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THE IMPACT OF A DIGITAL INTERVENTION ON PERCEIVED STRESS,
RESILIENCY, SOCIAL SUPPORT, AND INTENTION TO LEAVE AMONG NEWLY
LICENSED NURSES: A RANDOMIZED CONTROL TRIAL

A Dissertation

Submitted to School of Nursing

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Philosophy

By

Lisa Concilio

December 2020

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Lisa Concilio

2020

THE IMPACT OF A DIGITAL INTERVENTION ON PERCEIVED STRESS,
RESILIENCY, SOCIAL SUPPORT, AND INTENTION TO LEAVE AMONG NEWLY
LICENSED NURSES: A RANDOMIZED CONTROL TRIAL

By

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ABSTRACT

THE IMPACT OF A DIGITAL INTERVENTION ON PERCEIVED STRESS, RESILIENCY, SOCIAL SUPPORT, AND INTENTION TO LEAVE AMONG NEWLY LICENCED NURSES: A RANDOMIZED CONTROL TRIAL

By

Lisa Concilio

December 2020

Dissertation supervised by Dr. Joan Such Lockhart

The nursing shortage has been deemed a public health crisis with the turnover rate of newly licensed nurses (NLNs) growing (Robert Wood Johnson Foundation, 2014). One out of five NLNs are leaving the profession due to work dissatisfaction and feelings of inadequacy (National Academy of Medicine, 2017). NLN attrition during the first year of hire has been associated with feelings of overwhelming stress and decreased sense of support which negatively impact patient safety (Spence Laschinger et al., 2016). As seasoned nurses are attempting to retire amidst a nursing shortage (American Association of Colleges of Nursing, 2018), NLNs require more support than ever before. A prospective, randomized control trial evaluated the impact of a six-week digital intervention (text messaging) on NLNs' self-reported stress, resiliency, sense of support, and intention to leave (ITL) their jobs, organization and profession. Messages to the

experimental group (n=10) conveyed emotional, esteem, and networking support; messages to the control group (n=11) were medical facts. Duchscher's Theory of Transition Shock (2007) served as the study's conceptual framework. Outcome data were measured using the Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983), the Connor-Davidson Resiliency Scale-25 (CD-RISC-25) (Davidson, 2018), the Sense of Support Scale (SSS) (Dolbier & Steinhardt, 2000), and an Intention to Leave Survey (ITL Survey). Participants in the control group (those who received medical facts as the digital intervention) experienced increased sense of social support. At the end of week three, a Bayes Factor (BF) between 0.33 to 0.10 revealed substantial evidence to support there is a difference between the groups. At the end of week six, a BF between 0.03 to 0.01 revealed very strong evidence to support there is a difference between the groups. The impact of a digital intervention (text messaging medical facts) was found to increase this NLN cohort's sense of support during the first year of hire. Implications from this study encourages nurse educators to use a cost-effective digital intervention (text messaging) to support NLNs' first year of practice. Future research is needed to explore NLN resilience and turnover.

DEDICATION

To my mom and dad, thank you for your love and ongoing support.

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To my family, especially my mother and father, your encouragement and support led me to continuously believe in myself. To my dear friend Dr. Caterina Madani, your expertise in data set up and management was priceless, and your friendship fueled my spirit to keep moving forward. To David Nolfi, thank you for your expertise with the literature review. To Dr. Jane Brannan, thank you for your expertise on the topic of nurse resiliency. To Dr. Marilyn Oermann, thank for the insight and expertise in understanding newly licensed nurses' transition to practice. To Dr. Rebecca Kronk, thank you for your guidance in understanding nurse preparedness and quantitative methodology. To Dr. James Schreiber for your help choosing the most dependable statistical approach in order to attain precision and detail. To Dr. Joan Lockhart, my committee chair, thank you for your knowledge regarding the development and performance of healthcare professionals and helping me navigate this process. Lastly, thank you to the newly licensed nurses that participated in this study.

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LIST OF ABBREVIATIONS

AACN = American Association of Colleges of Nurses

AMSN = Academy of Medical-Surgical Nurses

ANA = American Nurses Association

AONE = American Organization of Nurse Executives

CD-RISC-25 = Connor-Davidson Resiliency Scale-25

F = Friday

I-CVI = content validity index

IRB = Internal Review Board

ITL= intent to leave current job/organization/profession

M = Monday

MSN = Master of Science in Nursing

NAM = National Academy of Medicine

NCLEX = National Council Licensure Exam-RN

NIH = National Institutes of Health

NLN = Newly licensed nurse

PI = Principal Investigator

PSS = Perceived Sense of Stress

QR Code = Quick Response Code containing URL on the World Wide Web

RCT= randomized control study

RN = registered nurse

RQ = research question

RWJF = Robert Wood Johnson Foundation

S = Saturday

SSBC = Social Support Behavior Code

SSS = Social Support Scale

TJC = The Joint Commission

W = Wednesday

INTEGRATIVE REVIEW OF THE LITERATURE

Manuscript #1

Newly Licensed Nurse Resiliency and Interventions to Promote Resiliency in the First Year of Hire: An Integrative Review

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Abstract

Background: Lack of resiliency contributes to growing dissatisfaction among newly licensed nurses (NLNs) and often leads to clinical errors and job resignations.

Method: An integrative review synthesized current research investigating NLNs' resiliency within their first year of hire and interventions that may affect their resiliency.

Results: Key database searches (2008 to 2018) yielded 16 studies. Insufficient resiliency among NLNs has been correlated with intentions to leave current jobs and decreased job satisfaction. Residency programs, well-prepared preceptors, and peer support promoted NLN resilience and enhanced patient safety. Lack of coworker support has led to NLNs' intentions to leave their current jobs or the profession entirely.

Conclusion: NLN turnover has been interpreted to be an outcome of poor NLN resilience. The first year of practice is stressful and affects NLNs' mental health and cognitive reasoning, thereby risking patient safety. Resiliency should be measured using a resiliency scale rather than turnover rates.

Newly Licensed Nurse Resiliency and Interventions to Promote Resiliency in the First Year of Hire: An Integrative Review

The nursing shortage has been a long-standing problem in the United States (US) and spans eight decades (National League for Nurses [The NLN], 2017). Newly licensed nurses (NLNs) are graduate RNs who have passed the National Council Licensure Exam-RN (NCLEX-RN) and are employed for the first time in the role as a professional nurse. NLN turnover has been reported in recent years to impact patient safety and compounds the global nursing shortage (S. Boamah & Laschinger, 2015; Bradbury-Jones, 2015; Kovner, Brewer, Fatehi, & Katigbak, 2014; Spence Laschinger, Zhu, & Read, 2016; Thomas, 2017; World Health Organization [WHO], 2017). The American population is living longer with chronic diseases and expanding disabilities; more well-prepared RNs are needed as healthcare is ever-advancing and technology is at the forefront to help solve healthcare problems and improve quality of life (Academy of Medical-Surgical Nurses [AMSN], 2018; National Academy of Medicine [NAM], 2017; Reinhard, 2014; World Health Organization [WHO], 2018).

Problem Identification and Significance

The American Association of Colleges of Nursing [AACN] (2018) reported that 1.2 million RN positions will be vacant between 2014 and 2022 and that approximately 700,000 nurses will retire or leave the workforce by 2024. Cline, Frentz, Fellman, Summers, and Brassil (2017) reported that training one NLN may cost a health care system \$60,000 – \$96,000; therefore, increasing NLN resiliency is imperative to maintain patient safety and is a financial priority. NLNs experience immense stress leading to a state of shock while transitioning to practice (Boyчук Duchscher, 2009) resulting in burnout and turnover (H. K. Laschinger et al., 2016; K. Pfaff, Baxter, Jack, & Ploeg, 2014). Dyrbye et al. (2017) defined burnout as a

syndrome characterized by emotional exhaustion which leads to poor performance and an attitude that is contrary to caring. Nurse burnout has led to staffing shortages and increased turnover rates which has resulted in the use of physical restraints, patient falls, and the formation of pressure ulcers (Aiken et al., 2014; Robert Wood Johnson Foundation [RWJF], 2012).

Resiliency has been identified as a key factor in managing the stress of nursing work-life, buffering burnout, and positively influencing NLNs' intentions to stay their current jobs (Chesak et al., 2015; Cope, Jones, & Hendricks, 2016; Delgado, Upton, Ranse, Furness, & Foster, 2017; Reyes, Andrusyszyn, Iwasiw, Forchuk, & Babenko-Mould, 2015). The National Center for Complementary and Integrative Health [NCCIH] (2016) stated the concept of resiliency is elusive and a closer examination of resiliency is needed in order to decrease burnout and decrease turnover. Without resiliency or ways to deal with the emotional stressors and workplace adversities (Delgado et al., 2017), nurses (including NLNs), may develop inconsistent thoughts, beliefs, and values which will render them unsafe for practice and the increase intentions to leave one's job (Hart, Brannan, & De Chesnay, 2014; Stephens, 2012; Tahghighi, Rees, Brown, Breen, & Hegney, 2017). This paper describes an integrative review of the literature that examined NLN resiliency within their first year of hire and interventions that may affect their resiliency.

Exploring the concept of resilience in nursing. The youngest generation of nurses are the most likely group of nurses to lack the protective factors of resiliency and leave the profession within the first year of hire (Flinkman, Isopahkala-Bouret, & Salanterä, 2013; RWJF, 2014). Resilience assists a nurse's psyche to deal with the negative consequences of workplace stress (Fletcher & Sarkar, 2013). Stressors encountered by nurses in healthcare organizations include an increasing aging population, growing numbers of patients suffering from chronic illnesses, and an aging nursing workforce (AACN, 2018). To overcome these organizational and

systemic stressors, nurses have been remediated to provide excellent customer service and uphold standards of care; yet, these approaches have not addressed the aforementioned stressors or bolstered nurses' resilience (Hagedorn Wonder, York, Jackson, & Sluys, 2017; Institute of Medicine [IOM], 2014; Spence Laschinger et al., 2016).

A resilient nurse receives information and acts upon it to safeguard patients and advocate for their needs (Sieg, 2015). Resiliency is the ability to command psychomotor skills (the ability to perform tasks/communicate correctly and timely) and cognitive-behavioral skills (cognitive re-framing, mindfulness, compassion, and emotional intelligence) in order to perform successfully while stressed (AMSN, 2018; McAllister & Lowe, 2011). In this paper, the authors provide current knowledge on the concept of NLN resilience during the first year of hire because the lack of resiliency causes nurses to act in a manner that is contrary to caring; as dissatisfaction builds, it leads to an increase in errors and contributes to NLNs leaving their current jobs (Gabriel, Diefendorff, & Erickson, 2011; Hart et al., 2014). Therefore, a need exists to understand NLN resilience during the first year of hire.

Purpose and Specific Aims

The purpose of this integrative review is to summarize and synthesize NLN resiliency and interventions used to promote NLN resiliency within the first year of hire, in an effort to guide future research in this area. Although resilience has been widely studied in nurses (Delgado et al., 2017; Hart et al., 2014; Stephens & Smith, 2017) and nursing students (Stephens, 2012, 2013), few studies have examined NLN resilience. This integrative review explores past literature to describe factors associated with a lack of resiliency or its protective factors and to investigate approaches that increase NLN resiliency. The following specific aims guided this integrative review: (1) What is the state of NLNs' resiliency within their first year of practice?

(2) What are the contributing factors that promote or hinder NLN resilience? (3) What are the outcomes associated with NLN resilience or lack of resiliency? (4) What are the current interventions or strategies used to build protective factors of resilience that lead to NLNs' intention to stay at their current jobs? (5) What tools have been used to measure NLN resiliency and have been correlated with intentions to leave jobs?

Method

An integrative approach by Whittemore and Knafl (2005) guided this review of the literature. This model included five stages (problem identification, literature search, data evaluation, data analysis, and presentation) to enhance accuracy and ensure a thorough search.

