the full main research study were reassured about the anonymity and confidentiality of their responses. Although Dillman et al. (2009) did not describe the researcher's attention to this important detail of reassuring participants as an element of a tailored survey design, in this research study, it was considered important enough to warrant being included as such.

Data were double checked for accuracy at the time of entry and again at a later date. In addition, a random audit of approximately 40 surveys was also performed to check the data for accuracy. The student researcher sought the advice of a statistician for a power analysis and sample size considerations. Some data were recoded for specific data analysis plans. Data analysis included attention to checking assumptions for specific statistical tests.

CHAPTER IV

RESULTS

The goal of the statistical analysis was to explore adaptation in new registered nurses (new RNs). In specific research questions, attributes of the new RNs were modeled with characteristics of the workplace and associations with several dependent variables were explored using simultaneous multiple regression analysis. The concept of adaptation was assessed with several different measures, including subscales of two pre-existing instruments. The Occupational Fatigue Exhaustion Recovery (OFER) Scale measured acute occupational fatigue (OFER-A) and chronic occupational fatigue (OFER-C) (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). In addition, negative affect was measured with the negative emotional subscale of the Job-Related Affective Well-Being Scale (JAWS) (Van Katwyk, et al., 2000). Turnover intent was measured with a single item measure using a Likert-scale format asking new RNs about their intent to remain in their current nursing position for the next two years. These instruments were included in the New Registered Nurse Questionnaire (NRNQ), an investigator developed tool that also included demographic questions, several of which were measures used in data analysis

The results of the data analysis are reported in this chapter. In addition to the results of data analysis for specific research question, this chapter also includes: a

description of the demographic characteristics of the participants, an explanation of the preliminary examination of the data, a discussion of missing data, and reliability statistics for the OFER –A, OFER –C, and negative affect subscales of the JAWS. Scores for perceived adjustment, a self-reported measure reflecting a conceptual understanding of adaptation is also discussed in this chapter.

Management of the Data

Preliminary Examination of the Data

Descriptive statistics were calculated on all the variables. Frequencies and percentages were assessed for categorical variables. Continuous variables were assessed with measures of central tendency, and graphic analysis box plots, histograms, and P-P plots. The one sample Kolmogorov-Smirnov test was calculated for each of the continuous variables that were used in statistical analysis and results were cautiously considered, but ultimately, graphic analysis of normal distribution and values for skewness and kurtosis were used to support decisions regarding the normal distribution of the data. Data were considered to be normally distributed if the values for skewness and kurtosis were between -1.0 to +1.0 (Huck, 2008).

Two outliers were noted on the boxplot for age. The data were checked for accuracy and found to be congruent with participants' responses. The ages of these two outliers were 55 and 57 and the data were not transformed, as analysis of residuals from modeling did not indicate violation of assumptions.

Missing Data

Missing values were assessed in several ways. First, observation during data entry revealed that some participants did not answer the question about intent to stay in their current nursing position (same unit) for the next two years. A missing values analysis indicated that ten new RNs did not answer this question. Some participants may have been confused by an error in the sequential numbering of three items immediately surrounding this question.

Examination of missing values continued during data entry. More formally, observation included frequencies and counts of variables which were used to look for missing data. Finally, a missing data analysis of all variables used in data analysis did not demonstrate any apparent pattern to missing values. There was one case where a new RN apparently turned two pages of the survey at one time, leaving six items unanswered. One other participant either ignored or missed one page of questions leaving three items unanswered. Other cases of missing values appeared to be isolated and sporadic and no participant was excluded from data analysis because of missing data.

Reliability of the Instruments

Reliability coefficients were calculated for the OFER A, OFER C, and the negative affect scale of the JAWS. The Cronbach's alpha for internal consistency was good with scores ranging from .841 to .868 (see Table 2).

*Table 2.**Reliability Measurements for Instrument Subscales*

Instrument	Subscale	Number of Items	Cronbach's alpha
OFER-A	Chronic Occupational Fatigue	5	.841
OFER-C	Acute Occupational Fatigue	5	.867
JAWS	Negative Affect	10	.868

Sample Demographics

Data from 88 new RN participants were included in this study, representing all participants who met inclusion criteria. The mean age of new nurses in this study was 30.90 years (SD = 8.37; range 21-57 years). New RNs ages 29 years and younger accounted for 53% of the sample and 47% of the new RNs were age 30 and over, including 18% of the participants who were age 40 and older. Not surprisingly, females constituted 87.5 percent of the sample. Almost half (46%) were single, 41% were married, and 8 % were separated, divorced, or widowed. Only four participants identified themselves as partnered however it seemed that this choice may have been somewhat confusing as one male nurse who indicated he was “partnered” also wrote in “female” near this item and another new RN added the comment “engaged”.

Less than half of the participants in the sample had a baccalaureate or higher degree in nursing education (45 %) compared to those educated with a diploma or an Associates' Degree (54%). Nearly half of the participants had a previous college degree

(46%) and some had multiple degrees. The mean professional tenure for new RNs in this study was 7.63 months (SD = 3.68 months). Most of the new RNs in this study were no longer on orientation (80%). The mean orientation length for this group of new RNs was 12.12 weeks (SD= 6. 17 weeks). Orientation periods ranged from “zero” weeks, reported by one new RN who worked in long-term care, to 26 weeks, which was described by two participants. The median and the mode for orientation length were also 12 weeks each

The majority of the new RNs in this study worked with patients requiring either a critical care or “step-down” level of care (73%) and 84% of the participants worked 12-hour shifts. The new RNs in this sample worked with diverse patient populations in critical care and outpatient settings where patients receive dialysis, from “mother – baby units” and pediatrics to psychiatry and several new RNs noted that they worked in long-term care and skilled nursing facilities. A large percentage of the new RNs in this study (57%) had been previously employed in health care. More than half the new RN participants (59%) had some form of transition support program available to them, all attended at least one or two sessions, and 44 % of these new RNs reported attending all the sessions. Fewer new RN participants worked in facilities recognized as Magnet hospitals (44%). The mean self-rated adjustment to the professional role of participants in this study was 7.35 ± 1.58 ; where the observed range was from three to 10.

Turnover rates for new nurses vary in the literature. In this study, 80% of the new RNs were employed in the first nursing position they were hired into. However, 20% of the new RNs in this study had already left either their original unit of hire or the institution where they began their nursing career. Two nurses reported “other” when

asked about turnover in their nursing role, but no explanation was given. One nurse with 12 months of experience assumed administrative duties in a long term care facility, a role that she reported she was encouraged to take by her supervisor and which seemed to represent successful assimilation in to the role of the registered nurse. Of the 18 new RNs who experienced turnover in their first nursing position 14 indicated that change was voluntary. The sample of new RNs in this study is described in Table 3.

Table 3.

Demographic Statistics of Sample (N = 88)

Variable	Minimum	Maximum	N (%) or Mean \pm SD*
Age	21	57	30.90 \pm 8.37
Gender	--	--	
Male			11 (12.5)
Female			77 (87.5)
Nursing education	--	--	
Diploma			7 (8)
Associate's Degree			41 (47)
Baccalaureate			30 (34)
Accelerated Baccalaureate			9 (10)
Master's Degree			1 (1)
Previous college degree(s)	--	--	
Yes			40 (46)
No			47 (53)
Missing data			1 (1)
Breakdown of participants' previous degrees (n = 40)			
Associate's Degree			6 (7)
Baccalaureate			36 (41)
Master's Degree			5 (6)

Ph.D.			1 (1) **
Professional tenure (months)	.25	12	7.63 ± 3.68
Orientation length (weeks)	0	26	12.12 ± 6.17
Currently on orientation	--	--	
Yes			17 (19)
No			70 (80)
Missing data			1 (1)
Currently employed in Magnet facility	--	--	
Yes			39 (44)
No			44 (50)
Missing data			5 (6)
Previously employed in health care setting	--	--	
Yes			50 (57)
No			38 (43)
Currently employed in critical care or “step-down” unit	--	--	
Yes			64 (73)
No			24 (27)
Usual shift length	--	--	
12 hours			74 (84)
Other			14 (16)
Shift Rotation			
Yes			23(27)
No			62 (73)
Employer sponsored transition support program available	--	--	

Yes			
No			52 (59)
Missing data			34 (39)
			2 (2)
Attendance at any transition support program (n = 52)	--	--	
Attends 100% of the sessions			39 (44)
Attends 75% of the sessions			7 (8)
Attends 50% of the sessions			1 (1)
Attends 25% of the sessions			2 (2)
Attends rarely, only 1 or 2 sessions			3 (3)
Employment status	--	--	
Currently working in same position as first hired			70 (80)
Working at same institution but a different unit			6 (7)
No longer working at same institution as first hired			10 (11)
Other			2 (2)
Decision to turnover was: (n = 18)	--	--	
Voluntary			14 (15)
Mutually decided with nurse manager			2 (2)
Involuntarily changed position			1 (1)
Missing data			1 (1)
Perceived adjustment	3	10	7.35 ± 1.58
*SD = standard deviation			
** does not add to 40 participants with a previous degree; some participants had more than one previous degree			

Descriptive Statistics of the Instruments

As previously described, several measures were created for acute and chronic occupational fatigue and negative affect following the scoring instructions. Intent to stay in the current nursing position for the next two years was assessed with a single-item, five point Likert-scale type response ranging from “very unlikely” (1) to “very likely” (5). Table 4 summarizes relevant information about these variables, including the number of items in each subscale, possible scores, the minimum and maximum scores of participants in this study, and the mean and standard deviations for each of these subscales.

Table 4.

Descriptive Statistics for Subscales and Intent to Stay in Current Position for Two Years

Variable	Number of items	Possible score range	Minimum-Maximum	Mean \pm SD
OFER – A*	5	0-100	20-100	64.88 \pm 19.69
OFER – C**	5	0-100	0-90	41.86 \pm 23.13
Negative affect (JAWS)***	10	10-50	14-43	24.42 \pm 6.25
Intent to stay in current position for two years****	1	1-5	1-5	3.38 \pm 1.39

*N = 85 OFER – Acute Occupational Fatigue

**N = 86 OFER –Chronic Occupational Fatigue

***N = 78 Negative Affect JAWS

**** N = 78

Results for Research Questions

The results for each of the research aims and questions follow.

Specific Aim # 1

Describe new registered nurses' adaptive behaviors.

Research question #1. What are the levels of acute and chronic occupational fatigue in new registered nurses?

As reported in Table 4, new RNs in this research study reported higher levels of acute occupational fatigue than chronic occupational fatigue. The mean score for chronic occupational fatigue was 41.86 (SD = 23.13) with minimum scores of 0 and maximum scores of 90 for the participants in this study. The mean score for the acute occupational fatigue scale was higher at 64.88 (SD = 19.69) with a minimum score of 20 and a maximum score of 100. The mean negative emotional subscale for the JAWS instrument was 24.42 (SD = 6.25).

Assumptions of the data were checked. One outlier was noted on the boxplot for the negative affect subscale of the JAWS. The data were checked for accuracy which was found. The median score for the negative emotional subscale of the JAWS was 24, which was reassuring for normality because of its proximity to the mean value of 24.42. Graphic analysis of P-P plots also indicated a normal distribution and the values for skewness and kurtosis were all between -1.0 and 1.0 which Huck (2008) considers as further evidence of a normal distribution.

Specific Aim #2

Explore the relationship between characteristics of new registered nurses and adaptive behaviors.

Research question #2. What variables are predictive of new registered nurses' acute occupational fatigue?

Attributes of the new RNs (age, gender, nursing education, perceived adjustment, and professional tenure in months) in this study did not predict the new RNs scores on the measure for acute occupational fatigue- OFER A (5 df; overall regression test $p = 0.278$; adjusted $R^2 = 0.017$). The assumptions of this statistical analysis included checking the residuals for independence, linearity, normal distribution, homoscedasticity, and multicollinearity. Based on study design, paired observations were not present. The Durbin-Watson statistic of 2.11 indicated there was no substantial autocorrelation. Graphic analysis of stem and leaf plot and P-P plots of the residuals is reassuring for normality and the one-sample Komogorov-Smirnov test for normal distribution was not statistically significant ($p = .0.260$). A scatterplot of the residuals satisfied the assumptions of homoscedasticity and linearity. Variance inflation factors were less than two, indicating that multicollinearity was not present in this statistical analysis. Several DF Betas were concerning for a combination of values on the independent variables that may have influenced the adjusted R^2 value in this analysis. Norusis (2008) recommended that unusual DFBetas should prompt the researcher to check the data for accuracy, and this was done on several occasions. As the mean Cook's value was 0.0.14, it was felt that no participant exerted an unusual influence on the modeling results.

Workplace variables of the new RNs were assessed for their predictive ability on acute occupational fatigue. These measures included: usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and whether or not the new RN attended any transition support programs. There was no substantial evidence that workplace variables contributed to the new RN's acute occupational fatigue scores (6 df, overall regression test $p = 0.483$; adjusted $R^2 = -.006$). When the adjusted R^2 is negative, Tabachnick and Fidell (2007) cite the recommendation of Cohen et al. (2003) to report the value as 0.

Assumptions of this statistical analysis were assessed. Study design and a Durbin-Watson statistic of 2.2 supported the assumption of independence of the residuals. Normality of the residuals was noted in the graphic analysis of box plots, stem and leaf plots, and a one-sample Kolmogorov-Smirnov statistic that was not statistically significant ($p = 0.694$). Analysis of the residual scatterplot demonstrated there was no particular pattern, thus satisfying the assumptions of homoscedasticity and linearity. Variance inflation factors were less than two, indicating that multicollinearity was not present. DFBetas were also assessed in analyses of potential influential observations and again, several were found to exceed the sample size adjusted cut off of .21 for this research study, but the mean Cook's distance was 0.015 indicating that none of the participants had an unusual influence on the modeling results.

Finally, the combination of personal attributes and characteristics of the workplace of the new RNs in this study did not substantially or significantly predict their scores on the OFER-A (11df; overall regression test $p = 0.341$; adjusted $R^2 = 0.022$).

Assumptions of the residuals were assessed and independence of the residuals was noted with a Durbin-Watson statistic of 2.14. Linearity and homoscedasticity were supported in the absence of any pattern on the scatterplot. The residuals appeared to be normally distributed on graphic analysis of box plots and P-P plots. The one sample Kolmogorov-Smirnov test for normal distribution of the residuals was not statistically significant ($p = 0.601$), another indication of adequacy of this assumption. Variance inflation factors were below 2 indicating that multicollinearity was not present in this analysis. Leverage was considered as several DFBetas exceeded the sample size adjusted cut-off of .21, but the mean Cook's distance value was reassuring at 0.017. Table 5 summarizes the influence of the attributes of the new RNs and the association of their workplace on acute occupational fatigue.

Table 5.

Adjusted R² and Overall Regression Tests for Any Significant Predictors of Acute Occupational Fatigue

Model	Adjusted R ²	df	p-value
Attributes of the new RN Age Gender Nursing education Professional tenure Perceived adjustment	0.017	5	0.278
Workplace Variables Usual shift length Shift rotation Orientation status Employer's Magnet status Patient acuity Attendance at transition support programs	0.00	6	0.483
Combined attributes of new RNs and workplace variables	0.022	11	0.341

Research Question # 3. What variables are predictive of new registered nurses' chronic occupational fatigue?

While the relationship between attributes of the new RNs (age, gender, nursing education, professional tenure, and perceived adjustment) and their scores on the measure for chronic occupational fatigue, the OFER-C, was statistically significant ($p = 0.041$), the adjusted R² value was only 0.080, indicating the relationship was weak.

Modeling assumptions were assessed with analysis of the residuals. The Durbin-Watson statistic was 2.18 supporting no autocorrelation of the residuals. Analysis of the

residual scatterplot satisfied homoscedasticity and linearity. The residuals appeared to be normally distributed in analysis of the box-plot, stem and leaf plot, and P-P plot. The one sample Kolmogorov-Smirnov test for normality further supported a normal distribution of the residuals ($p = 0.895$). Multicollinearity was not found in this statistical analysis with all variance inflation factors less than two. Finally, leverage was considered in the assessment of DFBetas that the sample size adjusted cut-off of .21 for this research study, but the mean Cook's value of 0.014 was reassuring that none of the participants' exerted an unusual influence on the outcome.

When measures for characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and whether or not the new RN attended any transition support programs) were assessed for their association with chronic occupational fatigue, the results were similar to those for acute occupational fatigue. The relationship between characteristics of the workplace and chronic occupational fatigue scores was statistically significant (6 df; $p = 0.032$), but the adjusted R^2 was 0.104 indicating a weak association between these predictors and the OFER – C scores.

Analysis of residuals supported modeling assumptions here. The assumption of no autocorrelation was borderline with a Durbin-Watson statistic of 2.52. The residuals were normally distributed on a box plot, stem and leaf plot, and P-P plot. The one-sample Kolmogorov-Smirnov statistic was not statistically significant ($p = 0.508$), indicating assumption of normality was reasonable. A residual scatterplot indicated linearity of the residuals and constant variance of the residuals. DFBetas were assessed,

but a mean Cook's value of 0.014 suggested no one participant unduly influenced the results.

In a subsequent model, the personal attributes of the new RNs and characteristics of the workplace were jointly assessed for their association with the score on the OFER – C. These predictors were jointly modeled for chronic occupational fatigue, the dependent variable. The results of this analysis indicated that a slightly stronger relationship between this set of predictor variables and chronic occupational fatigue, and was statistically significant (df 11; overall regression test $p = 0.006$, adjusted $R^2 = 0.207$).

The residuals in this analysis were assessed in order to assess if the assumptions were satisfied. Multicollinearity was not present in this statistical analysis with all variance inflation factors less than two. A mean Cook's value of 0.017 indicated that no participant's data substantially influenced the modeling results. Table 6 provides a summary of the predictor variables and their association with scores on the OFER – C.

Table 6.

Adjusted R² and Overall Regression Tests for Any Significant Predictors of Chronic Occupational Fatigue

Model	Adjusted R ²	df	p-value
Attributes of the new RN Age Gender Nursing education Professional tenure Perceived adjustment	0.080	5	0.041
Workplace Variables Usual shift length Shift rotation Orientation status Employer's Magnet status Patient acuity Attendance at transition support programs	0.104	6	0.032
Combined attributes of new RNs and workplace variables	0.207	11	0.006

Research Question # 4. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on acute occupational fatigue?

None of the characteristics of new RNs or workplace variables demonstrated a statistically significant association to acute occupational fatigue (see Table 7).

Assumptions of multiple regression were assessed and all were satisfied as reported for acute occupational fatigue. Table 7 summarizes the multiple regression analysis.

Table 7.

Multiple Regression Analysis of Acute Occupational Fatigue

Variable	b	95% CI for b	β	p-value
Gender				
Female vs. Male (RC*)	.336	(-14.021, 14.693)	.006	.963
Nursing Education				
Baccalaureate or higher vs. Associate's Degree/Diploma (RC)	3.55	(-7.580, 14.671)	.086	.527
Usual shift length				
12 hours vs. all other (RC)	- 4.64	(-21.849, 12.576)	-.083	.592
Shift rotation				
Yes vs. no (RC)	4.96	(-6.855, 16.777)	.109	.405
Employer's Magnet status				
Yes vs. no (RC)	.434	(-10.001, 10.869)	.011	.934
Patient acuity				
Critical care/step-down vs. neither (RC)	5.74	(-9.679, 21.159)	.120	.460
Orientation status				
Currently on orientation vs. completed orientation (RC)	-15.12	(-30.579, .339)	-.289	.055
Attendance at transition support program(s)				
Attends vs. does not attend (RC)	-.365	(-11.838, 11.108)	-.009	.949
Professional Tenure				
	-.409	(-2.203, 1.385)	-.072	.651
Age (years)				
	.488	(-.266, 1.242)	.188	.200
Perceived Adjustment				
	-3.40	(-6.925, 0.133)	-.231	.059

*Reference Category

 β = standardized regression coefficient

Research Question # 5. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on chronic occupational fatigue?

Of the 11 independent variables in this multiple regression, only two were statistically significant in their association with chronic occupational fatigue (see Table 8). The predicted mean chronic occupational fatigue score is 30.42 points less for new RNs who are currently on orientation compared to new RNs who are no longer on orientation, adjusting for the other predictors in the model ($p \leq .001$). In addition, for every one point increase in perceived adjustment, new RNs' predicted mean chronic occupational fatigue scores decreased by 5.178 points accounting for the other predictor variables in the model ($p = 0.005$).

The assumptions of linear regression were assessed and found to be intact. Independence of the residuals was demonstrated with a Durbin-Watson statistic of 2.28. The P-P plot indicated a normal distribution of the residuals as did the one-sample Kolmogorov-Smirnov test ($p = 0.976$). Homoscedasticity and linearity of the residuals were noted on the residuals scatterplot. Multicollinearity was not present in this analysis with acceptable variance inflation factors. Table 8 summarizes the multiple regression analysis of chronic occupational fatigue.

Table 8.

Multiple Regression Analysis of Chronic Occupational Fatigue

Variable	b	95% CI for b	β	p-value
Gender				
Female vs. Male (RC*)	1.92	(-16.516, 12.686)	-.029	.794
Nursing Education				
Baccalaureate or higher vs. Associate's Degree/Diploma (RC)	5.17	(- 6.158, 16.504)	.112	.365
Usual shift length				
12 hours vs. all other (RC)	-13.78	(-31.370, 3.801)	-.219	.122
Shift rotation				
Yes vs. no (RC)	2.95	(-9.045, 14.950)	.058	.625
Employer's Magnet status				
Yes vs. no (RC)	-6.29	(-16.856, 4.276)	-.136	.239
Patient acuity				
Critical care/step-down vs. neither (RC)	2.21	(-13.590, 18.018)	.041	.780
Orientation status				
Currently on orientation vs. completed orientation (RC)	-30.42	(-46.156, -4.686)	-.514	<0.001
Attendance at transition support program(s)				
Attends vs. does not attend (RC)	-2.77	(-9.079, 14.622)	.059	.642
Professional Tenure				
	-1.22	(-3.033, .599)	-.190	.185
Age (years)				
	-.228	(-.998, .542)	-.078	.556
Perceived Adjustment				
	-5.18	(-8.759, -1.586)	-.315	.005

*Reference Category

B = standardized regression coefficient

Research Question # 6. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on negative affect?

The results of this statistical analysis were very similar to the research question for chronic occupational fatigue. Of the 11 independent variables, the same two measures, orientation status and perceived adjustment, were statistically significant in their association with negative affect as measured by the negative emotional subscale of the JAWS instrument. For every one point increase in perceived adjustment, the predicted mean negative emotional score decreased by 1.81, adjusting for other variables in the model ($p < 0.001$). Similarly, the predicted mean score on the negative affect subscale of the JAWS decreased by 5.74 for new RNs during their formal orientation period compared to new RNs no longer on orientation, after accounting for other model predictors ($p = .010$).

The assumptions for multiple regression were assessed. The residuals were independent as noted in the Durbin-Watson statistic of 2.22. Homoscedasticity and linearity were noted in the residual scatterplot. The residuals were normally distributed except for one outlier, participant # 75, which was noted on the boxplot of the residuals. The data were checked for accuracy, which was intact. The Cook's value for that participant was 0.24 indicating no unusual influence on the modeling results. The P-P plot and one sample K-S test ($p = 0.812$) supported a normal distribution of the residuals.

All variance inflation factors were less than two, indicating that multicollinearity was not present in this analysis. Table 9 summarizes the regression results.

Table 9.

Multiple Regression Analysis of Negative Affect

Variable	b	95% CI for b	β	p-value
Gender				
Female vs. Male (RC*)	-.500	(-4.491, 3.492)	-.028	.803
Nursing Education				
Baccalaureate or higher vs. ADN/Diploma (RC)	-.210	(-3.264, 2.843)	-.017	.891
Usual shift length				
12 hours vs. all other (RC)	-1.16	(-5.995, 3.672)	-.068	.633
Shift rotation				
Yes vs. no (RC)	-.145	(-3.409, 3.120)	-.011	.930
Employer's Magnet status				
Yes vs. no (RC)	-1.96	(-4.848, .937)	-.158	.182
Patient acuity				
Critical care/step-down vs. neither (RC)	-.087	(-4.408, 4.235)	-.006	.968
Orientation status				
Currently on orientation vs. completed orientation (RC)	-5.74	(-10.077, 1.397)	-.357	.010
Attendance at transition support program(s)				
Attends vs. does not attend (RC)	.515	(-2.690, -.840)	.041	.182
Professional Tenure	-.194	(-.690, .301)	-.113	.437
Age (years)	-.044	(-.248, .160)	-.055	.669
Perceived Adjustment	-1.81	(-2.785, -.840)	-.414	<0.001

*Reference Category

B = standardized regression coefficient

Research Question # 7. What is the relationship between personal attributes of the new RNs (age, gender, nursing education, perceived adjustment level, and professional tenure) and characteristics of the workplace (usual shift length, shift rotation, patient acuity, orientation status, employer's Magnet status, and attendance at transition support programs) on new RNs' intent to stay in their current nursing position for two years?