Literature Search

A systematic process was used to review the primary studies of qualitative and quantitative research designs (Whittemore & Knafl, 2005). The process of conducting an integrative review is to provide an unbiased review of the literature. To retrieve relevant literature, searches were conducted with the assistance of a health science librarian using the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed databases and restricted to English-language articles published from January 2008 to May 2018. The following subject headings were used to retrieve articles that included descriptions about NLNs: *newly licensed nurses*, *resiliency*, and *intention to leave*. The Boolean operators AND and OR were used to combine these terms with *newly licensed nurse** and *nurs** (Table 1). Inclusion criteria included: (1) the topic addressed resilience or protective factors leading to resilience in NLNs; (2) study participants were NLNs within their first year of practice; (3) used any research design; (4) the studies were conducted in the US; and (5) publication was between January 2008

and May 2018. The review excluded non-research publications, gray literature, and publications that did not address the inclusion criteria.

A total of 789 articles were identified from CINAHL and PubMed using the initial search terms; 56 duplicates were removed resulting in 733 publications. As shown in the PRISMA flow diagram (Figure 1), 570 articles were removed based on their abstracts which did not meet the inclusion criteria. Next, 163 papers were retrieved for full-text evaluation; 147 of these papers were excluded as they did not meet the inclusion criteria, leaving 16 articles that comprised the final sample for this review (Anderson, Linden, Allen, & Gibbs, 2009; Bontrager, Hart, & Maren, 2016; Clark & Springer, 2012; Cline et al., 2017; Clipper & Cherry, 2015; Fiedler, Read, Lane, Hicks, & Jegier, 2014; Fink, Krugman, Casey, & Goode, 2008; B. Gill, Deagan, & McNett, 2010; Hodges, Keeley, & Troyan, 2008; Hodges, Troyan, & Keeley, 2010; Marlene Kramer et al., 2012; Li, Early, Mahrer, Klaristenfeld, & Gold, 2014; Martin & Wilson, 2011; McCalla-Graham & De Gagne, 2015; Olson, 2009; Pellico, Brewer, & Kovner, 2009). There was no follow-up with authors to retrieve additional information.

Sample studies included qualitative (n=8), quantitative (n=5), and mixed method (n=3) designs. Qualitative studies used case study (n=2), phenomenological (n=3), and grounded theory analyses (n=3). Quantitative studies were non-experimental (n=5) and included causal-comparative (n=1) and descriptive analyses (n=4). Mixed-method studies used sequential, exploratory designs (n=3) aimed to understand NLNs' behaviors and challenges during their first year of practice.

Data Evaluation

The data evaluation stage used a methodological approach to appraise the quality of each publication (Whittemore & Knafl, 2005). Each quantitative study was evaluated and categorized

based on the quality of evidence and recommendation level for practice using the *GRADE Guideline Criteria for Appraising Quality of Evidence* (Schünemann, Ahmed, & Morgan, 2011); for qualitative studies, the *GRADE-CERQual Confidence in the Evidence from Review of Qualitative Research* (Lewin et al., 2018) was used. Qualitative studies were evaluated using GRADE-CERQual and categorized using a systematic approach to increase transparency in the appraisal process. Four components were used to evaluate qualitative studies: methodological limitations, coherence, adequacy of data, and relevance. Publication bias is also important and was taken into the appraisal of qualitative evidence and was placed as a fifth criterion. Eleven studies were rated moderate to low quality (qualitative, n=8; mixed methods, n=3) and remaining five quantitative studies were rated moderate to very low quality.

A table was created to extract key data from each sample study using the following subheadings: author, year of publication, study design, sample population, setting, purpose, aims, variables, instruments, and the quality appraisal (Table 2). Ratings of evidence were labeled as high ⊕⊕⊕⊕, moderate ⊕⊕⊕○, low ⊕⊕○○, or very low ⊕○○○ (Table 2). Observational designs were noted using “++,” and experimental studies were noted using “++++” (Lewin et al., 2018; Ryan, 2016).

Data Analysis

During data analysis, primary studies were organized, categorized, summarized, and integrated into a conclusion about the research problem of each study based upon (1) NLNs’ resiliency within the first year of practice, (2) contributing factors of NLNs that promote or hinder resiliency, (3) the outcomes associated with NLN resiliency or the lack thereof, (4) methods found to build resiliency in NLNs; and (5) examine the tools that have been used to measure NLN resiliency and correlated with intentions to leave their jobs. Results were

synthesized using a consistent, correlative method to identify patterns, relationships, create themes, draw conclusions, and provide a comprehensive summary (Whittemore & Knafl, 2005).

Results

Presentation of data is the final stage of an integrative review which exhibits detailed evidence from each sample study (Whittemore & Knafl, 2005). The results section describes the synthesis of sample studies based on the review's purpose and aims.

Description of Sample

All 16 sample studies were published in the US and distributed from 2008 to 2017; most studies (n=3) were cited in 2009 with none in 2013. Studies were published in nine different journals; more than one study was included in the *Journal of Nursing Administration* (n=4); *Journal of Continuing Education in Nursing* (n=3); and *Nursing Outlook* (n=3).

A wide range of sample sizes existed by study designs: qualitative studies (7 to 612); quantitative (51 to 558); and mixed methods (7 to 434). Both male and female NLNs were included as study participants; half of the studies did not disclose participants' gender; and the remaining studies (n=8) focused mainly on women (89.3%). Reported age ranges of participants varied among studies with most NLNs ranging from 21 to 25 years; in addition, two studies "mean" ages of 33 and 33.4 years; and one study reported a median age of 38.6 years. Other studies reported diverse age ranges: 18 years or over (n=1); 21 to 50 years (n=1); 20 to 25 years (n=1); and younger than 30 years (n=1).

Only four studies reported the participants' race/ethnicity. Caucasians serving as the highest group represented (n=4, 54.7%) followed by Blacks (n=4, 13.6%), Latinos (n=3, 6.1%), and Asians (n=2, 16.7%). Study settings were in-patient care settings in medical centers and hospitals across the US.

NLN Resiliency

Literature over the past decade revealed that NLN resiliency must be fostered in order for NLNs to stay at their current jobs. Insufficient resiliency among NLNs has been correlated with intentions to leave current jobs, turnover, and decreased job satisfaction. According to sample studies (n=14), the majority of NLNs want to leave their jobs due to dissatisfaction with nursing work and/or their work environments (Anderson et al., 2009; Bontrager et al., 2016; Clark & Springer, 2012; Cline et al., 2017; Clipper & Cherry, 2015; Fiedler et al., 2014; Fink et al., 2008; B. Gill et al., 2010; Hodges et al., 2008; Hodges et al., 2010; Marlene Kramer et al., 2012; Li et al., 2014; Martin & Wilson, 2011; McCalla-Graham & De Gagne, 2015; Olson, 2009; Pellico et al., 2009).

Factors that Promote or Hinder NLN Resiliency

Residency programs and co-worker support were reported to enhance NLNs' intentions to stay at their current jobs and in the nursing profession. Residency programs specifically designed to address the needs of NLNs positively affected NLN resiliency (Anderson et al., 2009; Cline et al., 2017; Fiedler et al., 2014). The protective factors of resilience that emerged among the sample studies were social support (Clipper & Cherry, 2015; Fiedler et al., 2014; Hodges et al., 2008; Li et al., 2014; Martin & Wilson, 2011), group cohesion (Anderson et al., 2009; Bontrager et al., 2016; B. Gill et al., 2010; Li et al., 2014), well-prepared preceptors (Bontrager et al., 2016; Clipper & Cherry, 2015), relationship-based care practices (Clark & Springer, 2012; Clipper & Cherry, 2015; Fink et al., 2008; Marlene Kramer et al., 2012; McCalla-Graham & De Gagne, 2015; Olson, 2009; Pellico et al., 2009), organizational support (Fiedler et al., 2014; Fink et al., 2008; Olson, 2009), and plentiful clinical support (Fink et al., 2008).

NLN resiliency decreased when NLNs experienced verbal abuse from physicians and incivility among other staff nurses (Marlene Kramer et al., 2012; Martin & Wilson, 2011; Olson, 2009; Pellico et al., 2009). Their inability to meet expectations of preceptors, unengaged preceptors, and decreased support when making errors also hindered NLNs' confidence and job satisfaction which, in turn, negatively impacted their resiliency (B. Gill et al., 2010; Li et al., 2014).

Outcomes Associated with NLN Resiliency

Positive Outcomes. NLN resiliency, which has been inferred as NLNs who want to stay in their jobs (McAllister & Lowe, 2011), improves empathy toward patients, job engagement, augmented teamwork, enhanced ability to perform tasks, boosted confidence, adaptability, and improved clinical reasoning. All of these outcomes of resiliency have been reported to assist in closing the preparation-practice gap and enhance patient safety (Fink et al., 2008; Martin & Wilson, 2011; Olson, 2009).

Negative Outcomes. The most common outcome associated with poor NLN resiliency cited in the nursing literature is high turnover (Anderson et al., 2009; Bontrager et al., 2016; Clark & Springer, 2012; Cline et al., 2017; Clipper & Cherry, 2015; Fiedler et al., 2014; Fink et al., 2008; B. Gill et al., 2010; Hodges et al., 2008; Hodges et al., 2010; Marlene Kramer et al., 2012; Li et al., 2014; Martin & Wilson, 2011; McCalla-Graham & De Gagne, 2015; Olson, 2009; Pellico et al., 2009). Secondly, a lack of support from preceptors, staff, physicians, and other NLNs increases NLNs' intentions to leave their jobs or the profession entirely (Anderson et al., 2009; Li et al., 2014; Martin & Wilson, 2011; Olson, 2009). Lastly, poor resiliency decreases an NLN's capability to work in a team setting (Bontrager et al., 2016; Clark & Springer, 2012; Fink et al., 2008; B. Gill et al., 2010; Hodges et al., 2008; Hodges et al., 2010; Marlene Kramer

et al., 2012; Martin & Wilson, 2011; Pellico et al., 2009). Teamwork is the cornerstone of patient care delivery as clinicians collaborate and use enhanced communication to benefit patients to attain mutual goals (World Health Organization [WHO], n.d.). As NLN resiliency decreases, so does patient safety.

Methods to Build Resiliency and Decrease Turnover

Nurse residency programs have been reported to build NLN resiliency and decrease turnover or the intention to leave a job (Anderson et al., 2009; Bontrager et al., 2016; Clark & Springer, 2012; Cline et al., 2017; Fiedler et al., 2014; Fink et al., 2008; B. Gill et al., 2010; Marlene Kramer et al., 2012; Li et al., 2014). Residency programs coordinate group learning and utilize a buddy system approach to on-the-job learning; residency programs were reported to increase socialization which Dyer and McGuinness (1996) reported is a protective factor of resiliency. Eleven of the sample studies concluded collegial relationships, social support, and professional acculturation were formidable and essential to deal with stress of a chaotic, foreign, and challenging work environment (Anderson et al., 2009; Bontrager et al., 2016; Fiedler et al., 2014; Fink et al., 2008; B. Gill et al., 2010; Hodges et al., 2008; Hodges et al., 2010; Li et al., 2014; Martin & Wilson, 2011; McCalla-Graham & De Gagne, 2015; Olson, 2009). Hodges et al. (2010) and Fiedler et al. (2014) described NLNs building comradery with others to negate feelings of inadequacy as method to protect themselves from the daily assault of stress and self-doubt. Additionally, Martin and Wilson (2011) described NLNs forming “caring groups” to enhance collegial relationships; these supportive groups helped to decrease feelings of doubt and stress experienced during their transition from academia to practice.