Of the independent variables in the model, only two were statistically significant in their relationship to the response variable, intent to stay in the current position for two years (see Table 10). The predicted mean score on the intent to stay in their current nursing position decreased by 0.81 for new RNs with a nursing education at the baccalaureate level or higher, compared to new RNs with a diploma or Associate's degree, adjusting for other predictor variables in the model ($p = 0.024$). The predicted mean score on intent to stay in the current nursing position increased by 1.55 for new RNs who were on orientation, compared to new RNs no longer on orientation, adjusting for the other model covariates ($p = .002$).

The assumptions of linear regression were assessed and found to be intact. Independence of the residuals was demonstrated with a Durbin-Watson statistic of 2.18. The P-P plot indicated a normal distribution of the residuals as did the one-sample Kolmogorov-Smirnov test ($p = 1.000$). Homoscedasticity and linearity of the residuals were noted on the residual scatterplot. Multicollinearity was not present in this analysis with all variance inflation factors less than two. Table 10 summarizes the multiple regression analysis.

Table 10.

Multiple Regression Analysis for New RNs' Intent to Stay in Their Current Position for Two Years

Variable	b	95% CI for b	β	p-value
Gender				
Female vs. Male (RC*)	.531	(-.357, 1.419)	.141	.236
Nursing Education				
Baccalaureate or higher vs. Associate's Degree/Diploma (RC)	-.808	(-1.503, -.113)	-.294	.024
Usual shift length				
12 hours vs. all other (RC)	.743	(-.496, 1.981)	.163	.235
Shift rotation				
Yes vs. no (RC)	.087	(-.656, .831)	.029	.815
Employer's Magnet status				
Yes vs. no (RC)	.500	(-.133, 1.133)	.182	.119
Patient acuity				
Critical care/step-down vs. neither (RC)	.069	(-.934, 1.072)	.020	.891
Orientation status				
Currently on orientation vs. completed orientation (RC)	1.547	(.571, 2.523)	.440	.002
Attendance at transition support program(s)				
Attends vs. does not attend (RC)	.002	(-.734, .738)	.001	.996
Professional Tenure	.083	(-.028, .195)	.223	.141
Age (years)	.015	(-.033, .062)	.085	.534
Perceived Adjustment	.172	(-.052, .397)	.178	.130

*Reference Category

B = standardized regression coefficient

Summary

Data from 88 new RNs were collected for this research study. Scores on the acute occupational fatigue subscale of the Occupational Fatigue Exhaustion Recovery (OFER/OFER 15) Scale were higher than those for chronic occupational fatigue. None of the new RNs' personal characteristics or characteristics of their workplace or the combination of these were statistically significant predictors of acute occupational fatigue. With regards to chronic occupational fatigue, the new RNs' personal attributes and characteristics of the workplace were statistically significant, but the relationships were weak.

In four separate research questions, the personal attributes of the new RNs and the characteristics of their workplace were analyzed for their relationships to each of the dependent variables: acute occupational fatigue, chronic occupational fatigue, negative affect, and intent to stay in their current nursing position for two years. Simultaneous multiple regression analysis was used to explore these relationships.

None of the new RNs' personal attributes or characteristics of the workplace were statistically significant in their relationship with acute occupational fatigue. However, new RNs' self-reported perceived adjustment scores were statistically significant in their relationship with chronic occupational fatigue, as was new RNs' current status on orientation. These same measures, perceived adjustment and current orientation status were also statistically significant in the association with negative affect. Finally, higher levels of nursing education prior to licensure and current orientation status were

statistically significant in the relationship to intent to stay in the current nursing position for two years.

CHAPTER V

DISCUSSION

This chapter includes discussion of the results from each of the research questions found in Chapter IV, current implications, strengths and limitations of the study, and recommendations for future research activities. The chapter concludes with the researcher's judgment about the adaptation of new RNs.

Interpretation of the Findings

Levels of Acute and Chronic Occupational Fatigue

The first research question inquired about the levels of acute and chronic occupational fatigue in new RNs. Participants in this study reported a mean acute occupational fatigue score of 64.88 (SD = 19.69) out of a possible zero to 100. The minimum-maximum scores were 20 and 100 and a range of 80 was noted. The mean score for chronic occupational fatigue was lower at 41.86 (SD = 23.13) with a minimum-maximum of zero to 90.

The mean acute occupational fatigue score in the mid- sixties is concerning as it is approaching the upper limit of possible scores on the subscale. Acute fatigue is significantly related to psychological demands in the workplace and includes "mental effort" and "emotional demands" (Winwood & Lushington, 2006, Introduction, para. 2, 3, 5). Acute fatigue spills over to non-work time and affects the choices individuals

make about their activities in their time away from work (Winwood, et al., 2005). Unresolved acute occupational fatigue may be a precursor to altered brain structure and the development of chronic occupational fatigue as a result of the prolonged effects of the physiological response to stress (Winwood & Lushington, 2006; Winwood, Lushington, et al., 2006; Winwood, et al., 2005). Negative emotions, decreased motivation, commitment, and interest, and a sense of physical fatigue may reflect the development of chronic occupational fatigue (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). As it relates to the conceptual framework of the study, the levels of acute occupational fatigue present in the new RNs may represent a compensatory level of adaptation. But, these levels of acute occupational fatigue just as likely represent compromised adaptation and thus, interfere with new RNs' overall adaptation.

In the documents that accompanied the author's permission to use OFER, Winwood stated that higher scores on the subscales serve as an "early warning system" (P. Winwood, personal communication, October 31, 2011). In the absence of more formal cut scores, Winwood suggested that quartile scores may be used as cut points for the purposes of comparing scores or individual scores may be considered for their position to the mean by assessing the standard deviation (P. Winwood, personal communication, October 31, 2011). However, neither of these comparisons is entirely appropriate for this study. Polit (1996) commented that quartile scores are limited in their capacity to describe the variability of scores and suggested that the range of scores is a sufficient "descriptor" (p. 52). The scores of individual participants were not the focus of this study.

The OFER has not been used to measure acute or occupational fatigue in new RNs in the US, but it is possible to look generally at the few other studies that have used the acute and chronic occupational fatigue subscales of the OFER in nurses. The first two studies involving the OFER and the revised OFER 15 focused primarily on the psychometric properties of the instrument and less on the predictive nature of the attributes of the nurses or the characteristics of their workplace (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). Overall scores on the subscales were not reported in these publications. But as the research team continued to refine the conceptual understanding of acute and chronic occupational fatigue and related factors in subsequent publications, scores for acute and chronic occupational fatigue were published. Barker and Nussbaum's (2011) study of more than 1000 nurses in the US used the OFER and was similar to the publications of Winwood and colleagues in that nurses of diverse ages, professional tenure, and work responsibilities were included in the sample.

Nurses in Australia ages 18-24 years had a mean acute occupational fatigue score on the OFER of 61.9 (SD = 19.2) (Winwood, Winefield, et al., 2006). The mean scores decreased to 59.4 (SD = 19.6) for nurses' ages 25-34, and 57.7 (SD = 21.2) for nurses' ages 35-44 years, with a slight increase to 60.4 (SD 20.6) for nurses ages 45-54 years before falling to an overall low of 49.9 (SD = 22.3) for nurses older than 55 years (Winwood, Winefield, et al., 2006). Barker and Nussbaum (2011) reported a mean acute occupational fatigue score of 65.55 (SD = 22.06) in their study. In this study, the mean scores on the acute occupational fatigue subscale of the OFER are similar to the findings

for the youngest nurses in Winwood, Winefield, and Lushington's (2006) study and the participants in Barker and Nussbaum's (2011) study.

Nurses in Australia ages 18-24 years had a mean chronic occupational fatigue score of 57.3 (SD = 20.3) that decreased to 41.7 (SD = 25.3) for nurses 55 years and older (Winwood, Winefield, et al., 2006). There was also a slight increase in the mean chronic occupational fatigue scores for nurses 45-54 years (Winwood, Winefield, et al., 2006). Participants in Barker and Nussbaum's (2011) study had a mean chronic occupational fatigue score of 50.07 (SD = 27.74). Barker and Nussbaum (2011) did not model age in their statistical analysis. In this current study, participants' chronic occupational fatigue scores were as low as the most senior participants in Winwood, Winefield, and Lushington's (2006) study and lower than those found in Barker and Nussbaum's (2011) participants. But the findings of this study are similar to those of Barker and Nussbaum (2011), who also noted higher scores on the acute occupational fatigue subscale compared to those of the chronic occupational fatigue subscale. If chronic occupational fatigue follows unresolved acute occupational fatigue as has been suggested (Winwood, Lushington, et al., 2006; Winwood, et al., 2005), perhaps the mean score in this current study reflects an early assessment of chronic occupational fatigue in new RNs.

Acute Occupational Fatigue

Two research questions explored the relationship between five personal attributes of new RNs (age, gender, nursing education, professional tenure, and perceived adjustment) and six characteristics of their workplace (usual shift length, shift rotation,

patient acuity, employer's Magnet status, attendance at transition support programs, and orientation status) on acute occupational fatigue. In the first of these two questions, none of these attributes of the new RNs or the characteristics of their workplace predicted the new RNs' scores on the acute occupational subscale of the OFER. When these two groups of measures were modeled jointly with acute occupational fatigue, the results were similar in that none of these measures were statistically significant predictors of acute occupational fatigue.

The fourth research question was similar in that each of the personal attributes of the new RNs and the characteristics of their workplaces were considered for their effect on the predicted mean score for acute occupational fatigue score. Again, none of these measures significant explained the scores on the measure for acute occupational fatigue.

Barker and Nussbaum's (2011) described nurses' ages, professional tenure, work settings, shift length, and patterns of shift rotation, when applicable. Not all of these measures were included in data analysis and limit generalizability of findings across studies. Winwood, Winefield, and Lushington (2006) found that age and length of nursing experience were significantly correlated, and the highest scores on the acute occupational fatigue scale were noted in the youngest nurses (Winwood, Winefield, et al., 2006). To the researchers' credit, they explored the relationship of age and professional tenure responsibly before analyzing age and thereby linking professional tenure, as predictors of acute occupational fatigue. Age and professional tenure in nursing may not always be associated.

Age and professional tenure may be related to patterns in how nurses work. Winwood, Winefield, and colleagues (2006) found that older, and thus more experienced nurses worked fewer “high-stress shift patterns” (p. 443). Nurses who were older and had more professional tenure also seemed to have additional work responsibilities that required attention during the day (Winwood, Winefield, et al., 2006). Barker and Nussbaum (2011) didn’t relate age or professional tenure to work patterns, but they found the lowest acute occupational fatigue scores among nurses who worked straight dayshift or nightshift than for any other schedule, including shift rotations with or without nightshift. Only 11% of the participants in Barker and Nussbaum’s (2011) study rotated shifts. In the current study, one third of the participants (27%) rotated shifts, and yet the acute occupational fatigue subscale score of the group was quite high. Although Unruh and Nooney (2011) didn’t measure acute occupational fatigue with the OFER, they did note that participants in their study who worked during the day reported higher levels of work demands.

The results of this current study suggest that acute occupational fatigue is present in new RNs. Minimally, acute occupation fatigue represents a compensatory adaptation level, or the activation of the coping processes in the Roy Adaptation Model. The greater concern is that it may also indicate a compromised adaptation level. Acute occupational fatigue seems to be the new RNs’ response to situations that tax their knowledge, experience, and skill level. If role transition is the life process in the role function mode, as Roy (2009) has suggested, then new RNs are at risk for compromised adaptation. Roy (2009) noted that when people didn’t have the knowledge they needed to meet

expectations for their performance, they were at risk for compromised adaptation in the role function mode.

At this point, with no significant relationships among the measures that explain acute occupational fatigue or predict scores on the OFER –A, this concept requires further study. Acute occupational fatigue is a complex concept and may require qualitative inquiry to further develop and refine the concept. Further research is also needed to determine the extent to which acute occupational fatigue facilitates or impedes successful adaptation.