Measuring Resiliency and the Outcomes

This integrative review presents studies that correlated resiliency using satisfaction surveys, evaluations of preceptor effectiveness, and intention to leave surveys to best understand the reasons why NLNs leave their jobs. Table 3 outlines the tools used in sample studies (n=8) to evaluate strategies to build NLN resiliency (Anderson et al., 2009; Bontrager et al., 2016; Clark & Springer, 2012; Cline et al., 2017; Clipper & Cherry, 2015; Fiedler et al., 2014; Fink et al., 2008; McCalla-Graham & De Gagne, 2015). Studies did not evaluate patient outcomes while measuring NLN satisfaction or intention to leave. Yet, Gill (2010) explored NLNs' work perspective to gauge nursing quality by using the 10-item abbreviated version of the National Database of Nursing Quality Indicators (NDNQI) (reliability coefficient = .91) (Taunton et al., 2004). The NDNQI was correlated with intentions to leave one's job, yet the majority of the participants (n=7) in this study intended to leave their current job despite indicating they were satisfied. The same finding was reported by Clark and Springer (2012) in which NLNs expressed intentions to leave their jobs despite being satisfied with the care they delivered (n=37).

Discussion

An iterative process of examining each sample study to identify patterns, themes, noting intervening factors, and relationships between variability (Whittemore & Knafl, 2005) was done to provide clarity to summarize and synthesize what is known about the phenomenon of resiliency in NLNs, within the first year of hire, in an effort to guide future research in this area. First, the concept of NLN resiliency is not well understood as NLN turnover has been interpreted to be an outcome of poor NLN resiliency. Second, the expectation of NLNs is to take on new responsibilities and overcome numerous challenges to integrate themselves into a practice environment that stresses teamwork; this is so overwhelming that it negatively impacts NLNs'

mental health. Third, these feelings drain NLNs which can cause cognitive and emotional lability and impact clinical reasoning, a clear and present danger to patient welfare. Lastly, resiliency should be measured using a resiliency scale, as the decision or intention to leave one's job is not a surrogate to determine NLN resilience.

A growing body of research indicates NLNs' attrition is increasing at an alarming rate, despite residency programs assisting in their transition to help them assume professional responsibilities for which they may be unprepared (Clark & Springer, 2012; Cline et al., 2017; RWJF, 2014). Nurse incivility among staff, including NLNs, occurs due to the high stakes climate and coworkers' ineffective communication skills (H.K. Laschinger, Wong, & Regan, 2013). A paradox ensues as NLNs believe they would be cared for by caring professionals in a caring environment (Hart et al., 2014; Hodges et al., 2008; Marine, Ruotsalainen, Serra, & Verbeek, 2009; Martin & Wilson, 2011; Pariyo, Kiwanuka, Rutebemberwa, Okui, & Ssengooba, 2009).

Implications for Practice, Policy, and Research

The implications for this integrative review provides information to hospital educators and administrators regarding the trends and needs of NLNs and a new perspective on workforce readiness in an effort to promote patient safety. Nursing research has used a positivist approach to assess NLN resiliency, a philosophy that has not advanced nursing science in this area. Millennials (ages 22-37) (Pew Research Center, 2018) comprise the majority of newcomers to the nursing workforce and have the highest attrition rate among any generation that has entered the nursing profession (RWJF, 2014). Therefore, nurse researchers must apply a social constructivist approach, as there is much to learn about the millennial generation in the workplace (American Nurse Today, 2017). A social constructivism approach encourages a

participant's own interpretation of the situation to better understand the meaning of their experience (Dahnke & Dreher, 2011). This sociological lens may help researchers, managers, and educators evaluate NLN resilience as a truth created by their own perceptions rather through job satisfaction surveys or intention to leave scales. The American Academy of Nursing Policy agrees there is a need to build NLNs' resilience (Goode, Glassman, Reid Ponte, Krugman, & Peterman, 2018) to mitigate the negative effects of stress and encourage intention to stay at their first job is paramount. Research regarding low cost, social support strategies to encourage NLNs' motivation and engagement in nurse work is needed to garner patient safety.

Limitations

Several limitations exist among the sample studies that may result in the findings not being applicable to each NLN's experience during their first year of hire or their abilities to build resiliency. For example, detailed information was not provided regarding sample characteristics such as age in nine studies (Anderson et al., 2009; Clark & Springer, 2012; Fink et al., 2008; Hodges et al., 2008; Marlene Kramer et al., 2012; Li et al., 2014; Martin & Wilson, 2011; McCalla-Graham & De Gagne, 2015; Olson, 2009). Additionally, there was minimal representation of males in all sample studies as well as a poor representation of ethnic/racial diversity. Various practice settings among the studies limited generalizability of the findings as the settings included medical centers, hospitals, and specialty units (i.e. oncology). Each setting used different ways to orient NLNs and participants faced varying types of experiences which may not represent all NLNs' experiences when transitioning into their first jobs.

The designs of the 16 sample studies were primarily surveys or qualitative interviews. One study did not report the reliability and validity of the instrument used (Anderson et al., 2009). Researchers did not directly measure participants' resilience in any of the sample studies

yet inferred that participants' resilience was low if they intended to leave their jobs. This ambiguity may have led to a lack of differentiation among the search terms as "turnover" and "intention to leave" have been correlated with "resilience." However, strategies that encourage group cohesiveness, managerial involvement, and adequately prepare preceptors for what Duchscher (2007) refers to as the "transition shock" period, may increase resiliency and decrease intentions to leave (Anderson et al., 2009; Bontrager et al., 2016; Clark & Springer, 2012; Cline et al., 2017; Clipper & Cherry, 2015; Fiedler et al., 2014; Fink et al., 2008; B. Gill et al., 2010; Hodges et al., 2008; Hodges et al., 2010; Marlene Kramer et al., 2012; Li et al., 2014; Martin & Wilson, 2011; McCalla-Graham & De Gagne, 2015; Olson, 2009; Pellico et al., 2009; RWJF, 2014). Despite these efforts, the NLN attrition rates continue to rise yearly.

Conclusions

This integrative review provides pertinent information to researchers, managers, educators, and healthcare facilities about the concept of NLN resiliency. Decreased resiliency threatens patient safety. NLNs expressed difficulties with feeling confident which affects professional development, crucial to preparing a competent workforce. A supportive staff of nurses and physicians who are empathetic to the challenges NLNs face during the first year of hire is a proven facilitator of NLN resiliency; these supportive attributes increase NLN job engagement, confidence, and enhances team building skills. Additionally, resilience may be an indicator of practice readiness, a vital key to motivate and retain NLNs.

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Table 1*Search Terms by Databases Used in the Literature Search*

Database	Search Term Headings Used: Newly Licensed Nurse, Leaving within First Year, and Resiliency	No. of Titles and Abstracts
CINAHL search terms	<p>((("Newly licensed nurse*" OR (MH "New Graduate Nurses") OR ((MH "Nurses+") OR nurse*)) AND (MH ("Internship and Residency) OR MH ("Transitional Programs) OR MH ("Employee Orientation) OR MH ("Preceptorship")))))</p> <p>AND</p> <p>(((MH "Personnel Retention") OR (MH "Personnel Turnover") OR Retention OR Turnover OR Attrition OR Quit OR Stay OR "Negative Nurse Outcomes" OR "Intention to Leave" OR "Intention to Quit" OR (MH "Intention") OR (MH "Personnel Attitudes") OR (MH "Motivational factors for turnover intention") OR (MH "Professional Identity") OR (MH "Locus of control") OR (MH "Negative Patient Outcomes") OR (MH "Willingness to leave") OR Manpower OR "Motivational factors" OR "Psychosocial Factors" OR "negative patient outcomes"))</p> <p>AND</p> <p>(((MH ("Adaptation, Occupational") OR (MH "Avoidance (Psychology)" OR (MH "Coping") OR (MH "Cultural Safety") OR (MH "Disengagement") OR (MH "Disruptive Behavior") OR (MH "Hardiness") OR (MH "Job Satisfaction") OR (MH "Optimism") OR (MH "Reality Shock") OR (MH "Self-Efficacy") OR (MH "Social Adjustment") OR (MH "Stress Disorders, Post-Traumatic+") OR (MH "Stress, Occupational") OR (MH "Support, Psychosocial") OR (MH "Symptom Distress") OR (MH "Symptom Distress") OR (MH "Vulnerability") OR "Nurse Shock" OR "Occupational Adaptation" OR "occupational shock" OR "personal identity disturbance" OR "Post-Traumatic Stress Disorder" OR "Professional ident*" OR "psychological capital" OR "Reality Shock" OR Coping OR Optimis* OR Protective factors OR PTSD OR Resiliency) OR (MH "Motivation") OR (MH "Psychological Factors") OR (MH "Occupational Coping") OR (MH "Shared decision-making") OR (MH "Workplace empowerment") OR (MH "growth mindset") OR (MH "Prevention and Control") OR (MH "Occupational Commitment") OR (MH "Professional commitment") OR (MH "Controlled Motivation"))</p>	397
PubMed search terms	<p>((((("Emotional Adjustment"[Mesh]) AND "Sense of Coherence"[Mesh] OR "Resilience, Psychological"[Mesh] OR "Adaptation, Psychological"[Mesh] OR "Problem Behavior"[Mesh] OR "disruptive behavior"[tiab] OR "disruptive behavior"[ot] OR "Job Satisfaction"[Mesh] OR "Absenteeism"[Mesh] OR</p>	392

"Presenteeism"[Mesh] OR "Optimism"[Mesh] OR "Self Efficacy"[Mesh] OR "Social Adjustment"[Mesh] OR "Stress Disorders, Post-Traumatic"[Mesh] OR "Social Support"[Mesh] OR "Nurse Shock" [tiab] OR "Occupational Adaptation" [tiab] OR "occupational shock" [tiab] OR "personal identity disturbance" [tiab] OR "Post-Traumatic Stress Disorder" [tiab] OR "Professional identity" [tiab] OR "Professional identities" [tiab] OR "psychological capital" [tiab] OR "Reality Shock" [tiab] OR Coping [tiab] OR Optimis* [tiab] OR "Protective factor" [tiab] OR "Protective factors" [tiab] OR PTSD [tiab] OR Resiliency [tiab] OR "Nurse Shock" [ot] OR "Occupational Adaptation" [ot] OR "occupational shock" [ot] OR "personal identity disturbance" [ot] OR "Post-Traumatic Stress Disorder" [ot] OR "Professional identity" [ot] OR "Professional identities" [ot] OR "psychological capital" [ot] OR "Reality Shock" [ot] OR Coping [ot] OR Optimis* [ot] OR "Protective factor" [ot] OR "Protective factors" [ot] OR PTSD [ot] OR Resiliency [ot] OR "Motivation" [Mesh] OR "psychology" [Subheading] OR "Decision Making" [Mesh] OR "Prevention and Control" [Subheading])) AND ((Quit [ot] OR Quit [tiab] OR retention [ot] OR Retention [tiab] OR Stay [ot] OR Stay [tiab] OR Turnover [ot] OR Turnover [tiab] OR "Personnel Turnover" [Mesh] OR "Personnel Loyalty" [Mesh] OR Retention [tiab] OR Retention [ot] OR Turnover [tiab] OR Turnover [ot] OR Attrition [tiab] OR Attrition [ot] OR Quit [tiab] OR Quit [ot] OR Stay [tiab] OR Stay [ot] OR "Negative Nurse Outcomes" [tiab] OR "Negative Nurse Outcomes" [ot] OR "Intention to Leave" [tiab] OR "Intention to Leave" [ot] OR "Intention to Quit" [tiab] OR "Intention to Quit" [ot] OR Manpower [tiab] OR "Motivational factors" [tiab] OR "Psychosocial Factors" [tiab] OR "negative patient outcomes" [tiab] OR Manpower [ot] OR "Motivational factors" [ot] OR "Psychosocial Factors" [ot] OR "negative patient outcomes" [ot])) AND (((Newly licensed nurse" [tiab] OR "Newly licensed nurse" [ot] OR "Newly licensed nurses" [tiab] OR "Newly licensed nurses" [ot] OR "New Graduate Nurse" [ot] OR "New Graduate Nurse" [ot] OR "New Graduate Nurses" [ot] OR "New Graduate Nurses" [ot] OR "Novice nurse" [tiab] OR "Novice Nurse" [ot] OR "Novice nurses" [tiab] OR "Novice Nurses" [ot] OR "Newly licensed nurse*" [tiab] OR "New Graduate Nurses" [ot] OR "Novice nurse" [tiab] OR "Novice Nurses" [ot] OR ("Nurses" [Mesh] OR nurse* [tiab] OR nurse* [ot]) AND ("Internship, Nonmedical" [Mesh] OR "Inservice Training" [Mesh] OR "Preceptorship" [Mesh]))

Total no.
of
citations
including
duplicates

789

Note. CINAHL = Cumulative Index to Nursing and Allied Health Literature.

Table 2*Summary of Findings from Research Studies (N=16)*

Author/year	Design/Method	Sample population/ Setting	Purpose, Aims, Variables, and Instruments	Findings	Appraisal Rating/ Quality of Evidence using GRADE or GRADE-CERQual
Anderson et al. (2009)	mixed methods/ sequential exploratory	90 new graduate nurses, gender and ethnicity not reported/interactive nurse residency	<p>Purpose: to compare perceived job satisfaction and employee engagement of new graduate nurses completing an interactive nurse residency.</p> <p>Aims: to measure job satisfaction and engagements perceptions of new nurses after completing interactive residency modules and to test the environment nursing satisfaction survey.</p> <p>Variables: change for nurse residency –</p>	<p>Qualitative results revealed 2 themes (protective factors of resiliency emerged): what satisfied nurses (patients, patient outcomes, and teamwork) and what did not satisfy nurses (staffing/scheduling, lack of teamwork, MD disrespect).</p> <p>Quantitative results: “After the nurse residency sessions and 1 year later, the quantitative findings on the Halfer-Graf survey revealed that the nurse residents</p>	<p>++ ⊕○○○</p> <p>Risk of bias: There were limitations in detailed design as the outcome was not confidently determined as the tool’s psychometrics was not discussed. There was no discussion about the Halfer-Graf Job/Work Environment Nursing Satisfaction Survey other than stating it was reliable and valid as previously stated in previous studies. Most information was stated from studies at</p>

implementation of a 2- day interactive nurse residency.
Instruments: Halfer-Graf Job/Work Environment Nursing Satisfaction Survey (psychometrics not reported)

significantly perceived that they were able to perform their job, identify resources, understand performance expectations, accomplish work tasks, and manage the demands of the job effectively” (p. 168).

An interactive learning environment assists new graduate nurses in job satisfaction and employee engagement. Most valuable strategy was email communication as a form of support (a protective factor of resiliency).

low or unclear risk of bias. This denotes serious risk of bias, down grade one level (Ryan, 2016).
Inconsistency: the sample was from one cohort of new graduate nurses and one period in time. This denotes some inconsistency and a downgrade of one point is recommended (Ryan, 2016).
Indirectness: the author answered the question of whether this particular cohort were satisfied and engaged by using interactive residency modules.
Imprecision: Confounding variables were not discussed as to other reasons to the 4% increase of new graduate nurse retention when compared to past years. There was not

					<p>enough information to detect a precise estimate of the effect (interactive residency modules on new graduate satisfaction and job engagement). Publication bias: Not detected, Journal of Nursing Administration has various studies of size and design.</p>
Bontrager et al. (2016)	quantitative/descriptive, prospective, cross-sectional	84 newly licensed registered nurses enrolled in a residency program. 5.8% of participants were male. 66.7% participants were Caucasian, 17.9% were black, 3.6% Latino, and 7.1% Asian.	<p>Purpose: to understand how preceptor role effectiveness and group cohesion affect NLRNs' satisfaction and intent to stay.</p> <p>Aims: What were the relationships among preceptor role effectiveness, group cohesion, and job satisfaction among NLRNs? What were the relationships among preceptor role effectiveness, group cohesion, job satisfaction, and</p>	<p>High levels of intention to stay at job was perceived by nurses due to the role of preceptors, job satisfaction, and group cohesion (protective factor of resiliency). Preceptors that are effective ensure a quality orientation and can help socialize a new nurse and encourage job satisfaction. Group cohesion was found to be vital to increase feelings of</p>	<p>++ ⊕⊕○○</p> <p>Risk of bias: Tool psychometrics were reported and Cronbach α scores showed reliability and validity. The tools/scales were justly chosen to predict the outcome level.</p> <p>Inconsistency: the sample was not discussed regarding units worked on or shift worked. The ability to examine</p>

intent to stay among
NLRNs?

Variables: DV:
preceptor role
effectiveness, group
cohesion, and job
satisfaction

Instruments:
Preceptor Role
Effectiveness Scale,
Nurse Job
Satisfaction Scale,
Intent to Stay
Scale.

value, reduce
burnout, stress and
anxiety. Group
cohesion is
important to reduce
transition shock and
intention to stay.

changes during the
orientation period was
not discussed.
Doubtful that there
are large variations in
the degree to which
the outcome is
affected, no
downgrade of on the
basis that it does not
seems to be an issue.
Indirectness: There
was evidence of
indirectness as the
outcome was assessed
at only one period in
time which limited
the ability to examine
changes. The
evidence that was
found was more
restrictive than the
review question and
may not directly
answer the review
question, "What were
the relationships
among preceptor role
effectiveness, group
cohesion, and job
satisfaction among
NLRNs? What were

					the relationships among preceptor role effectiveness, group cohesion, job satisfaction, and intent to stay among NLRNs?” Downgraded one point as some indirectness exists. Imprecision: good correlation with primary studies, no imprecision detected. Publication bias: Not detected, the Journal of Continuing Education in Nursing has various studies of size and design.
Clark & Springer (2012)	qualitative/ case study model	37 new graduate nurses in a nurse residency program across many specialty areas/ northwestern US 15.6% of participants were male. The ethnicity or participants was not reported.	Purpose: to examine the lived experience as new nurses to assess the level of job satisfaction during the first year of practice. Aims: 1. How do new graduate nurses describe their typical workday?	Themes that emerged: learning to work in chaos, feeling valued, stress of the unknown, life-long learning, and preserving the profession. Preceptors and staff are vital to enhancing job	++ ⊕⊕⊕○ Methodical limitations: Primary studies revealed conflicting evidence regarding the lived experiences of new nurses. We are confident that the findings in this study

2. What are the most satisfying aspects of the new graduate nurses' nursing?	satisfaction and commitment to nursing. Support (protective factor of resiliency) was mentioned to improve job satisfaction. The stress of life-long learning was divided into sub-themes that included dealing with incivility, adapting to change, and stress management.	reflect this small sample's lived experience as it did represent what was found in primary studies discussed.
3. What are the most concerning aspects of the new graduate nurses' practice?		Relevance: New nurses are experiencing a new environment and way to function yet one of the research questions asked about educational topics they may to know more about. The premise of being "new" and the chaos this brings, it seems contrary and not relevant to pursue this aim. Not applicable to the context specified in describing the lived experience of a new nurse; downgraded one point.
4. What educational topics do new graduate nurses want to know more about?	Participants described being valued by colleagues as a major contributor to job satisfaction. Organizations can help new nurses feel valued by using relationship-based care and increasing collegial relationships as ways for enhancing satisfaction and feelings of	Coherence: There is good fit between the data from the primary studies and the review findings.
5. Where do the new graduate nurses see themselves practicing nursing in the future?		
Variables: DV: job satisfaction		
Instruments: open-ended questions		

				competence. Some participants stated preceptors were unsupportive and disinterested and this decreased job satisfaction. This also increased stress and decreased new nurses' ability to work in teams.	Adequacy of data: There is good amounts of data supporting the review finding and this aligns with primary studies about the lived experiences of new nurses. Publication Bias: Nursing Outlook has published diverse studies designs with various sample sizes.
Cline et al. (2017)	quantitative/descriptive, retrospective analysis of 10 years of residency data	first stated over 1,000 participants' data were analyzed then table showed 558 new nurses within 12 months of hire/residency program in a cancer center within the US 8.9% were male participants. Percentage of Caucasian participants was 36%, Black 21.6%, Latino 12.2%, Asian 26.3%.	Purpose: to present a 10-year retrospective review of outcomes from an internally developed nurse residency program Aims: an analysis of an internally developed residency program on the development of new nurses. Variables: "customized" nurse residency program at one cancer care center and was "enhanced" over	Scores in support declined over the course of the residency program which decreased professional satisfaction. The Casey-Fink scores revealed participants' stress levels were low during this residency program, this is not consistent with primary studies or newly licensed nurses' experiences in the literature. The	++ ⊕○○○ Risk of bias: there were lack of details in the design and execution as the residency program over time had many changes. Inconsistency: there was little understanding of the outcomes from this longitudinal study and how the data supported the outcome that

time, simulation was also added through the years.

Instruments: Casey-Fink Graduate Nurse Experience Survey, institutional retention metrics

authors suggested that findings developed in this “custom” residency program emphasized that a program just about entry to practice can comfort new nurses and promote confidence (protective factor of resiliency) which will lead to positive retention.

residency programs assist in new nurse job satisfaction and therefore retention. Indirectness: applicability of this customized residency program (undetailed) did not help reader to understand the phenomenon of new nurse retention or the ability to enhance dealing with stress or adversity (resilience). Imprecision: there is a large amount of inadequacy due to the levels of stress reported and the confounding variables such as the possibilities of financial stress due to the level of support the hospital may have offered participants as opposed to the actual stress of the job. Publication bias: yes, this study was most likely published due to the positive

					findings that a residency program can possibly influence new nurse retention.
Clipper & Cherry (2015)	quantitative/descriptive, comparative	59 participants/gender and ethnicity were not specified	<p>Purpose: to describe the implementation and evaluation of a preceptor development program and its effect on the new graduate nurse's transition to practice and measure first-year turnover.</p> <p>Aims: to assess new nurses' perceptions of their transition and preceptors between 2 groups of preceptors (one group trained in a structured and well-developed program: details well explained, and the other group was untrained).</p> <p>Variables: ID: new nurses within the first year of hire. DV: perceptions of transition to practice between 2 groups of</p>	<p>The study evaluated the effectiveness of a preceptor program by measuring perceptions of transition to practice and 1st year retention of 2 groups of former nurse graduates and the other group was those that did not participate in structured training. New graduates have more positive perceptions regarding safe care giving and have a slightly better retention rate than those who did not have a structured new grad program.</p> <p>Preceptors need to address themes of socialization</p>	<p>++ ⊕⊕○○</p> <p>Risk of bias: Possible, limitations in the design – obviously well-trained preceptors would better understand the needs of new nurses and help mitigate the stress of transition, but the study did not reveal reasons for consistent turnover or new nurse dissatisfaction during the first year of hire. It was clear from previous literature that a well prepared and trained preceptor will decrease transition shock, but still not a big change in new nurse retention.</p>

preceptors. Trained preceptors and untrained preceptors. Instruments: 16-item investigator developed surveyed based on the attributes of transition shock theory was used to obtain data regarding new nurse perceptions of the transition process and the effectiveness of their preceptors.

(protective factors in resiliency) in order to build confidence and foster good relationships to build forms of support.

New nurses that had trained preceptors expedited to a higher level of practice faster than the untrained preceptor cohort.

It was anticipated that those that were in the cohort of untrained preceptor would stay at the organization due to lack of confidence and that was not the case.

Confidence was found to directly impact patient outcomes positively and increase when new nurses had a

Inconsistency: the findings were consistent with the phenomenon of new nurses during the first year of hire.

Indirectness: information in this study was not very applicable to understanding new nurse turnover or how transition shock mitigation strategies can decrease turnover.