Chronic Occupational Fatigue

Two research questions explored the relationships among the personal attributes of new RNs and the characteristics of their workplace on chronic occupational fatigue. In the first of these research questions, the attributes of the new RNs were modeled with chronic occupational fatigue, followed by the characteristics of the work environment on chronic occupational fatigue, and then finally, both the personal attributes and the characteristics of the workplace were entered into a model jointly with chronic occupational fatigue. In all three models, a weak but statistically significant relationship was found. The adjusted R^2 for attributes of the new RN (age, gender, nursing education, perceived adjustment, and professional tenure) was 0.080 ($p = 0.041$). When the characteristics of the workplace were entered into the model, the adjusted R^2 was 0.104 ($p = 0.032$). The combination of personal attributes and characteristics of the workplace was slightly better at predicting chronic occupational fatigue with an adjusted R^2 of 0.207 ($p = 0.006$). Although these findings were significant, the relationships are weak, and

further investigation is required to determine what, if any implications can be drawn from these results.

The fifth research question investigated the personal attributes of the new RNs and the characteristics of their workplace which were modeled with chronic occupational fatigue. Of the 11 measures in this analysis, only two were statistically significant in their association with chronic occupational fatigue: orientation status and perceived adjustment.

Orientation status. The predicted mean chronic occupational fatigue score was 30.42 points less for new RNs who are on orientation compared to new RNs who are no longer on orientation, adjusting for the other predictors in the model ($p < 0.001$). Chronic occupational fatigue is believed to be a consequence of unresolved acute occupational fatigue and seems to be accompanied by negative emotional states and an awareness of physical fatigue (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). The link between chronic occupational fatigue and orientation status is not clear; given the conceptual understanding of chronic occupational fatigue as a consequence that follows unresolved psychological strain in the work setting. Perhaps the relationship has to do with the negative emotional states new RNs experience.

Craig, Moscato, and Moyce (2012) remarked that new graduate nurses fear situations that tax their capacity to respond appropriately. This more general concern about “unknowing” may be interpreted to reflect the fear new nurses have that they will harm a patient because of what they do not know (Clark & Springer, 2011; Craig, et al., 2012; Dyess & Sherman, 2009; Myers, et al., 2010; Olson, 2009). But new nurses are

also afraid of “being exposed as clinically incompetent” (Duchscher, 2009, p. 1107). New nurses have reported that the level of responsibility they had was surprising, even shocking, to them personally (Etheridge, 2007; Pinchera, 2012). New nurses are well aware of their limitations. Nurse executives are well aware of new nurses’ limitations (Berkow, et al., 2008; Oermann, Poole-Dawkins, et al., 2010). Benner (2001) noted that a nurses’ competence evolved after “two to three years” of having “been on the job in the same or similar situations” (p. 25). The experience of being in orientation seems to buffer new nurses’ concerns (Craig, et al., 2012). Being on orientation may be the only time a new nurse feels shielded from full accountability and responsibility as they assume to role of the registered nurse.

Most orientation programs pair a new nurse with a more experienced nurse for a pre-determined period of time (Kovner, et al., 2007; Salt, Cummings, & Profetto-McGrath, 2008). While not all orientation experiences are positive, those that are provide new nurses with needed support, a sense of connection, and feelings of being welcomed, protected, and valued (Schumacher, 2007). New nurses appreciated feedback, being able to ask multiple questions, and being exposed to nurses who “modeled best practices” (Craig, et al., 2012, p. 204). New nurses who reported their orientation was “adequate” also reported being less harried in their work (Unruh & Nooney, 2011, p. 579). In addition, successful orientation was related to an improved sense of “control over their work” (Unruh & Nooney, 2011, p. 580). Satisfaction with the “quality and quantity” of orientation decreased nursing turnover and improved job satisfaction (Scott, et al., 2008, p. 80).

Not all new nurses experience the benefits of a well-planned and executed orientation program (Clark & Springer, 2011; Schumacher, 2007; Scott, et al., 2008; Unruh & Nooney, 2011). Not all preceptors are suited for the role (Schumacher, 2007). New nurses have multiple preceptors (Craig, et al., 2012; Fink, et al., 2008). Orientations vary in length. Scott, Engelke, and Swanson (2008) reported the average length of orientation in their study was 8.6 weeks. Craig, Moscato, and Moyce (2012) noted that the length of orientation programs in 2008 averaged about five to six weeks and increased to 11-12 weeks by 2010. The mean length of orientation in this study was 12 weeks. Longer orientation programs that range from three to six months seem to improve retention of new nurses (Salt, et al., 2008).

One can speculate that the most successful orientation programs support new RNs' through their concerns while helping them to feel secure in a new setting. Successful orientation programs may represent caring in the work environment that continues beyond the ending of the formal orientation period. An orientation period that lasts 12 weeks is probably insufficient to meet all the needs of the new nurse, and what happens after orientation is just as important as what happens during orientation. Duchscher (2009) noted in her study of new nurses in Canada that the "personal and professional adjustments" were most "intense" in the first four months after the formal orientation period ended (p. 1105). Some new nurses have reported that once off orientation, their patient assignments are the same as their more experienced nursing colleagues (Kovner, et al., 2007; Pellico, et al., 2009). Schoessler and Waldo (2006) commented that new nurses were challenged with their workloads for four to nine

months. At 12 months of experience, new nurses on “very health work units” experienced a “significant increase” in Environmental Reality Shock (Kramer, et al., 2011, p. 15).

In this current study, the average professional tenure was 7.63 months (SD = 3.68). At this point in their first year of nursing, all the new RNs had completed their formal orientation period. Although the scores on the chronic occupational fatigue scale are not as high as those for the acute occupational scale, the scores are not low either. Orientation is important for the new RNs’ adaptation, but supporting the new nurse once orientation ends is not any less important. Further research is needed to determine what orientation means to the new RNs and how the ending of the formal orientation period affects new RNs’ ongoing adaptation to their work and their role.

Perceived adjustment. In this study, perceived adjustment was a self-reported measure of how well the new RNs thought they were adjusting to the role of the professional nurse. The mean perceived adjustment score for participants in this study was 7.38 (SD = 1.58) out of a possible zero to 10, with zero indicating “not adjusting very well” and 10 representing “adjusting very well”. This score for perceived adjustment seem to indicate that many participants feel generally positive about their adjustment to the role of the registered nurse. The score for perceived adjustment was higher than expected, based on the description of challenges that persist through and beyond the first year in practice that are found in the published literature. In addition, nurse administrators in hiring institutions have expressed concern that new nurses are not ready for the complexities of nursing practice (Berkow, et al., 2008; Oermann, Poole-

Dawkins, et al., 2010). The new RN participants self-reported high score of adjustment to their role seems to contradict the opinion of nurse executives in the clinical environment.

For every one point increase in perceived adjustment, the predicted mean scores for chronic occupational fatigue decreased by 5.178 points accounting for the other predictor variables in the model ($p = 0.005$). Measuring perceived adjustment of new RNs was novel. Although perceived adjustment was conceptually grounded and literature support for the visual analog scale was considered in the development of this item, there seems to be no way to compare this finding in the existing literature. Nurse researchers used a measure for adjustment in clinical research to inquire about patients' perceptions of their adjustment to motherhood or in the aftermath of a serious injury (DeSanto Madeya & Fawcett, 2009). However a search in the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and a review of the publications about new nurses failed to identify any reference that could have been interpreted as a measure that was suitable for comparison.

As publications have described new teachers' "reality shock" (Caires, Almeida, & Martins, 2009), the education literature was searched for any publication that might serve as a comparison for the scores of new RNs perceived adjustment. Using broad search terms such as: "teachers" or "new teachers", "new teachers' adjustment", "new teachers' adaptation", "new teachers' reality shock" in the Web of Science and Education Resource Information Center (ERIC) databases were also unproductive. A search in the Cumulative Index for Nursing and Allied Health Literature (CINAHL) for some measure

of adjustment in other health care professionals was equally disappointing. There were a limited number of articles that described facilitators and barriers to successful transitions for new teachers, but the concepts of adjustment and adaptation seem to be applied more to the recipient of services than to the providers. For example, there are many publications about students' adjustment to school, or stroke victims' adjustment to life with a disability. Researchers in nursing and a few other disciplines seem to be more interested in the adjustment of the "other" and less concerned with professional introspective inquiry.

At this point, there is no way to relate this finding, directly or indirectly, in the current literature. That perceived adjustment is significantly related to chronic occupational fatigue is a unique contribution to what is known about new RNs' personal adaptation and the concept of chronic occupational fatigue. Understanding the factors that contributed to the new RNs decision about their perceived adjustment is another topic for future research.

Negative Affect

The terms affect and emotion are often used interchangeably, although affect is felt by some researchers to be a broader, more general concept that influences emotional responses (Fredrickson, 2001; Russell & Feldman Barrett, 1999). In this study, negative affect was related to work and measured with the negative emotional subscale of the Job-Related Affective Well-Being Scale (JAWS). The new RNs in this study had a negative affect score of 24.42 (SD = 6.25). The minimum-maximum scores for new RNs in this study were 14-43, but possible scores could have been anywhere from ten to 50.

The concern for negative affect in this study is twofold. First, in the nursing publications about new nurses taking on the practice of nursing, there are abundant descriptors of negative emotions, however they are often found incidentally and are not usually the primary focus in the study. The negative affect score in this study was surprisingly low, given the documented negative emotions that many new nurses experience. Secondly, researchers with expertise in acute and chronic occupational fatigue have postulated that negative emotions develop with chronic occupational fatigue (Winwood, Lushington, et al., 2006; Winwood, et al., 2005). Chronic occupational fatigue represents a maladaptive state of altered neurological structure and function that is the result of insufficient recovery from the physiological effects of prolonged exposure to the stress (Winwood, Lushington, et al., 2006; Winwood, et al., 2005).

The sixth research question explored the personal attributes of new RNs and the characteristics of the workplace on negative affect. Of the 11 independent variables, only orientation status and perceived adjustment were statistically significant in their association with negative affect as measured by the negative emotional subscale of the JAWS instrument. Of note, these were also the only two measures that were statistically significant in their relationship with chronic occupational fatigue. But as the design of this study limits our understanding of the sequence of events, it is not possible to conclude that these negative emotions indicate chronic occupational fatigue. The scores for negative affect are approaching the midpoint of the possible scores and while they are not high enough to be concerning, they are not low either. It appears that new RNs have some degree of negative affect in response to their work. Negative affect has been noted

and described as such by Kovner et al. (2007) who commented on the negative affect of some participants in their study. This assessment of negative affect was based on one positively worded and one negatively worded item with a Likert-scale response where one represented “strongly disagree” and five represented “strongly agree” (Kovner, et al., 2007). The mean score for the positively worded item was higher at 3.6 (SD = 0.9) than the mean score for the negatively worded item which was 2.7 (SD= 0.7) (Kovner, et al., 2007). Kovner et al. noted the need for a more in-depth analysis of negative affect in their sample.

Perceived adjustment. For every one point increase in perceived adjustment, the predicted mean negative emotional score decreased by 1.81, adjusting for other variables in the model ($p \leq .001$). As previously mentioned, it is not entirely clear what went into new RNs’ decision making about for their assessments of perceived adjustment and there is nothing available to compare this finding with. However, it isn’t surprising that a better sense of adjustment to the role might likely mitigate negative emotions.

Orientation status. The predicted mean score on the negative affect subscale of the JAWS decreased by 5.74 for new RNs during their formal orientation period compared to new RNs no longer on orientation, after accounting for other model predictors ($p = .010$). The importance of orientation for new nurses is demonstrated in this finding.

Intent to Stay in the Current Nursing Position for Two Years

In this study, intent to stay in the current nursing position was measured with a single-item, Likert-scale format where possible responses were 1 (“very unlikely”) to 5

representing “very likely”. The mean score for intent to stay in the current position for two years for participants in this study was 3.38 (SD = 1.39). The last research question explored the relationship between the five personal attributes of the new RNs and the six characteristics of their workplace on the response variable of intent to stay in the current nursing position for two years. Of the 11 variables included in this analysis, only two were significantly related to intent to stay in the current nursing position for two years: nursing education at the baccalaureate level and higher, and orientation status. .

Nursing education at the baccalaureate level or higher. The predicted mean score on the intent to stay in their current nursing position decreased by 0.81 for new RNs with a nursing education at the baccalaureate level or higher, compared to new RNs with a diploma or Associate’s degree, adjusting for other predictor variables in the model ($p = 0.024$). Turnover among new nurses is frequently mentioned in nursing publications and there are some contradictory results. In some cases, nursing education at any level was not significantly related to turnover (Brewer, et al., 2011; Kramer, Halfer, Maguire, & Schmalenberg, 2012). But other researchers found that nurses prepared at the baccalaureate level were more likely to consider leaving their position than nurses educated at the Associates’ degree level or lower ($X^2 = 4.9397$, $df = 1$, $p = 0.026$) (Beecroft, et al., 2008).