Imprecision: inadequate amount of data regarding new nurse confidence, the support a new nurse receives, and the intention to leave first job.

Publication bias: Not found. The Journal of Continuing Education in Nursing publishes many types of studies that reveal positive and negative findings such as this study.

Fiedler et al. (2014)	quantitative/ descriptive	51 new nurses in a residency program (most were second degree students) on diverse units/ medical center in the Midwest, a UHC/AACN program. Gender and ethnicity of participants were not specified.	Purpose: to determine what influence a nurse residency program has on long-term outcomes including turnover, career satisfaction, and leadership development. Aims: 1. describe the long-term (beyond the 1st year of employment) turnover rates of NRP graduates, 2. examine the long-term career satisfaction of NRP graduates beyond the 1st year of employment, and 3. explore long-term leadership development	good relationship with s/he's preceptor. This also was correlated with the new nurse having a safer practice than those with an effective preceptor. The long-term outcomes of a nurse residency program have benefits to the organization and individual turnover rates lower than the national average of 14.7% (1.5-3 years after the residency program). The literature review in this study points out that within 6 months, residents noticed decrease job satisfaction, yet at the end of the year, significant increase in satisfaction resulted. Support (protective factor of	++ ⊕○○○ Risk of bias: Detected. Using one instrument, which measures satisfaction to evaluate turnover limited the execution of the study and other data or qualitative factors were missed for reasons or intentions to leave. Inconsistency: Detected. Sample size was small, it was diverse yet getting in touch with participants that have left but filled out the survey was difficult and possibly lead to
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of NRP graduates beyond the 1st year of employment.
 Variables: IV: AACN residency program.
 DV's: career satisfaction, leadership development, hospital committee involvement, certification status, pursuing an advanced degree.
 Instruments:
 McCloskey/Mueller Satisfaction Scale (MMSS) has 8 subscales: extrinsic rewards, scheduling satisfaction, family/work balance, coworkers, opportunities for social contacts, professional responsibilities, praise/recognition, and control/responsibility.

resiliency) from the organization, managers, and recognition leads to satisfaction and well as good collegial relationships. Peer support was ranked as a major component of nurses' job satisfaction.

inconsistencies with results.
 Indirectness: None detected as the applicability is reasonable as residency programs are supportive and foster new nurses' careers, therefore increased retention is very probable.
 Imprecision: Detected.
 Dissatisfaction results in turnover yet the tool was measuring satisfaction and that was assumed the reason for turnover, more investigation regarding what led to dissatisfaction would have been more helpful in understanding if a residency program, over years, affects retention rates alone.
 Publication bias: Not detected. The Journal of Nursing Administration

					publishes pilot studies with negative results and also larger sample sizes.
Fink et al. (2008)	mixed method/ sequential exploratory	434 graduate nurse residents in the University HealthSystem Consortium/AACN nurse residency program at 12 academic hospital sites. Gender and ethnicity of participants was not specified.	<p>Purpose: To evaluate if qualitative responses to Casey-Fink Graduate Nurse Experience Survey could be analyzed quantitatively to easily analyze new nurses' experiences during a post BSN nurses residency program.</p> <p>Aims: 1. to analyze the qualitative voices of the resident respondents to determine if comments could further enrich the quantitative data and 2. to determine if analysis of the themes mined from the qualitative data could be used to convert the open-ended questions on the Casey-Fink</p>	<p>“The results of this qualitative analysis permitted further revisions of the Casey-Fink Graduate Nurse Experience Survey. Themes identified from data analysis of the 3 top skills difficult to master at each period, and the 5 open-ended questions asked on the original survey, were of sufficient strength to convert these items to multiple-choice format. The one open-ended item that the authors retained was the final survey question that asked residents to comment on their experiences”</p>	<p>++ ⊕⊕○○</p> <p>Methodical limitations: Detected. The design and execution of the study was to use a quantitative tool to gather qualitative data and revision of the tool was suggested. Relevance: The body of evidence from primary studies supported review findings that is applicable to the context specified in the review questions. Coherence: There is a clear fit between the data from primary studies and the review findings, yet the sample is homogeneous, downgraded 1 point.</p>

Graduate Nurse Experience Survey into quantitative questions for ease of test administration and analytic procedures. Variables: DVs: role changes, lack of confidence, workload, fears, orientation issues. IV: residency program within the first year of hire. Instruments: Casey-Fink Graduate Nurse Experience Survey. Qualitative data outcomes were gathered via open ended questions from the author.	(p.347). New nurse stressors were issues with skills over a period of time, they were not getting easier. This was attributed to constant preceptor assistance and lack of being able to perform skills independently during complex patient cases. Work/life balance was a major stressor and impacted the ability to function at the job. Being able to communicate with MDs (a protective factor of resiliency) and organize their workload were barriers to transitioning into their new role which reflected Benner's, Kramer's, and	Adequacy of data: There is a good amount of qualitative data to represent the homogeneity sample. Publication Bias: Not detected. The Journal of Nursing Administration publishes pilot studies with negative results and also larger sample sizes. Quality increased by 1 point due to all plausible residual confounding factors demonstrated an effect.
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Halfer and Graf's results.

Communication from management and the desire to be a part of the unit's culture were pointed out to be a much-needed support which echoes the findings of Winter-Collins and McDaniel, Newhouse, and Schoessler and Waldo's findings.

The top 3 most satisfying aspects of graduate nurse residents' work environment included as follows: support, camaraderie, and caring for patients.

"There is not enough socialization in the residency program. Becoming

				a new nurse in a new environment is difficult'' (p.347).	
Gill et al. (2010)	cohort study using mixed methods/ sequential exploratory	7 participants/ inpatient care areas at Level 1 trauma center. 7.7% participants were male. The ethnicity of participants was not specified.	<p>Purpose: to investigate the expectations, perceptions, and satisfaction of graduate nurses after 6 and 12 months of employment.</p> <p>Aims: to describe new graduates during the first year of practice.</p> <p>Variables: DV: perceptions regarding the first year of practice such as social support, stress, professional values</p> <p>Instruments: 10-item abbreviated version of the National Database of Nursing Quality Indicators (NDNQI) revised survey for RNs which is a series of statements relating to the nurses' perceptions of their</p>	<p>New graduates are fairly satisfied. Two themes emerged: establishing relationships and learning the job.</p> <p>Strong tie to primary studies that states group cohesion (a protective factor of resiliency) and satisfaction can increase the ability to stay at one's job and in nursing.</p> <p>At the end of the 12-month study, many graduates considered leaving their until and the organization, but few participants thought of leaving the profession entirely.</p>	<p>++ ⊕⊕⊕○</p> <p>Methodical limitations: Not detected as the primary studies are reflected in the review findings.</p> <p>Relevance: The study was relevant. The body of evidence from primary studies supported the review finding and is applicable to the context of new nurse graduates and the aims of the study.</p> <p>Coherence: The study was coherent, and the findings were a fit between the primary studies and the review finding.</p> <p>Adequacy of data: There was adequate data supporting the review finding but the</p>

			work. It has been shown to be both reliable. “At the completion of the final interview, graduate nurses were asked to complete a brief three-item survey on intent to leave. Individuals were asked to indicate how often they contemplated leaving their unit, the organization, or the profession of nursing on a 5-point Likert scale” (p. E13).		sample was very small. Publication Bias: There is no detection of publication bias as results revealed perceptions and were not deemed as positive or negative.
Hodges et al. (2008)	qualitative: phenomenological model/ exploratory	11 new nurses/ southeastern US and had experience between 12 and 18 months. 9% of participants were male. The ethnicity of participants was not specified.	Purpose: To explore the nature of professional resilience in new BSN nurses in the acute care setting and to extrapolate pedagogical strategies that can be developed to support resilience and career longevity. Aims: to explore the existence and social	New nurses spend a significant amount of time learning their place in the social structure and need positive experiences to feel they are a part of the work environment. Resilience is needed to ensure new nurse self-protection, risk taking, and moving forward with	++ ⊕⊕○○ Methodical limitations: Not detected as primary studies revealed similar findings. Relevance: the study is relevant due to its context to the aim which explored professional resilience

structure of professional resilience among practicing nurses to evolve a middle range theory to explain the relationships of constructs within the concept.
 Variables: DV: experiences of social support of new nurses.
 Instruments: open-ended questions

reflective knowledge of self. Themes that emerged were learning the milieu (developing confidence and skills), discerning fit (accepted by the culture), and moving through (recovering from stress and identifying those they can trust in order to develop protective factors against work-life issues).

Participants noted significant amount of adapting that must take place to be accepted socially and also the disparity between academics and practice. This distressed new nurses as they actualized the discrepancies. This

and as a protective factor, social support. Coherence: it is clear that social support is needed to be professionally resilient, yet it was not coherent regarding how to garner social support to ensure the development of resiliency, downgraded a point. Adequacy of data: There is an adequate amount of data but is from a small sample yet does reflect current findings regarding the phenomenon of new nurse resilience. Publication Bias: There is no detection of publication bias as results revealed perceptions and were not deemed as positive or negative.

aligns with
Duchester, Kelly,
Parse, Yancy, and
McQueen.

New nurses'
emotional energy is
consumed by
cognitive work;
resilience is
necessary for such
work in order to
grow from
adversity.
Construction of a
new nurse's social
identity was found
to be important to
create their
professional
identity.

Hodges et
al. (2010)

qualitative:
grounded theory/
descriptive

19 new and
experienced BSN
nurses working in
direct patient care (9
participants were 11 to
18 months in
practice)/southeast US-
multiple levels of med
centers and hospitals.
No gender or ethnicity

Purpose: to explain
how BSN acute care
nurses understand,
adapt to, and
negotiate challenge
and change in acute
care settings in the
context of social and
structural features
and career
persistence.

The central theme
was building
professional
resilience, was
noted to be the
central social
process.

Verifying fit:
participants stated
incongruent

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Methodical
limitations: Detected
as the studied was
composed of new
nurses (within 11-18
months of practice to
those with 5 or more
years). That is a large

of participants were specified.

Aims: to understand career persistence in BSN acute care nurses and create a middle range theory to place into practice to encourage career resilience.

Variables: nurses spanning 11 months – over 5 years.

Instruments: open-ended questions

personal principles and values regarding nursing practice and incompatibility with the environment (the environment does not match their strengths).

Stage setting: how to protect one's self and form relationships in order to feel secure and supported (protective factors of resiliency).

Optimizing the environment: seeking activities that help one attain professional goals.

The key to understanding professionalism of nurses is to understand one's social group.

breath of experience to find out about nurse's resilience as the stress of a new job tests one's resilience and those that have overcome adversity are known as resilient. Downgraded one point.

Relevance: Good relevance as the concept of an ever-changing healthcare arena is obvious, career resilience is a characteristic one needs to stay in the career.

Coherence: The data aligns to the primary studies.

Adequacy of data: The data is coming from a small population of different ages and timeframes within their careers (18 months to over 5 years), downgraded one point.

Kramer et al. (2012)	qualitative: grounded theory/ exploratory	82 participant interviews were done. At the time of interviewing, 71% (n = 236) of the 330 NLRNs were between 9 and 12 months post hire/local Magnet hospitals. Gender and ethnicity of participants were not specified.	Purpose: to elicit from new nurses and experienced nurses on clinical units with very healthy work environments, the components and strategies of nurse residency programs and effective in new nurse integration into professional practice. Aims: What NRP components and strategies do NLRNs and clinical nurses practicing on clinical units with Very Healthy Work	First theme was about delegation. Second theme was about prioritization. Third theme was about getting work done. Fourth theme clinical autonomy and how to make the right decisions. Text messages to MDs to relay info and data was citing as an effective communication technique in hospitals. Fifth theme: constructive conflict resolution.	Publication Bias: Most likely this study was published because of its “sensibility” regarding recommendations to help nurses stay engaged with their work life and work environment, downgraded one point.
					++ ⊕⊕⊕○ Methodical limitations: Detected. Interviews were conducted with 2 or 4 new nurses and experienced nurses (contamination possible as responses may not have been as genuine if nurses were alone) in each of the units and were interviewed by various hospital unit educators. Decreased one point.