Understanding turnover among new graduates is complex and not easily reduced to something as simple as the new nurses’ level of nursing education. Relating this finding to the current literature underscores the problem. Researchers have looked at turnover or intent to stay in light of other concepts, such as job commitment (Brewer, et

al., 2012), job satisfaction (Dimattio, Roe-Prior, & Carpenter, 2010; Scott, et al., 2008), job embeddedness (Halfer, 2011), organizational commitment (Bratt & Felzer, 2012) and “perceived job difficulties, demands, and control”(Unruh & Nooney, 2011, p. 580). In some cases, but not all, nursing education is factored into data analysis, adding to the challenge of relating personal attributes of the nurses to another concept, which may be used to understand turnover intent or intent to stay.

More new nurses with a baccalaureate degree were found to be enrolled in graduate nursing education compared to other nurses with an Associate’s degree (Brewer, et al., 2012). Nurses educated at the baccalaureate level may not plan to work in hospitals for the duration of their career (Dimattio, et al., 2010). Newer nurses educated at the baccalaureate level and higher were less likely to report they had control over their work and more likely to report increased job difficulties (Unruh & Nooney, 2011). Satisfaction with their jobs and the choice of nursing as a career predicted intent to leave, and new nurses educated at the baccalaureate level were less likely to report they were satisfied with their career choice of nursing (Scott, et al., 2008). However, Craig, Moscato, and Moyce (2012) reported that new nurses with a baccalaureate degree in nursing were prepared to work very hard to develop into competent nurses, but they did have an expectation for support in the work environment.

Any discussion about the results in this study relating nursing education to intent to stay in the current position for two years is somewhat incomplete without any further details. This research study did not explore the plans new RNs might have had for

graduate study and advanced practice roles. It would be unfortunate if this finding was used to cast doubt on new RNs' commitment to patients or the nursing profession.

Orientation status. The findings of this study reinforce the importance of the orientation period for new RNs. The predicted mean score on intent to stay in the current nursing position increased by 1.55 for new RNs who were on orientation, compared to new RNs no longer on orientation, adjusting for the other model covariates ($p = .002$). This finding is congruent with that of Scott, Engelke, and Swanson (2008) who reported new nurses who were satisfied with the length and quality of their orientation had significantly less turnover rate (45%) compared with a 60% turnover rate for new nurses who were less than satisfied with their orientation.

Conversely, this finding also reiterates the need to understand how things change for new RNs when they have completed their formal orientation and are expected to function more independently. If a successful orientation period is a proxy for a supportive work environment, there is a need to understand how the new RNs perceive that, as there is likely to be a difference in how new and experienced nurses rate a supportive environment.

Implications for Nursing

Importance of Orientation

The importance of a well-planned and executed orientation period for new RNs cannot be underestimated. Despite all the publications about successful orientation programs, much more research is needed to understand how to effectively and efficiently target support to new RNs. In light of this study though, and the focus on the adaptation

of the new RNs, there are some ideas that have been mentioned in the literature that seem both reasonable and beneficial for new nurses.

The importance of good preceptors. Many nursing publications describe the traits of successful preceptors, and yet, the literature also documents that new nurses' continue to have unpleasant experiences with their preceptors. Preceptors orient new nurses to the unit, the patient population, their work, the health care team, the institution, and the profession and their influence is both powerful and under-appreciated. They ensure safe care for patients and safe learning experiences for new nurses. Preceptors need education, support, and recognition for this important work. The responsibility welcoming new RNs in to the nursing unit, the institution, and the profession should be assigned to nurses who demonstrate a proclivity for the preceptor role. Preceptor preparation is as varied as orientation and nurse residency programs. While a "one size fits all" approach to preceptor preparation may not be appropriate, it is reasonable to consider that most preceptors likely need some education and skills about the importance of their role, how to give feedback, and teaching strategies when dealing with adult learners. Given the importance of the role, developing a standard for preceptors' competence seems attainable and worthy of the profession's time and attention. The National Council of State Boards of Nursing is currently studying online education for preceptors (National Council of State Boards of Nursing, 2012b). Further data is required to determine the effectiveness of these modules on new nurses' experiences and patient outcomes.

Debriefing. Winwood and Lushington (2006) have asserted that acute occupational fatigue is an end of shift response that is related to the psychological demands in the work environment. Acute occupational fatigue keeps the individual focused on the events of work after the shift has ended and interferes with needed sleep and rest (Winwood & Lushington, 2006). This preoccupation with worry about the events at work after the shift ends is evident in several nursing publications about new nurses (Olson, 2009; Schoessler & Waldo, 2006). If what the new nurses in these publications are describing is acute occupational fatigue, then one simple measure that might help diffuse the end of shift tension is the practice of debriefing, mentioned in a publication by Chandler (2012). In this publication, a new nurse commented that at the end of every shift, the preceptor made it a point to walk the new nurse to their car for the purpose of “debriefing” (Chandler, 2012, pp. "They were there for me", para. 2). Debriefing and diffusing end of shift tension seem to be a promising, relatively easy, and low cost intervention that may lessen acute occupational fatigue. The importance and benefits of debriefing for new RNs can be conveyed to preceptors. It's conceivable that managerial support might also be needed to facilitate time and a quiet place for debriefing at the end of the shift.

New Nurses Need More Than Clinical Education

Winwood and Lushington (2006) seemed surprised that nurses were not educated about how to manage stress, especially as it pertains to recovery from stressful experiences. They advocate for stress management education in undergraduate education and in the work setting, in the hopes that nurses will incorporate the skills to develop

“physiological toughness” which they believe can minimize the harmful effects of unresolved stress (Winwood & Lushington, 2006, p. 687). The concept of professional resilience has also been identified by Hodges, Keeley, and Troyan (2008) as behaviors which may already be present in a new nurse, but if not, can be cultivated. Professional resilience involves working with others to respond to problems, personal reflection, and conversation that fosters awareness of personal growth (Hodges, et al., 2008). The nurturing of professional resilience should begin in undergraduate nursing education (Hodges, et al., 2008).

The concept of self-care should be addressed and facilitated in undergraduate nursing education, orientation, nurse residency programs, and in the workplace. New nurses need to hear from faculty and their more experienced colleagues that restoring one’s self for work is necessary and not selfish. Prioritizing sleep, healthy meals, fresh air, exercise, spending time with friends and family, and pursuing pleasurable activities is important in achieving work/life balance (Christiaens, Abegglen, & Gardner, 2010; Clark & Springer, 2011).

The call for nurses to have higher education may create stress for registered nurses as it occupies their time and energy. But it isn’t likely that either of the recommendations found in *The Future of Nursing: Leading Change, Advancing Health* (Institute of Medicine (U.S.), et al., 2010), for more nurses to be educated at the baccalaureate level or beyond with graduate degrees to serve as nurse practitioners, will be rescinded. Returning to school for a baccalaureate or a graduate degree while trying to adjust to the role of the registered nurse can compound the stress new RNs experience.

In addition, nurse managers may question a new nurses' commitment when the topic of returning to school comes up during an interview or early in a new nurses' employment. This is an unfortunate reality. Given the well-documented stress that new nurses experience, it may be advisable that new RNs take time to adjust to their role and practice self-care by incorporating health promoting behaviors into their lifestyle during the first year in practice. Perhaps deferring school until they have a better sense of their role and the routine in the work environment would serve new nurses well.

Narrow the Education – Practice Gap

The polarization that seems to accompany the pre-licensure education and post-licensure practice gap is divisive and tension-filled and places new nurses in a vulnerable position. New nurses do not feel that their nursing education prepares them for their work (Craig, et al., 2012; Hodges, et al., 2008; Myers, et al., 2010; Olson, 2009; Zeller, Doutrich, Guido, & Hoeksel, 2011). Nursing leaders agree that new nurses are not ready to take on the complexities of work (Berkow, et al., 2008; Oermann, Alvarez, et al., 2010; Oermann, Poole-Dawkins, et al., 2010). The current call to transform nursing practice to meet the needs of a reformed health care system (Institute of Medicine (U.S.), et al., 2010) provides a backdrop for a most important conversation about expectations for nursing education and practice. The complexity of nursing work has been noted (Ebright, Patterson, Chalko, & Render, 2003; Krichbaum et al., 2011). The competing priorities of the education and practice arenas must be openly discussed, debated, and reconciled. The call to more closely align nursing education with the practice environment is not a novel

idea (Benner, et al., 2010; Olson, 2009; Pellico, et al., 2009). It is merely echoed in light of the concern for acute occupational fatigue that is present in this sample of new RNs.

Current Study and the Roy Adaptation Model

The findings from this study support the relevance of the Roy Adaptation Model (RAM) as an appropriate conceptual framework with which to inquire about the adaptation of individuals and groups. Three of the dependent variables in this study, acute and chronic occupational fatigue and negative affect are present in this sample of new RNs. It is the judgment of the researcher that these results point to new RNs' ineffective adaptive responses. The scores on measures of acute occupational fatigue can be interpreted as a compromised adaptation level. That orientation status, perceived adjustment, and the level of education the new RN has received are significantly related to chronic fatigue, negative affect and turnover intent signal the need to understand these factors in order to support new RNs' adaptation.

This study supported the RAM in several important ways. First, it addressed a "high priority" need to apply the RAM in research exploring "role taking processes and role transition" (Barrone, et al., 2008, p. 361). Secondly, it answered the call to "locate" other instruments that may be suitable for use with the RAM (Barrone, et al., 2008, p. 361). The OFER scale and the JAWS instruments may be useful in measuring adaptation in work related situations with other groups of people. Finally, asking new RNs to self-report their perceived adjustment to their role as a registered nurse lends support to De Santo Madeya and Fawcett's (2009) middle range theory that adjustment adequately describes adaptation.

Recommendations for Future Research

This descriptive study about the adaptation of new RNs highlights topics for future research. If Winwood and colleagues are correct that acute occupational fatigue has more to do with work-related psychological demands on an individual, and that a prolonged exposure to this level of work – related stress has the potential to alter brain structure, placing individuals at risk for negative emotional states and physical tiredness, this seems to be an important topic for future research. As it pertains to new RNs, a longitudinal study design that more fully described the trajectory of acute and chronic occupational fatigue would be helpful. Understanding nurses' psychological demands and mental effort, terms Winwood and colleagues (2006) use to describe the non-physical strain nurses experience, could help clarify the concept of acute occupational fatigue. One important difference between new and experienced nurses' psychological strain might be that new nurses experience an additional burden because of a cognitive deficit that has been resolved with experience in nurses who have a longer professional tenure. Exploring the dimensions of psychological strain among nurses of varying professional tenure is an important area of further study.

Although shift length was not a significant factor in predicting or explaining acute occupational fatigue, the conceptual understanding of this construct suggests that new RNs who work eight-hour shifts, might experience less acute occupational fatigue and this would be an important area of future research. As it is, the concept of acute occupational fatigue is somewhat elusive, as no significant measures were found in this

study that either explained relationships between the measures or predicted the scores on the OFER-A.

Likewise, it is important to understand what factors new RNs considered when rating their own adjustment to the role of the registered nurse. New RNs may have answered this question with specific thought to their work performance or they may have responded in consideration of their work/life balance. Further research on this topic would provide insight about new RNs experiences and increase the understanding of adjustment in the Roy Adaptation Model.

That the orientation period is so important to new RNs is not really surprising. There are a number of publications that claim to have implemented successful orientation programs or describe attributes of successful preceptors. Salt, Cummings, and Profetto-McGrath (2008) identified the need to investigate all the claims of successful, effective orientation programs in the US with scholarly inquiry and their call for further research is echoed here. They concluded that at this point, there is only weak evidence in support of preceptor programs that last for three to six months (Salt, et al., 2008). Beyond that though, another question remains; how does the support and experience of new RNs change when their formal orientation period ends?

In addition to the need to understand how to best support new RNs during their orientation period, nurse residency programs have proliferated over the past decade, and with them, the claims of increased satisfaction, competence, and retention of new nurses. However, many of these claims are anecdotally described in the nursing literature and cannot be substantiated with scholarly inquiry (Rush, Adamack, Gordon, Lilly, & Janke,

2012). Ideally, orientation and transition support programs should be intertwined and multi-dimensional in supporting new RNs, but of the two, only orientation significantly related to chronic occupational fatigue, negative affect, and intent to stay in the current position for two years, suggesting that they are distinct and separate entities to new RNs.

The topic of how new RNs are adapting or their well-being during this tumultuous time in their careers and their lives has not been well addressed in nursing research. A review of the literature in other disciplines suggests that other new professionals might have similar experiences as new RNs. Specifically, references to new teachers “reality shock”, burnout, and turnover were found in the Education Resources Information Center (ERIC) and Web of Science databases. However these references provided little insight about the phenomenon and did not allow for relating the experiences across disciplines. Perhaps aspects of this phenomenon may be developmental. But it’s also possible that there may be an element of the experience that is detrimental to the adaptation of the new professional, as suggested by the findings of this study.

Introspective inquiry in a profession has a place in research. It is neither irresponsible nor selfish to inquire about the adaptation of the newest members’ adaptation to a group. Clarke, Barone, Hanna, and Senesac (2011) describe an interest in the vulnerability of others as “justice” (p. 341). Some may object to the idea that new RNs or new teachers should be described as vulnerable or marginalized, but the lack of research about their personal and professional adaptation coupled with what is known about the challenges these new professionals experience would suggest otherwise. For too long, their needs have been under-attended to and under-researched.

In addition to the developing professional there is another stakeholder: a vulnerable “other” who is the recipient of the developing professionals’ attention. The vulnerable other might be an elementary school student or a patient, but when the new teacher or the new nurse struggles with their work, it is reasonable to conclude that quality and in the case of new RNs, safety, of the vulnerable other is at stake.

Strengths of the Study

Several strengths of this study may support the generalizability of the findings. Among these is the random sampling strategy which enhanced the rigor of the study. The response rate of 37% seemed to represent the effectiveness of the literature based design strategies that included: reassurance of new RNs’ anonymity and confidentiality, advising participants that their contact information was obtained from the North Carolina Board of Nursing, an advance cash token incentive, and a follow up postcard which served as a thank you and a reminder to participants to complete their survey.

Participants in this study were representative of registered nurses in the state of North Carolina in two important areas: gender and nursing education. Of the 95,545 registered nurses currently employed in nursing in North Carolina, 7348 or 7% are male (North Carolina Board of Nursing, n.d.). In this study, there were 11 male new RNs constituting 12.5% of the participants. There are 88, 194 female nurses in North Carolina, making up 92% of the registered nurse population (North Carolina Board of Nursing, n.d.). In this study, 77 participants were female, which was 87.5% of the participants.

In North Carolina, 7532 nurses or 7% of the nursing workforce is prepared with a diploma in nursing (North Carolina Board of Nursing, n.d.). In this study, seven new RNs or 8% of the participants had a diploma in nursing. Currently, in North Carolina, there are 37, 499 nurses with an associate degree in nursing which is 39% of the nursing workforce (North Carolina Board of Nursing, n.d.). New RNs in this study with an Associate degree numbered 46 or 47% of the participants. There are 37, 291 nurses with a baccalaureate degree in nursing or a related field, which is 37% of the nursing workforce (North Carolina Board of Nursing, n.d.). There were 39 participants in this study with a baccalaureate education in nursing or a related field, which represented 39% of the total sample.

Additionally, while self-reports of measures may be problematic for some individuals, in accordance with the Roy Adaptation Model, the data were provided by the new RNs themselves, and thus this aspect of study design was especially congruent with the conceptual framework. The researcher assumed that new nurses responded to the NRNQ with honesty and integrity and hoped that they found the survey and their participation in it to be meaningful.

Reflections on the Implications for New Registered Nurses

For several years, the researcher has had a scholarly interest in the experiences of new RNs and has spent nearly two decades working with new RNs in the clinical area. It is the opinion of the researcher that there are several strategies that new RNs can use to diffuse and reduce the work-related stress they feel. No doubt this thinking is related to the RAM. In the nursing process of the RAM, when a challenge to adaptation is noted,

the nurse partners with the other to set goals that will facilitate adaptation. This process is appropriate given the results of this study and the ensuing discussion. Adaptation is both a “process” and an “outcome” (Roy, 2009, p. 29). This suggests that adaptation is an active process and it is essential that new RNs are active, engaged participants in this important phase of their nursing career. Worrying about what the first year in practice may be like is not helpful but sharing these concerns with others might lessen any anxiety nursing students or new RNs experience. Nursing faculty and other leaders with expertise in new RNs’ experiences could provide much needed guidance and demonstrate professional caring and commitment to the newest nurses.

New RNs must be patient with themselves as learners and cultivate in themselves a quest for life-long learning. Asking preceptors for help with difficult tasks or organizing an assignment is not a sign of weakness. Admitting that a situation or a task causes discomfort can be a first step towards overcoming that discomfort. Likewise, asking for feedback from preceptors and co-workers demonstrates maturity and a willingness to grow personally and professionally.

At the completion of their nursing education, new RNs should have a very good understanding of the benefits of physical activity, proper rest, and healthy nutritious meals. These are priorities for new RNs and the extent to which the new RN practices these basic self-care activities may influence their adaptation to their new role. This knowledge should be incorporated into their activities as often as possible. Many employers offer opportunities for exercise, either in organized programs or through benefit packages. Clark and Springer (2011) reminded new nurses to care for themselves

with rest, healthy food, and exercise, and to participate in hobbies and recreational activities. Deferring self-care practices may jeopardize the new RNs' adaptation, their ability to care for their patients, and hamper their ability to serve as role models for others with regards to healthy behaviors

Limitations

This study was designed to capture information at one point in time, in order to describe new RNs' adaptation. The non-experimental, correlational, cross-section study design does not provide any insight into the sequencing of events, specifically, acute and chronic occupational fatigue. Nor are the findings of this study meant to infer causality. How this experience changes over time was not the focus of this study, despite the need to understand this phenomenon more fully.

While it is reasonable to consider new RN's fatigue, negative affect, and intent to stay in their current position for two years as measures of their adaptation; it is also possible that these measures did not comprehensively capture what new nurses are experiencing. Further, the construct of inter-shift recovery, while important to understand as it relates to acute and chronic occupational fatigue was beyond the scope of this study.

The accessible sample represented new RNs from only one state and this may be considered a limitation. Although this was not ideal, currently there was no reasonable way to extrapolate new RNs' contact information across the US.

Summary

The purpose of this study was to explore adaptation in new nurses and was grounded in the Roy Adaptation Model. Several measures demonstrating acceptable psychometrics were used as suitable proxies for adaptation. New RNs' personal attributes and characteristics of the workplace were assessed for their relationship to acute and chronic occupational fatigue, negative affect, and intent to stay in their current nursing position for two years. The findings of this study indicate that new nurses have more acute occupational fatigue than chronic occupational fatigue, although there is some evidence that they are also experiencing chronic occupational fatigue and with it, negative affect. For the most part, new RNs intend to stay in their current nursing position for two years, however higher levels of nursing education are significantly related to this measure. Orientation is significantly related to chronic occupational fatigue, negative affect, and intent to stay in their current nursing position. Perceived adjustment is significantly related to chronic occupational fatigue and negative affect.

This study offers a unique insight to what is known about new RNs during the first year of practice by considering their personal and professional adaptation. In the judgment of this researcher, that there are sufficient professional and behavioral reasons to be concerned with the new RNs' adaptive response to their professional role. The results of this study indicate new registered nurses are experiencing a level of compensatory adaptation that is alarming because it borders on compromised adaptation in response to the challenges and events of the first year in nursing practice. New RNs are experiencing an ineffective response to adaptation. While not fully understood, these

results are compelling and should reinforce the need to understand new nurses' experiences more fully in order to design effective support.

In the past decade, nursing leaders have acknowledged new nurses need support and guidance as they begin to work in the professional role. This interest in new nurses' experiences led to an abundance of transition support programs. In addition, some nurse researchers have turned their attention to new nurses. Despite this increased attention, new RNs' challenges in taking on the practice persist, and in this researcher's opinion will continue to do so. Not only do these challenges continue, they are interfering with the new RNs' overall adaptation. These preliminary findings about new nurses' adaptation add to the call to action; new nurses are not adapting to practice with the current supports. The nursing profession has an opportunity to demonstrate an unprecedented level of commitment to new nurses and the patients they will care for by a focused research agenda that leads to well planned, evidence-based support and guidance to keep new nurses engaged, committed, and employed in nursing.

REFERENCES

- Aaronson, L. S., Cassmeyer, V., Neuberger, G. B., Pallikkathayil, L., Pierce, J., Press, A. N., . . . Wingate, A. (1999). Defining and Measuring Fatigue. *Image: Journal of Nursing Scholarship*, 31(1), 45. Retrieved from <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291547-5069>
- Aaronson, L. S., Pallikkathayil, L., & Crighton, F. (2003). A qualitative investigation of fatigue among healthy working adults. *Western Journal of Nursing Research*, 25(4), 419-433. Retrieved from <http://wjn.sagepub.com/>
- Alabama Board of Nursing. (n.d.). Research; Workforce Retrieved March 26, 2012, from <http://health.state.tn.us/boards/Nursing/index.htm>
- Alligood, M. R., & Tomey, A. M. (2010). *Nursing Theorists and Their Work* (7th ed.). Maryland Heights, MO: Mosby Elsevier.
- Altier, M. E., & Krsek, C. A. (2006). Effects of a 1-year residence program on job satisfaction and retention of new graduate nurses. *Journal for Nurses in Staff Development*, 22(2), 70-77. Retrieved from <http://journals.lww.com/jnsdonline/pages/default.aspx>
- American Association of Colleges of Nursing. (2011, July 11, 2011). Nursing Shortage Retrieved January 16, 2012, from <http://www.aacn.nche.edu/media-relations/factsheets/nursing-shortage>

- American Association of Critical Care Nurses. (2012). About Critical Care Nursing
Retrieved March 14, 2012, from
<http://www.aacn.org/wd/pressroom/content/aboutcriticalcarenursing.pcms?menu=>
- American Association of Critical Care Nurses. (n.d.). Progressive care fact sheet
Retrieved March 14, 2012, from
<http://www.aacn.org/WD/Practice/Docs/ProgressiveCareFactSheet.pdf>
- Ashton, K. S. (2012). Getting into "Nursing Shape": New graduate nurses' experiences.
Poster presentation; Graduate Research and Creativity Expo: "Scholarship That Matters". The University of North Carolina at Greensboro.
- Barker, L. M., & Nussbaum, M. A. (2011). Fatigue, performance and the work environment: a survey of registered nurses. *Journal of Advanced Nursing*, 67(6), 1370-1382. doi: 10.1111/j.1365-2648.2010.05597.x
- Barrone, S. H., Roy, C. L., & Frederickson, K. C. (2008). Instruments used in Roy Adaptation Model-based research: Review critique and future directions. *Nursing Science Quarterly*, 21, 353-362. doi: 10.1177/0894318408323491
- Beecroft, P. C., Dorey, F., & Wenten, M. (2008). Turnover intention in new graduate nurses: a multivariate analysis. *Journal of Advanced Nursing*, 62(1), 41-52.
Retrieved from <http://www.journalofadvancednursing.com/default.asp>
- Benner, P. (1982). From novice to expert. *The American Journal of Nursing*, 82(3), 402-407. Retrieved from <http://www.jstor.org/stable/3462928>

- Benner, P. (2001). *From novice to expert Excellence and power in clinical nursing practice* (Commemorative ed.). Menlo Park, CA: Addison-Wesley Publishing Company.
- Benner, P., Sutphen, M., Leonard, V., & Day, L. (2010). *Educating nurses A call for radical transformation*. San Francisco, CA: Jossey Bass.
- Berkow, S., Virkstis, K., Stewart, J., & Conway, L. (2008). Assessing new graduate nurse performance. *Journal of Nursing Administration, 38*(11), 468-474. doi: 10.1097/01.nna.0000339477.50219.06
- Bratt, M. M., & Felzer, H. M. (2012). Predictors of new graduate nurses' organizational commitment during a nurse residency program. *Journal for Nurses in Staff Development, 28*(3), 108-119.
- Brewer, C. S., Kovner, C. T., Greene, W., & Cheng, Y. (2009). Predictors of RNs' intent to work and work decisions 1 year later in a U.S. national sample. *International Journal of Nursing Studies, 46*(7), 940-956. doi: 10.1016/j.ijnurstu.2008.02.003
- Brewer, C. S., Kovner, C. T., Greene, W., Tukov-Shuser, M., & Djukic, M. (2011). Predictors of actual turnover in a national sample of newly licensed registered nurses employed in hospitals. *Journal of Advanced Nursing*. Retrieved from doi:10.1111/j.1365-2648.2011.05753.x
- Brewer, C. S., Kovner, C. T., Yingrengreung, S., & Djukic, M. (2012). New nurses: Has the recession increased their commitment to their jobs? *American Journal of Nursing, 112*(3), 34-45. doi: 10.1097/01.NAJ.0000412637.63022.d4