Environments (VHWE) identify as effective in NLRN transitioning and integrating into professional practice? Variables: DVs: delegation, prioritization, conflict resolution were used to construct the interview schedule and as the basis for selection of participant observations. Instruments: open-ended questions

Sixth: feedback to restore self-confidence (a protective factor of resiliency). Results of this study support the recommendation that development of two-stage, Transition plus Integration, NRPs are no longer an option but a necessity. These NRPs need to have clearly differentiated goals, components, expected role performance, and rites of passage.

Relevance: Very relevant as learning about what creates a healthy work environment can help prepare a strong workforce and good transition experience is very desirable for organizations. Coherence: Some hospitals had clinical coaches and others did not, this may have affected participants' responses and experiences limiting generalizability yet since all programs were enrolled at hospitals with residency programs greater than 3 years, and since not every hospital has coaches, the sample size was large enough to represent the population of those in residency programs. Adequacy of data: There is adequate data to support the finding

					that residency programs are preferred when transitioning to first year of practice. Publication Bias: findings were not positive or negative, therefore none detected.
Li et al. (2014)	quantitative, correlational/descriptive, predictive	A convenience sample of 251 nurse residents (0-3 months of working on a pediatric unit in LA, CA.). 7.9% of participants were male. Percentage of Caucasian participants 30.3%, Black 0.8%, Latino 2.4%, and other ethnicities were not reported.	Purpose: The purpose of the study examined protective factors that may decrease burnout and increase job satisfaction in a nurse residency program over 3 months. Group cohesion optimizes practice whereas organizational commitment helps to create an intention to stay at current job (p. 96). Aim: to determine whether factors such as group cohesion and organizational commitment would be protective and	“Organizational commitment was not found to protect nurse residents from negative nurse outcomes, it did play an important role in promoting job satisfaction” (p. 95). “Results confirmed previous findings that stress exposure and PTSD symptoms have serious implications for a range of affective outcomes for new resident nurses” (p. 95). Information was provided about the	++ ⊕⊕○○ Risk of bias: sample bias due to convenience sampling and collection of information was not reliable and only at one hospital, one type of floor. Inconsistency: findings were consistent with other findings within the context of group social support decreases the adverse effects of stress. Indirectness: Findings were applicable to the context of the study.

			<p>moderate the association between stress exposure and posttraumatic stress symptoms and other negative nurse outcomes which would create positive ones.</p> <p>Variables: DVs: stress, compassion, satisfaction, group cohesion, and organization commitment.</p> <p>Instruments: Life Events Checklist good reliability, PTSD Checklist Civilian Version, Compassion Satisfaction and Fatigue Test, Nurse Job Satisfaction Scale, Group Cohesion Scale, and Organizational Commitment Scale</p>	<p>relationships that group cohesion and negative nurse outcomes have and that establishing a relationship in a group can serve as a protective factor in helping bounce back from negative nurse outcomes like burnout and compassion fatigue.</p> <p>**Social support could also impact how nurses respond to stress (p. 97).</p>	<p>Imprecision: relevant only to one hospital on one floor, downgraded one point.</p> <p>Publication bias: not likely as findings were neither positive or negative.</p>
Martin & Wilson (2011)	qualitative/interpretive phenomenology, descriptive	7 new nurses within the first year of practice who participated in an intensive transition	<p>Purpose: to examine the lived experience of newly licensed RNs in their first year</p>	<p>Themes: real nurse work, guidance, transitional processes,</p>	<p>++ ⊕⊕⊕⊕○</p>

program designed as a component of an orientation program to ease new grads into nursing practice on various medical/surgical units/ purposive convenience sample. 14% of participants were male. Percentage of Caucasian participants was 85.7%, Black 14%, there were no other ethnicities reported.

(purposive: the researcher deliberately selects subjects most knowledgeable about the issue under study.)

of practice in a hospital setting.
Aims: to extract the meaning and understand from the human experience, new nurses, during their first year of hire.
Variables: DV: experiences of new nurses during their first year of hire.
Instruments: interview questions

institutional context, and interpersonal dynamics. “The cumulative effects of socialization, skill acquisition, and stress on new nurses indicate that research is needed to answer questions regarding recruitment, retention, and job satisfaction” (p. 21). Caring of the profession vs non-caring within the profession is posed as an argument for a new orientation objective – possibly the formation of a “caring group” (better known as support group). “Professional acculturation is a complex process that requires time to navigate. The success of the process is often dependent upon the

Methodical limitations: somewhat detected as convenience sample was used to recruit sample yet framework for the study matched the purpose and aims for this study. Relevance: the findings are very applicable to the context of new nurse experiences. Coherence: good coherence with previous studies of professional acculturation and struggle to create a professional identity while transitioning to practice which is deemed extremely stressful. Adequacy of data: findings aligned with Kramer’s seminal work (1974), *Reality Shock*, and reconfirmed via Duchscher’s work on

				degree of perceived support the newly licensed RN receives” (p.22). Relationships are required to adapt to the stress of starting nursing. Collegial relationships with all nursing staff and MDs, and ancillary staff matters to new nurses.	<i>Transition Shock Theory.</i> Publication Bias: none detected as the study did not report positive or negative findings.
McCalla-Graham & De Gagne (2015)	qualitative: phenomenological/ exploratory	10 participants, using a purposive, snowball sampling/southwest Florida, most were experiencing their second career. Gender and ethnicity were not specified.	Purpose: to explore the lived experiences of new graduate nurses employed in an acute care setting. Aims: to best understand new graduate nurses’ experiences in the acute setting Variables: DV: acute care setting in the first year of hire. Instruments: 11 open-ended questions	Participants stated that nursing school did not prepare them for current roles or responsibilities and that the goal of nursing school was only to assist the new grad in passing the NCLEX. “The findings suggest that the graduate nurses thought that if they developed good coping skills, the acute care clinical setting might be less	++ ⊕⊕⊕○ Methodical limitations: none detected as the findings reflected similar findings as primary studies, there were very little issues, other the sampling method, in the way the study was designed/ conducted. Relevance: the findings were relevant and the extent of the body of evidence

stressful for them” (p. 125). Participants also stated they were very overwhelmed by the workload and that positive reinforcement helped mitigate this stress.

from the primary studies supported and is applicable to the context of the new nurse shortage phenomenon occurring within the first year of practice. Coherence: The researchers discussed a clear fit between the data from primary studies and the review findings. Adequacy of data: there was rich data and the amount to support the findings were adequate. Publication Bias: none detected as the results are neither positive or negative influencing the preference to publish.

Olson
(2009)

qualitative/
exploratory,
interpretive,
phenomenological,
longitudinal

12 participants/
purposive sample of 2
groups of new grads: 6
BSN and 6 ADN
nurses – full time staff
nurses at the time of
data collection. 16.6%

Purpose: to
understand the
experience of newly
licensed nurses from
their perspective.
Aims: to understand
millennial, novice

Themes that
emerged: being in
unfamiliar
surroundings which
seemed confusing
and overwhelming
because they had

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Methodical
limitations: limitation
regarding small
sample yet findings

of participants were male. Ethnicity of participants not specified.

nurses' experiences throughout the first year of practice
Variables: DV: new nurse experiences
Instruments: open ended interviews at 3, 6, and 12 months

spent limited time in acute care as students. After a year, participants expressed fear about being oriented to a different place. The second theme, "out of the blue," which are the "never to be forgotten" experiences – so chaotic and the difficulty of trying to keep up – this was relayed to researchers as feelings of helplessness, guilt, and extreme sadness as novices dealt with death for the first time or a med error. The third theme: finding my voice, this was a description of novices' relationships with preceptors, MDs, and other staff members. Feeling welcomed and

were analyzed well, and researcher demonstrated a good ability to reflect on participants' experiences to create common themes that are applicable to the phenomenon of new graduate experiences. Relevance: Primary studies support the findings and it is applicable to millennial, novice nurses' and their intentions to do everything really well regardless of how foreign something is and the need for immediate attention and feedback to continually grow and learn. Coherence: there is a good fit between the primary studies and the findings in this study. Adequacy of data: the quantity and degree of richness in primary

confronting incivility with other nurses were crucial to feeling successful in the transition. The fourth theme was “am I ok?” Obtaining feedback, trust with knowing someone would tell them they were doing something wrong was very important to participants as they expressed great anxiety regarding making mistakes. The acute setting is very unfamiliar, and socialization can assist with the stressful adjustment which makes it difficult to grow and continue to learn. Millennials want nurturing, attention, and continuous feedback which places an extensive value on social support (a

studies support the review findings. Publication Bias: Doubtful due to neither positive or negative results were shared, only reported experiences of a sample of new nurses.

				protective factor of resiliency).	
Pellico et al. (2009)	qualitative: case study model/ descriptive	612 participants in 12-18 months of practice /stratified sampling in metropolitan midsize areas in the US working inpatient. Ethnicity and gender of participants not specified.	Purpose: "The purpose of this article was to explore the perceptions of 612 NLRNs' nascent experiences as reflected in their comments provided in a national survey that sought to gain a better understanding of the work life of NLRNs" (p. 194). Aims: to understand NLRN's work-life experiences. Variables: multiple areas across the US Instruments: 16-page survey with 207 items.	"5 themes were discovered. "Colliding expectations" describes conflicts between nurses' personal view of nursing and their lived experience. "The need for speed" describes the pressure related to a variety of temporal issues. "You want too much" expresses the pressure and stress NLRNs feel personally and professionally. "How dare you" describes unacceptable communication patterns between providers. "Change is on the horizon" suggests optimism for the future as NLRNs speak of	++ ⊕⊕⊕⊕ Methodical limitations: this was secondary findings from a parent study and there were no limitations in the design of the findings of the primary studies. Relevance: the findings are applicable to the context specified to explore perceptions of new nurses' work life. Coherence: There is a good fit between the data from the primary studies and the findings yet primary studies did not reveal any mention of wanting to change new nurses' experiences as stated in the review of findings in this study.

transforming the systems where care is provided (a protective factor of resiliency). This content analysis reveals that the working environment where NLRNs begin their career is in need of reform” (p. 194).

Adequacy of data: the data underlying a review finding are rich and come from different numbers of participants per study. Publication Bias: doubtful as the results were neither positive or negative but reported the experiences of participants.

Table 3

Tools Used in Studies to Determine NLN Resiliency or Protective Factors of Resiliency

Study	Tool	NLN Outcomes Reflecting NLN Resiliency
Anderson, Linden, Allen, & Gibbs (2009)	The Halfer-Graf Survey (validity/reliability not reported) (Halfer & Graf, 2006) and open-ended questions	Compared job satisfaction and employee engagement after completed 2-day interactive residency modules which assisted NLNs to perform job, identify resources, and job expectations. Most valuable strategy to satisfy NLNs was email communication as a form of support, followed by positive patient outcomes and teamwork.
Bontrager, Hart, & Mareno (2016)	Preceptor Role Effectiveness Scale (reliability coefficient = .75) (Rauen, 1974); Group Cohesion Scale (reliability coefficient = .81) (Hinshaw & Atwood, 1983); Nurse Job Satisfaction Scale (overall internal consistency reliability coefficient = .88) (Hinshaw & Atwood, 1983); and Intent to Stay Scale (reliability coefficient = .85) (Kim, Price, Mueller, & Watson, 1996)	Preceptors, job satisfaction, and group cohesion were found to be important to reduce transition shock and intention to leave.
Clark & Springer (2012)	Open-ended questions	Learning the work flow, feeling valued, preceptors, and coworkers enhanced satisfaction and commitment to the profession and the ability to work in a team.
Cline et al. (2017)	Casey-Fink Graduate Nurse Experience Survey: the section on comfort and confidence (Cronbach $\alpha = .78$). The next section consists of 5 factors, namely, support ($\alpha = .90$), patient safety ($\alpha = .79$), stress ($\alpha = .71$), communication/leadership ($\alpha = .75$), and professional satisfaction ($\alpha = .83$) (Casey, Fink, Krugman, & Propst, 2004) and institutional retention metrics	A customized residency program may improve NLNs' experiences as they enter practice which increases confidence and may lead to intention to stay at current job.