- Burger, J. L., Parker, K., Cason, L., Hauck, S., Kaetzel, D., O'Nan, C., & White, A. (2010). Responses to work complexity: The novice to expert effect. *Western Journal of Nursing Research*, 32, 497-510. doi: 10.1177/0193945909355149
- CA.gov, Department of Consumer Affairs,, Board of Registered Nursing. (2012). Welcome to the Board of Registered Nursing Retrieved March 26, 2012, from <http://www.rn.ca.gov/>
- Caires, S., Almeida, L. S., & Martins, C. (2009). The Socioemotional experiences of student teachers during practicum: A case of reality shock? *Journal of Educational Research*, 103, 17-27. doi: 10.1080/00220670903228611
- Casey, K., Fink, R., Krugman, M., & Propst, J. (2004). The graduate nurse experience. *The Journal of Nursing Administration*, 34, 303-311. Retrieved from <http://journals.lww.com/jonajournal/pages/default.aspx>
- Chandler, G. E. (2012). Succeeding in the first year of practice: heed the wisdom of novice nurses. *Journal for Nurses in Staff Development*, 28, 103-107. doi: 10.1097/NND.0b013e31825514ee
- Christiaens, G., Abegglen, J. A., & Gardner, A. (2010). Expert holistic nurses' advice to nursing students. *Journal of Holistic Nursing*, 28(3), 201-208. doi: 10.1177/0898010110369176
- Clark, C. M., & Springer, P. J. (2011). Nurse residents' first-hand accounts of transition to practice. *Nursing Outlook*, *In press*. doi: 10.1016/j.outlook.2011.08.003

- Clarke, P. N., Barone, S. H., Hanna, D., & Senesac, P. M. (2011). Roy's Adaptation Model. *Nursing Science Quarterly*, 24(4), 337-344. doi: 10.1177/0894318411419223
- Committee on Quality of Healthcare in America, Institute of Medicine,,. (2000). To Err is Human Building a Safer Health System L. T. Kohn, J. M. Corrigan & M. S. Donaldson (Eds.), Retrieved from http://books.nap.edu/openbook.php?record_id=9728&page=R1
- Committee on the Work Environment for Nurses and Patient Safety, Board on Health Care Services, Institute of Medicine,,. (2004). Keeping patients safe: Transforming the work environment of nurses A. Page (Ed.) Retrieved from http://books.nap.edu/openbook.php?record_id=10851&page=R2
- Craig, C., Moscato, S., & Moyce, S. (2012). New BSN nurses' perspectives on the transition to practice in changing economic times. *Journal for Nurses in Staff Development*, 42, 202-207. doi: 10.1097/NNA.0b013e31824ccd95
- Crisp, R. (2008). "Well-Being" E. N. Zalta (Ed.) *The Stanford Encyclopedia of Philosophy* Retrieved from <http://plato.stanford.edu/archives/win2008/entries/well-being/>
- Daniels, K. (2000). Measures of five aspects of affective well-being at work. *Human Relations*, 53(2), 275-294. Retrieved from <http://hum.sagepub.com/>
- de Sousa, R. (2012, January 4, 2012). Emotion. *The Stanford Encyclopedia of Philosophy* (Spring 2012). Retrieved February 25, 2012, 2012, from <http://plato.stanford.edu/archives/spr2012/entries/emotion/>

- De Vries, J., Michielsen, H. J., & Van Heck, G. L. (2003). Assessment of fatigue among working people: A comparison of six questionnaires. *Occupational and Environmental Medicine*, *60*, 10-15. doi: 10.1136/oem.60.suppl_1.i10
- Deppoliti, D. (2008). Exploring how new registered nurses construct professional identity in hospital settings. *The Journal of Continuing Education in Nursing*, *39*, 255-262. Retrieved from <http://www.slackjournals.com/jcen>
- DeSanto Madeya, S., & Fawcett, J. (2009). Toward understanding and measuring adaptation level in the context of the Roy Adaptation Model. *Nursing Science Quarterly*, *22*, 355-359. doi: 10.1177/0894318409344753
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*(2), 276-302. doi: 10.1037/0033-2909.125.2.276
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2009). *Internet, mail and mixed-mode surveys: The tailored design method* (3rd ed.). Hoboken, NJ: John Wiley & Sons, Inc.
- Dimattio, M. J. K., Roe-Prior, P., & Carpenter, D. R. (2010). Intent to stay: A pilot study of baccalaureate nurses and hospital nursing. *Journal of Professional Nursing*, *26*(5), 278-286. doi: 10.1016/j.profnurs.2010.06.005
- Donaldson, S. K., & Crowley, D. M. (1978). The discipline of nursing. *Nursing Outlook*, *26*, 113-120. Retrieved from <http://nursingoutlook.org/home>

- Duchscher, J. B. (2009). Transition shock: the initial stage of role adaptation for newly graduated Registered Nurses. *Journal of Advanced Nursing*, 65(5), 1103-1113. doi: 10.1111/j.1365-2648.2008.04898.x
- Dyess, S. M., & Sherman, R. O. (2009). The first year of practice: new graduate nurses' transition and learning needs. *Journal of Continuing Education in Nursing*, 40(9), 403-410. doi: 10.3928/00220124-20090824-03
- Ebright, P. R., Patterson, E. S., Chalko, B. A., & Render, M. L. (2003). Understanding the complexity of registered nurse work in acute care settings. *Journal of Nursing Administration*, 33(12), 630-638. Retrieved from <http://journals.lww.com/jonajournal/pages/default.aspx>
- Etheridge, S. A. (2007). Learning to think like a nurse: Stories from new nurse graduates. *The Journal of Continuing Education in Nursing*, 38(1), 24-30. Retrieved from <http://www.slackjournals.com/jcen>
- Fink, R., Krugman, M., Casey, K., & Goode, C. (2008). The graduate nurse experience: Qualitative residency program outcomes. *The Journal of Nursing Administration*, 38, 341-348. doi: 10.1097/01.NNA.0000323943.82016.48
- Florida Department of Health. (n.d.). Division of Medical Quality Assurance; Nursing Frequently Asked Questions; Licensure by Examination; What does graduate nurse status mean? Retrieved March 25, 2012, from http://www.doh.state.fl.us/mqa/nursing/nur_faq.html

- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218-226. doi: 10.1037/0003-066x.56.3.218
- Georgia Secretary of State. (2008). Secretary of State Professional Licensing Boards; Roster Request Form Retrieved March 26, 2012, from http://sos.georgia.gov/plb/rn/roster_request.pdf
- Gliner, J. A., Morgan, G. A., & Leech, N. L. (2009). *Research Methods in Applied Settings An Integrated Approach to Design and Analysis* (2nd ed.). New York, NY Routledge Taylor and Francis Group.
- Guerrero, S., & Herrback, O. (2008). The affective underpinnings of psychological contract fulfilment. *Journal of Managerial Psychology, 23*, 4-17. Retrieved from <http://www.emeraldinsight.com/products/journals/journals.htm?id=jmp>
- Halfer, D. (2011). Job embeddedness factors and retention of nurses with 1 to 3 years of experience. *Journal of Continuing Education in Nursing, 42*(10), 468-476. doi: 10.3929/00220124-20110601-02
- Halfer, D., & Graf, E. (2006). Graduate nurse perceptions of the work experience. *Nursing Economics, 24*, 150-155, 123. Retrieved from <http://www.nursingeconomics.net/cgi-bin/WebObjects/NECJournal.woa>
- Hirsch, A. M. (2011). Report of survey results for newly licensed registered nurses in Washington state. *Journal of Nursing Education, 50*(10), 575-578. doi: 10.3928/01484834-20110616-01

- Hodges, H. F., Keeley, A. C., & Troyan, P. J. (2008). Professional resilience in baccalaureate-prepared acute care nurses: First steps. *Nursing Education Perspectives, 29*(2), 80-89. Retrieved from <http://www.nlnjournal.org/>
- Huck, S. W. (2008). *Reading statistics and research* (5th ed.). Boston, MA: Pearson Education, Inc.
- Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. (2007). *Designing Clinical Research* (3rd ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Hurrell, J. J., Nelson, D. N., & Simmons, B. L. (1998). Measuring job stressors and strains: Where we have been, where we are, and where we need to go. *Journal of Occupational Health Psychology, 3*, 368-389. Retrieved from <http://www.apa.org/pubs/journals/ocp/index.aspx>
- Illinois Center for Nursing. (n.d.). Data/Research Retrieved March 26, 2012, from <http://nursing.illinois.gov/ResearchData.asp>
- Institute of Medicine (U.S.), Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, Robert Wood Johnson Foundation, & National Academy of Sciences (U.S.). (2010). *The future of nursing: Leading change, advancing health* Retrieved from http://books.nap.edu/openbook.php?record_id=12956&page=R5
- Jex, S. M., Spector, P. E., Gudanowski, D. M., & Newman, R. A. (1991). Relations between exercise and employee responses to work stressors: A summary of two studies. *Journal of Social Behavior & Personality, 6*(7), 425-443.

- Joel, L. A. (2003). *Kelly's Dimensions of Professional Nursing* (9th ed.). New York, NY: McGraw-Hill Companies.
- Jones, C. B. (2008). Revisiting nurse turnover costs: adjusting for inflation. *Journal of Nursing Administration*, 38(1), 11-18. Retrieved from <http://journals.lww.com/jonajournal/pages/default.aspx>
- Jones, C. B., & Gates, M. (2007). The costs and benefits of nurse turnover: A business case for nurse retention *The Online Journal of Issues in Nursing*, 12. Retrieved from <http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume122007/No3Sept07/NurseRetention.aspx>
- Kelly, S., & Courts, N. (2007). The professional self-concept of new graduate nurses. *Nurse Education in Practice*, 7(5), 332-337. Retrieved from http://www.elsevier.com/wps/find/journaldescription.cws_home/623062/description#description
- Kentucky Board of Nursing. (2012, June 24, 2011). Provisional license, from <http://kbn.ky.gov/apply/provisional.htm>
- Kovner, C. T., Brewer, C. S., Fairchild, S., Poonima, S., Kim, H., & Djukic, M. (2007). Newly licensed RNs' characteristics, work attitudes, and intentions to work. *American Journal of Nursing*, 107, 70-71. Retrieved from <http://journals.lww.com/ajnonline/pages/default.aspx>

- Kowalski, S., & Cross, C. L. (2010). Preliminary outcomes of a local residency programme for new graduate registered nurses. *Journal of Nursing Management*, 18(1), 96-104. doi: 10.1111/j.1365-2834.2009.01056.x
- Kramer, M. (1974). *Reality shock Why nurses leave nursing*. Saint Louis, MO: C. V. Mosby Company.
- Kramer, M., Brewer, B. B., & Maguire, P. (2011). Impact of healthy work environments on new graduate nurses' environmental reality shock. *Western Journal of Nursing Research*. Retrieved from doi:10.1177/0193945911403939
- Kramer, M., Halfer, D., Maguire, P., & Schmalenberg, C. (2012). Impact of healthy work environments and multistage Nurse Residency Programs on retention of newly licensed RNs. *Journal of Nursing Administration*, 42(3), 148-159. doi: 10.1097/NNA.0b013e31824808e3
- Krichbaum, K. E., Peden-McAlpine, C., Diemert, C., Koenig, P., Mueller, C., & Savik, K. (2011). Designing a measure of complexity compression in registered nurses. *Western Journal of Nursing Research*, 33(1), 7-25. doi: 10.1177/0193945910383877
- Lavizzo-Mourey, R. (2010, January 20, 2010). Opinion: Let's make the most of one of our most valuable health resources. *Kaiser Health News*, from <http://www.kaiserhealthnews.org/Columns/2010/January/012010LM.aspx>
- Letvak, S., & Buck, R. (2008). Factors influencing work productivity and intent to stay in nursing. *Nursing Economic\$,* 26(3), 159-166. Retrieved from <http://www.nursingeconomics.net/cgi-bin/WebObjects/NECJournal.woa>