Clipper & Cherry (2015)	16-item investigator developed survey assessing the attributes of transition shock to obtain NLN perceptions and effectiveness of their preceptors (Cronbach $\alpha = .954$) (Boychuk Duchscher, 2009)	NLNs were more positive regarding practices and a slightly better retention rate when a structured preceptor program was provided.
Fiedler, et al. (2014)	McCloskey/Mueller Satisfaction Scale (Cronbach $\alpha = .94$) (Mueller & McCloskey, 1990)	Residency programs can lower turnover rates yet at 6 months, job dissatisfaction decreased yet at 12 months satisfaction increased.
Fink et al. (2008) Gill, Deagan & McNett (2010)	Casey-Fink Graduate Nurse Experience Survey (Cronbach $\alpha = .89$) (Casey et al., 2004) and open-ended questions 10-item abbreviated version of the National Database of Nursing Quality Indicators (reliability coefficient = .91) (Taunton et al., 2004) and open-ended questions	Constant preceptor assistance increased NLN satisfaction. Establishing relationships and learning the job positively affected NLN satisfaction. Despite positive results, some NLNs considered leaving the organization but few stated they thought of leaving the profession.
Hodges, Keeley, & Troyan (2008)	open-ended questions	Developing confidence by learning skills, being accepted by others, and recovering from stress because of the academic/practice disparity was found important for NLNs to build professional identities and a social connection in order to adapt and negotiate career stress.
Hodges, Troyan, & Keeley (2010)	open-ended questions	The practice environment does not match NLN strengths. Feeling supported is key and establishing a social group is necessary to develop career persistence.
Kramer et al. (2012)	open-ended questions	Delegation, prioritization, accomplishing work, clinical autonomy, effective clinical decision-making, constructive conflict resolution, and

			restoring self-confidence are important factors to promote NLN professional practice.
	Li et al. (2014)	Life Events Checklist (reliability $\kappa > .50$, test-retest reliability $r = .82$) (Gray, Litz, Hsu, & Lombardo, 2004), PTSD Civilian Checklist (internal consistency $\alpha = .94$, test-retest reliability $r = .88$) (Weathers, Litz, Huska, & Keane, 1991), Compassion Satisfaction and Fatigue Test (test produces three subscales: compassion satisfaction, burnout, and CF/STS. Each scale shows good internal consistency in this sample ($\alpha = .87$, $.90$, and $.87$) (Stamm, 2002), Nurse Job Satisfaction Scale ($\alpha = .90$) (Mueller & McCloskey, 1990), Group Cohesion Scale ($\alpha = .89$) (Byrne & Nelson, 1965), and Organizational Commitment Scale ($\alpha = .89$) (Porter, Steers, Mowday, & Boulian, 1974)	Relationships and social support can buffer stress and compassion fatigue.
	Martin & Wilson (2011)	open-ended questions	Socialization, the ability to perform skills, and collegial relationships help to garner job satisfaction and retain NLNs.
	McCall-Graham & De Gagne (2015)	open-ended questions	NLNs reported more training needed for coping skills to deal with stress.
	Olson (2009)	open-ended questions	The overwhelming work atmosphere confused NLNs as well as new experiences not encountered while in nursing school translated into feelings of helplessness. Inabilities to speak with MDs and not knowing who to trust verified extensive social support and continuous feedback are needed in millennial NLNs the first year of hire.

Pellico, open-ended questions
Brewer, &
Kovner
(2009)

Poorly understood NLN expectations, the
expectations for NLNs to perform quickly, and
incivility among clinicians informs organizations
and leaders that the work environment needs reform.

0 *Note.* NLN = Newly licensed nurse.

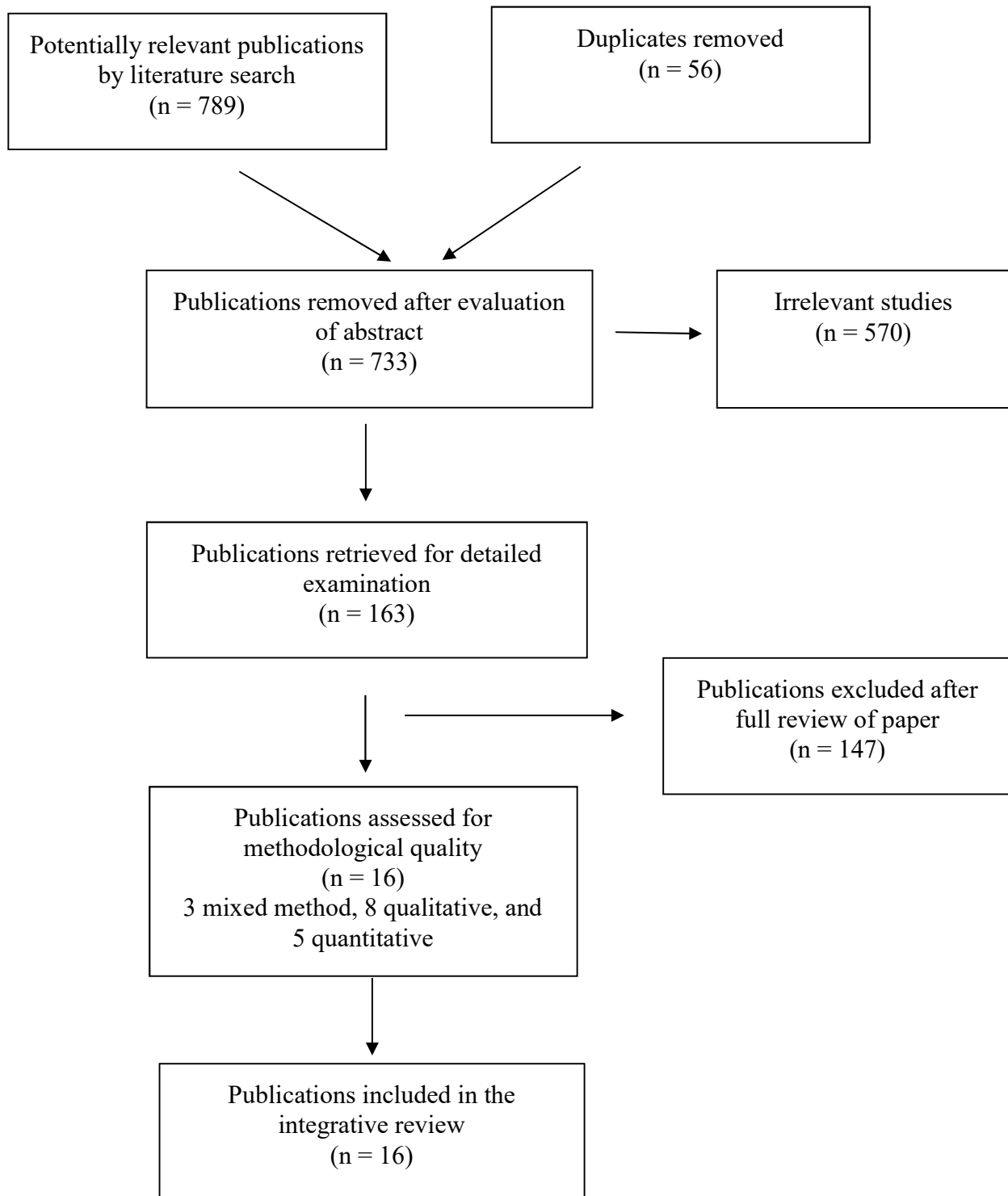


Figure 1. Graphical representation of the flow of citations reviewed. Adapted from “Preferred reporting items for systematic reviews and meta-analyses: The PRISMA Statement,” by Moher, Tetzlaff, Liberati, and Altman (2009), *Physical Therapy*, 89(9), pp. 873-880. Copyright 2011 by Elsevier B.V

Dissertation Proposal

THE IMPACT OF A DIGITAL INTERVENTION ON STRESS, RESILIENCY, PERCEIVED SENSE OF STRESS, SOCIAL SUPPORT, AND INTENTION TO LEAVE AMONG NEWLY LICENSED NURSES: A RANDOMIZED CONTROLLED TRIAL

Specific Aims

The nursing shortage has been deemed a public health crisis and the turnover rate of newly licensed nurses (NLNs) has been associated with work dissatisfaction and feelings of inadequacy (Cope et al., 2016; Grant, 2016; Kishore et al., 2018; Robert Wood Johnson Foundation [RWJF], 2012). According to Kovner and colleagues (2016), 17.9% of NLNs leave their first job during the first year of hire. The organizational cost to train an NLN is estimated between \$60,000 to \$96,000 (Cline et al., 2017). During NLNs' transition to practice, social support is not only crucial to their feeling confident but also encourages growth in their new role (American Organization of Nurse Executives [AONE], 2010; Kovner, Brewer, Fatehi, & Katigbak, 2014; K. A. Pfaff, Baxter, Ploeg, & Jack, 2014). NLNs, who are millennials (between the ages of 18 to 24), are the most active text message users among the generational spans and prefer text messages as a form of social support and communication (Smith, 2011). A recent survey by AMN Healthcare (2018) stated NLNs feel the social support of an organization and unit are crucial to their abilities to deliver quality patient care. Additionally, this survey suggested many NLNs continue to seek new job opportunities and are searching for a positive work environment that is both transparent and supportive.

The purpose of this randomized control study (RCT) is to determine the impact of a 6-week digital support intervention (text messaging) on NLNs' levels of stress, resiliency, perceived social support, and intent to leave (ITL) their current jobs. The long-term objective is

to examine if a 6-week digital support intervention impacts NLNs' ITL during the first year of hire. The central hypothesis is that a digital support intervention plays a critical role in NLNs' levels of stress, resilience, perceived sense of social support, and ITL their current jobs. The rationale is that the "shock" NLNs experience as they transition into practice requires emotional, network, and esteem support to positively impact their intentions to stay at their current jobs. This proposal's research questions (RQs) include: **RQ1:** What is the effect of a digital support intervention upon NLNs' stress? The Perceived Stress Scale (PSS) will be used to measure stress (Cohen, Kamarck, & Mermelstein, 1983). **RQ2:** What is the effect of a digital support intervention upon NLNs' resiliency? The Connor-Davidson Resiliency Scale-25 (CD-RISC-25) will be used to measure resiliency (Connor & Davidson, 2003). **RQ3:** What is the effect of a digital support intervention upon NLNs' perceived social support? The Social Support Scale (SSS) will be used to measure perceived social support scores (Dolbier & Steinhardt, 2000). **RQ4:** What is the effect of a digital support intervention upon NLNs' ITL their first jobs during their first year of hire? An ITL investigator designed survey will be used to measure the participants' ITL their current jobs.

Gap: One in five NLNs leave their first job within the first year of hire due to new challenges they face while acclimating to their new role.



Long -Term Objective: To examine if a 6-week digital support intervention impacts NLNs' ITL during the first year of hire.



Central Hypothesis: A digital support intervention may decrease NLNs' perceived stress and ITL and may increase perceived social support and resiliency during their first year of hire.



Research Questions (RQs): RQ1: What is the effect of a digital support intervention upon NLNs' stress? RQ2: What is the effect of a digital support intervention upon NLNs' resiliency? RQ3: What is the effect of a digital support intervention upon NLNs' perceived social support? RQ4: What is the effect of a digital support intervention upon NLNs ITL their first jobs during their first year of hire?