- Letvak, S. A., Ruhm, C. J., & Gupta, S. N. (2012). Nurses' presenteeism and Its effects on self-reported quality of care and costs. *American Journal of Nursing*, 112(2), 30-48. Retrieved from <http://journals.lww.com/ajnonline/pages/default.aspx>
- Li, S., & Kenward, K. (2006). A national survey of nursing education and practice of newly licensed nurses. *JONA's Healthcare Law, Ethics & Regulation*, 8(4), 110-115. Retrieved from <http://journals.lww.com/jonalaw/pages/default.aspx>
- Linder, L. (2009). Experiences of pediatric oncology nurses: the first year of hire. *Journal of Pediatric Oncology Nursing*, 26(1), 29-40. doi: 10.1177/1043454208323913
- Maryland Board of Nursing. (n.d.). Invoice Licensed Nurses Compact Disc, from http://www.mbon.org/services/nurse_cd.pdf
- Mason, D. J. (2008). Transforming health care for patient safety: Nurses' moral imperative to lead. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses*. Rockville, MD: Agency for Healthcare Research and Quality Retrieved from <http://www.ncbi.nlm.nih.gov/books/NBK2654/>.
- Meier, L. L., Semmer, N. K., Elfering, A., & Jacobshagen, N. (2008). The double meaning of control: Three-way interactions between internal resources, job control, and stressors at work. *Journal of Occupational Health Psychology*, 13(3), 244-258. doi: 10.1037/1076-8998.13.3.244
- Millar, M. M., & Dillman, D. A. (2011). Improving Response to Web and Mixed-Mode Surveys. *Public Opinion Quarterly*, 75(2), 249-269. doi: 10.1093/poq/nfr003

- Myers, S., Reidy, P., French, B., McHale, J., Chisholm, M., & Griffin, M. (2010). Safety concerns of hospital-based new-to-practice registered nurses and their preceptors. *Journal of Continuing Education in Nursing, 41*(4), 163-171. doi: 10.3928/00220124-20100326-02
- National Council of State Boards of Nursing. (2012a). Research Retrieved March 26, 2012, from <https://www.ncsbn.org/index.htm>
- National Council of State Boards of Nursing. (2012b). Transition to practice Retrieved August 27, 2012, from <https://www.ncsbn.org/363.htm>
- National Council of State Boards of Nursing. (2012c). Workforce Data Retrieved March 26, 2012, from <https://www.ncsbn.org/176.htm>
- Nixon, A. E., Mazzola, J. J., Bauer, J., Krueger, J. R., & Spector, P. E. (2011). Can work make you sick? A meta-analysis of the relationships between job stressors and physical symptoms. *Work & Stress, 25*(1), 1-22. doi: 10.1080/02678373.2011.569175
- North Carolina Board of Nursing. (n.d.). Statistics; Currently licensed RNs Retrieved August 25, 2012, from <http://www.ncbon.com/LicensureStats/LicStat-RNWSTAT.asp>
- Norusis, M. J. (2008). *SPSS 16.0 guide to data analysis*. Upper Saddle River, NJ: Prentice Hall.

- Oermann, M. H., Alvarez, M. T., O'Sullivan, R., & Foster, B. B. (2010). Performance, satisfaction, and transition into practice of graduates of accelerated nursing programs. *Journal for Nurses in Staff Development, 26*(5), 192-199. doi: 10.1097/NND.0b013e31819b5c3a
- Oermann, M. H., Poole-Dawkins, K., Alvarez, M. T., Foster, B. B., & O'Sullivan, R. (2010). Managers' perspectives of new graduates of accelerated nursing programs: How do they compare with other graduates? *Journal of Continuing Education in Nursing, 41*(9), 394-402. doi: 10.3928/00220124-20100601-01
- Olson, M. E. (2009). The "Millennials": first year in practice. *Nursing Outlook, 57*(1), 10-17. doi: 10.1016/j.outlook.2008.06.001
- Pasupathy, K. S., & Barker, L. M. (2011). Impact of fatigue on performance in Registered Nurses: Data mining and implications for practice. *Journal for Healthcare Quality. doi: 10.1111/j.1945-1474.2011.00157.x*
- Patrician, P. A. (2004). Methods. Single-item graphic representational scales. *Nursing Research, 53*(5), 347-352. Retrieved from <http://journals.lww.com/nursingresearchonline/pages/default.aspx>
- Pellico, L. H., Brewer, C. S., & Kovner, C. T. (2009). What newly licensed registered nurses have to say about their first experiences. *Nursing Outlook, 57*, 194-203. doi: 10.1016/j.outlook.2008.09.008

- Pennsylvania Department of State. (2011, November 30, 2011). State Board of Nursing; Licensure Information; Board Forms/Applications/ NCLEX and Graduate Temporary Practice Permit Retrieved March 26, 2012, from http://www.portal.state.pa.us/portal/server.pt/community/state_board_of_nursing/12515/licensure_information/572048#forms
- Pinchera, B. J. (2012). Newly licensed nurses: A look at their first 18 months. *Nursing*, 42(5), 18-22. doi: 10.1097/01.NURSE.0000413625.74733.f8
- Polit, D. (1996). *Data analysis & statistics for nursing research*. Upper Saddle River, NJ: Prentice Hall.
- Reevy, G. M. (2010). "Affect" Encyclopedia of Emotion. Santa Barbara, CA: Greenwood. Retrieved from <http://ebooks.abc-clio.com.libproxy.uncg.edu/reader.aspx?isbn=9780313345753&id=B3194C-1203&q=affect#>.
- Roy, C. (2009). *The Roy Adaptation Model* (3rd ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Rush, K. L., Adamack, M., Gordon, J., Lilly, M., & Janke, R. (2012). Best practices of formal new graduate nurse transition programs: An integrative review. *International Journal of Nursing Studies*(0). doi: 10.1016/j.ijnurstu.2012.06.009
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, 39(6), 1161-1178. doi: 10.1037/h0077714

- Russell, J. A., & Feldman Barrett, L. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology*, 76(5), 805-819. doi: 10.1037/0022-3514.76.5.805
- Salt, J., Cummings, G. G., & Profetto-McGrath, J. (2008). Increasing retention of new graduate nurses: a systematic review of interventions by healthcare organizations. *Journal of Nursing Administration*, 38(6), 287-296. doi: 10.1097/01.NNA.0000312788.88093.2e
- Schoessler, M., & Waldo, M. (2006). The first 18 months in practice: a developmental transition model for the newly graduated nurse. *Journal for Nurses in Staff Development*, 22, 47-54. Retrieved from <http://journals.lww.com/jnsdonline/pages/default.aspx>
- Schumacher, D. L. (2007). Caring behaviors of preceptors as perceived by new nursing graduate orientees. *Journal for Nurses in Staff Development*, 23, 186-192. doi: 10.1097/01.NND.0000281419.27602.4c
- Scott, E. S., Engelke, M. K., & Swanson, M. (2008). New graduate nurse transitioning: Necessary or nice? *Applied Nursing Research*, 21, 75-83. doi: 10.1016/j.apnr.2006.12.002
- Simons, S. R., & Mawn, B. (2010). Bullying in the workplace -- a qualitative study of newly licensed registered nurses. *AAOHN Journal*, 58(7), 305-311. doi: 10.3928/08910162-20100616-02

- Slaikue, K. N. (2011). Addressing the preparation/practice gap: A new era, new approach. *Nurse Leader*, 9(2), 46-49. doi: 10.1016/j.mnl.2011.01.005
- South Carolina Department of Labor, Licensing,, and Regulation,,. (n.d.). South Carolina Board of Nursing, from <http://www.llr.state.sc.us/pol/nursing/>
- Spector, P. E. (2006, April 19, 2006). Overview of the Job-Related Affective Well-Being Scale Retrieved February 27, 2012, from <http://shell.cas.usf.edu/~pspector/scales/jawsover.html>
- Spector, P. E. (2007, June 4, 2007). Instructions for Scoring the Job-related Affective Well-being Scale, JAWS Retrieved February 27, 2012, from <http://shell.cas.usf.edu/~pspector/scales/jawsscor.html>
- Spector, P. E. (2011, January 7, 2011). Job-related Affective Well-Being Scale, from <http://shell.cas.usf.edu/~pspector/scales/jawspage.html>
- Staiger, D. O., Auerbach, D. I., & Buerhaus, P. I. (2012). Registered nurse labor supply and the recession — Are we in a bubble? *New England Journal of Medicine*. Retrieved from doi:10.1056/NEJMp1200641
- State of Connecticut. (2011, October 24, 2011). Department of Public Health; Board of Examiners for Nursing Retrieved March 26, 2012, from <http://www.ct.gov/dph/cwp/view.asp?a=3143&q=388910>
- Suzuki, E., Kanoya, Y., Katsuki, T., & Sato, C. (2006). Assertiveness affecting burnout of novice nurses at university hospitals. *Japan Journal of Nursing Science*, 3(2), 93-105. Retrieved from <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291742-7924>

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.

Tennessee Government, Department of Health,,. (n.d.). Board of Nursing Retrieved March 26, 2012, from <http://health.state.tn.us/boards/Nursing/index.htm>

Texas Board of Nursing. (n.d.). Statistical Information; Texas Nursing Statistics, from <http://www.bon.texas.gov/about/statistical.html>

The Joint Commission. (2011). Sentinel Event Alert: Health care worker fatigue and patient safety. 1-4. Retrieved from http://www.pwrnewmedia.com/2011/joint_commission/sea_fatigue/downloads/EA_48_HCW_Fatigue.pdf

U.S. Dept. of Health & Human Services, Public Health Service, Health Resources & Services Administration, Bureau of Health Professions, Division of Nursing. (2010). The Registered Nurse Workforce Initial Findings From the 2008 National Sample Survey of Registered Nurses. In U.S. Dept. of Health & Human Services, Health Resources and Services Administration (Series Ed.) Retrieved from <http://bhpr.hrsa.gov/healthworkforce/rnsurveys/rnsurveyinitial2008.pdf>

Unruh, L. Y., & Nooney, J. (2011). Newly licensed registered nurses' perceptions of job difficulties, demands and control: individual and organizational predictors. *Journal of Nursing Management*, 19(5), 572-584. doi: 10.1111/j.1365-2834.2011.01239.x

- Van Katwyk, P. T., Fox, S., Spector, P. E., & Kelloway, E. K. (2000). Using the Job-Related Affective Well-Being Scale (JAWS) to investigate affective responses to work stressors. *Journal of Occupational Health Psychology, 5*(2), 219-230. doi: 10.1037/1076-8998.5.2.219
- Virginia Board of Nursing. (n.d.). Reports; Statistical Information as of February 28, 2012 Retrieved March 26, 2012, from <http://www.dhp.state.va.us/nursing/default.htm>
- Warr, P. (1990). The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology, 63*(3), 193-210. doi: 10.1111/j.2044-8325.1990.tb00521.x
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98*(2), 219-235. doi: 10.1037/0033-2909.98.2.219
- Williams, C. A., Goode, C. J., Krsek, C., Bednash, G. D., & Lynn, M. R. (2007). Postbaccalaureate Nurse Residency 1- Year Outcomes. *Journal of Nursing Administration, 37*, 357-365. doi: 10.1097/01.NNA.0000285112.14948.0f
- Winwood, P. C., & Lushington, K. (2006). Disentangling the effects of psychological and physical work demands on sleep, recovery and maladaptive chronic stress outcomes within a large sample of Australian nurses. *Journal of Advanced Nursing, 56*(6), 679-689. doi: 10.1111/j.1365-2648.2006.04055.x
- Winwood, P. C., Lushington, K., & Winefield, A. H. (2006). Further development and validation of the Occupational Fatigue Exhaustion Recovery (OFER) scale. *Journal of Occupational and Environmental Medicine, 48*(4), 381-389.

Winwood, P. C., Winefield, A. H., Dawson, D., & Lushington, K. (2005). Development and validation of a scale to measure work-related fatigue and recovery: the Occupational Fatigue Exhaustion/Recovery Scale (OFER). *Journal of Occupational and Environmental Medicine, 47*(6), 594-606.

Winwood, P. C., Winefield, A. H., & Lushington, K. (2006). Work-related fatigue and recovery: the contribution of age, domestic responsibilities and shiftwork. *Journal of Advanced Nursing, 56*(4), 438-449. doi: 10.1111/j.1365-2648.2006.04011.x

Zeller, E., Doutrich, D., Guido, G. W., & Hoeksel, R. (2011). A culture of mutual support: Discovering why new nurses stay in nursing. *Journal of Continuing Education in Nursing, 42*(9), 409-414. doi: 10.3928/00220124-20110615-02

Zinsmeister, L. B., & Schafer, D. (2009). The exploration of the lived experience of the graduate nurse making the transition to registered nurse during the first year of practice. *Journal for Nurses in Staff Development, 25*(1), 28-34. doi: 10.1097/NND.0b013e318194b58c