Expected Outcome: We propose there will be a difference between the experimental and the control groups' perceived stress, resiliency, social support scores, and ITL after receiving a digital intervention over a 6-week period.

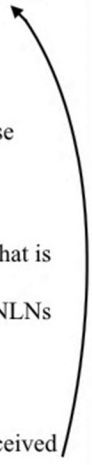


Figure 1. The long-term objective, central hypothesis, and expected outcome of proposed study. Adapted from *Grantsmanship 101: Developing and writing effective grant applications*, by UW Medicine, retrieved from https://depts.washington.edu/anesth/research/grantsmanship/session3_WritingEffectiveSpecificAims.pdf

Significance

Evaluation and Synthesis of the Literature

Nursing research suggests that transition to practice for NLNs is extremely stressful (Boyer, Valdez-Delgado, Huss, Barker, & Mann-Salinas, 2017; Delgado et al., 2017; Duchscher, 2009; Goodare, 2015; Thomas, 2017) and those entering practice are leaving faster than any other generation of NLNs (RWJF, 2014). The stress experienced during transition into practice is a moderating variable on resilience and inhibits NLNs' critical thinking skills which, in turn, negatively impact patient safety (Concilio, 2019; Goodare, 2015; Paley, 2015). During the 27th Annual Convention of the Academy of Medical-Surgical Nurses (AMSN), Steelman (2018) stated resiliency is the ability of nurses "to withstand shock without rupture" (p. 1) and is created when nurses form connections with their coworkers. Therefore, socialization has been found to

be another moderating variable on NLNs' resilience as they transition to practice (Cope et al., 2016; Delgado et al., 2017). Exploring professional socialization, a protective factor of resiliency, (AMSN, 2018) may decrease NLNs' ITL, enhance critical thinking, close the education to practice gap, and safeguard patients.

Gaps in Knowledge

Little is known about the communication/socialization practices of NLNs. The past decade of nursing research has lacked defining hallmarks, checklists, or evaluation tools to validate successful socialization to the nursing role (Li et al., 2014; Spence Laschinger et al., 2016). Improving the work environment, conducting resiliency building programs, and incorporating mentorship programs have been interventions used to improve nurse retention, yet, these ideas stalemate as patients suffer the results of a long-standing nursing shortage (Chesak et al., 2015; Gazaway, 2016; Shatto & Lutz, 2017; Svercauski, 2015; Tahghighi et al., 2017). The inability to stay in nursing is considered a lack of resiliency (Ahern, Kiehl, Sole, & Byers, 2006). Decreased resiliency has been correlated with an inability to problem-solve and maintain a sense of control (Polk, 1997) which negatively affects patient outcomes (Spence Laschinger et al., 2016). The American Association of Colleges of Nurses (AACN) (2019) predicted the United States (US) would experience a nurse preceptor shortage as seasoned professionals begin to retire. The lack of preceptor support decreases NLNs' ability to socialize and develop (Lalonde & McGillis Hall, 2017). Newly licensed nurse turnover is not only a healthcare crisis (Kishore et al., 2018; RWJF, 2014) but a broken link in a causal chain as novice nurses are teaching novice nurses; this cycle leads to poor patient outcomes (Kyer, 2018). No RCTs have been published in the past decade involving NLN resiliency or social support during NLNs' first year of hire and

its effect on NLN attrition in the US. Therefore, an urgency exists to explore NLNs, perceived stress, resilience, digital support, and ITL their current jobs.

The Importance of the Research to Health and Nursing

National Impact. The Affordable Care Act expanded Medicare and Medicaid Services to many Americans; accessibility to healthcare reduced patient barriers and increased the healthcare system's workload (CMS.gov, 2016; Discoverthenetworks.org, 2015). Since 2007, the average age of employed registered nurses (RNs) has been 44.6 years; these nurses will be retiring by 2036 (American Nurses Association [ANA], 2018a). Society is taxed to absorb the high cost of turnover due to the increased Medicare and Medicaid expenses (Kovner et al., 2016). It is estimated that "the average cost of turnover for a bedside RN ranges from \$37,700 to \$58,400 resulting in the average hospital losing 6.6 million dollars" (NSI Nursing Solutions Inc., 2016, p. 8).

Professional Impact. Preceptors are expected to be expert clinicians and mentor their peers, but unfortunately, their time spent with NLNs has become abbreviated leading to decreased NLN socialization and professional development (Cubit & Ryan, 2011). The 2015 vacancy rate for RNs in the US was reported to be 7.2% (NSI Nursing Solutions Inc., 2016) and the Bureau of Labor Statistics (2018) states employment of RNs is projected to grow by as much as 16% by 2024. The image of nursing may suffer as the performance of NLNs declines and reported errors increase; society may lose trust in the nursing profession (Rutherford, 2014).

Organizational Impact. Measurement of nurse turnover is important for organizations to assess, as it reveals information about their work environments and may encourage policies to improve the workplace (Kovner, Brewer, Fatehi, & Jun, 2014). Healthcare worker turnover correlates with poor organizational performance and negative patient outcomes (RWJF, 2012;

RWJF, 2014). Employee shortages often lead to increased orientation programs instead of an investment in quality improvement projects and/or a way to improve retention and the work environment (Mohr et al., 2012).

Nurse Impact. The loss of NLNs within their first year of hire has consequences for all nurses. According to the ANA (2018a), nurses who suffer from workplace stress make more mistakes and medical errors. Nursing research reveals those nurses who stay in the profession are resilient, respect the profession, and respect their daily work (Ahern et al., 2006). Poor retention of NLNs may lead to decreased morale and disinterest that may spread to those pursuing a career in nursing (ANA, 2018b).

Patient Impact. NLNs leaving their first job within the first year of hire is a public health concern as nursing shortages have been correlated with poor patient outcomes (National Academy of Medicine [NAM], 2017; RWJF, 2014). A supply of adequately trained nurses is needed in order to care for patients yet onboarding and the constant training of NLNs adds to the workload of an already challenged RN workforce (The Joint Commission [TJC], 2009). RN shortages have also been related to increased workloads which result in the use of physical restraints, patient falls, and the formation of pressure ulcers (Aiken et al., 2014; RWJF, 2012).

Social Support and Technology. Enhancing NLN professional socialization practices may have the potential to improve critical thinking, confidence, help NLNs manage stressful situations, and assist new clinicians to work well in teams (Colbert, Yee, & George, 2016; Gazaway, 2016; Ke, Kuo, & Hung, 2017). In a recent study, Guillory et al. (2015) created a group of supportive text messages based on an established taxonomy of social support, the Social Support Behavior Code (SSBC) (Cutrona & Suhr, 1992), to establish a basis of support for patients experiencing chronic pain. Social support used for NLNs has primarily consisted of

residency programs which can take six to 12 months, yet, the ITL one's position seems to reach its peak within the first three months of hire (Zhang, Wu, Fang, Zhang, & Wong, 2017). Due to this critical timeframe, the RWJF (2014) and the NAM (2017) encouraged researchers to explore reasons why NLNs leave their current jobs.

The proposed study is based on previous nursing research that has revealed students are unprepared after graduation to deal with the stressful challenges of the work environment (AONE, 2010; Cline et al., 2017; Cowin & Johnson, 2015; Ehrenberg, Gustavsson, Wallin, Boström, & Rudman, 2016; Goodare, 2015; Stephens, 2012). A longitudinal analysis of new nurses' work-related factors associated with professional development (N= 1,085) revealed that the longer NLNs worked, the less likely they wanted to work in a team setting (Ehrenberg et al., 2016). In this study conducted by Ehrenberg et al. (2016), social interaction was one of the four major components lacking in the participants' perceived abilities to succeed while working with others. In 2012, a post positivist approach using Ahern's Model was used to examine a social support intervention with undergraduate nursing students (N= 57) over a period of six weeks (Stephens, 2012). Stephens discovered nursing students' resilience scores significantly increased from pretest to post when a message of resiliency was communicated digitally.

Theoretical Framework

Professional socialization is a process in which a NLN adopts the values, skills, attitudes, and knowledge associated with the practice of nursing (M Kramer, Maguire, Halfer, Brewer, & Schmalenberg, 2011) and has been studied to improve one's resiliency and job performance (S. A. Boamah, Read, & Laschinger, 2017; Collins, 2014; Stephens & Smith, 2017). This proposed impact study is based on the work of Duchscher (2007) and Cutrona and Suhr (1992). Duchscher documented that socialization of NLNs induced fear, anxiety, and inconsistent

thoughts or beliefs leading to negative feelings and work attitudes. Duchscher (2007) recognized this pattern and named the stressful period of transition to practice as “transition shock” (p. 24). The conceptual framework of “Transition Shock” is built upon four identified expressions NLNs experience as they adapt from the role of student to licensed nurse: physical, emotional, intellectual, and socio-developmental (Figure 2).

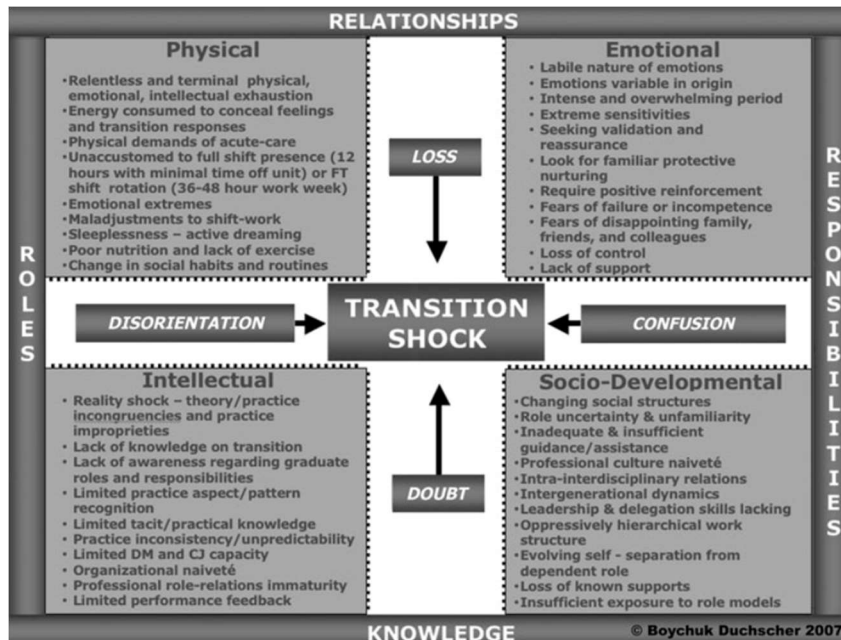


Figure 2. The Theory of Transition Shock. Reprinted from *Transition shock: the initial stage of role adaption for newly graduated registered nurses*, by Duchscher, 2009, *Journal of Advanced Nursing*, p. 1107. Copyright 2009 Blackwell Publishing Ltd. Reprinted with permission (Appendix A).

Duchscher explains there is immense, physical exhaustion during this period as NLNs work tirelessly to hide their feelings and attempt to become accustomed to shift work. In the SSBC, Cutrona and Suhr (1992) employed emotional, network, and esteem support types to mitigate stress. An absence of these types of support has led to NLNs’ increased stress and ITL along with decreased resiliency and a lack of perceived sense of support. Duchscher states emotional exhaustion is expressed as loss of school relationships, a need for validation, and constant, positive reinforcement as they have lost their connection (network) previously formed in nursing

school. The oppressive hierarchal environment renders the NLN at a socio-developmental disadvantage as NLNs' role uncertainties decrease their abilities express growth needs for fear of judgment (esteem). Based upon a social constructivist philosophy, nurses' abilities are enhanced through interactions with others (Dahnke & Dreher, 2011). In this proposed study, the SSBC's three nurturant support types (emotional, network, esteem support) developed by Cutrona and Suhr (1992), will be created as a digital support intervention (text messages) and used to examine if stress, resiliency, perceived social support, and ITL changes at three weeks and after six-weeks (Appendix B).

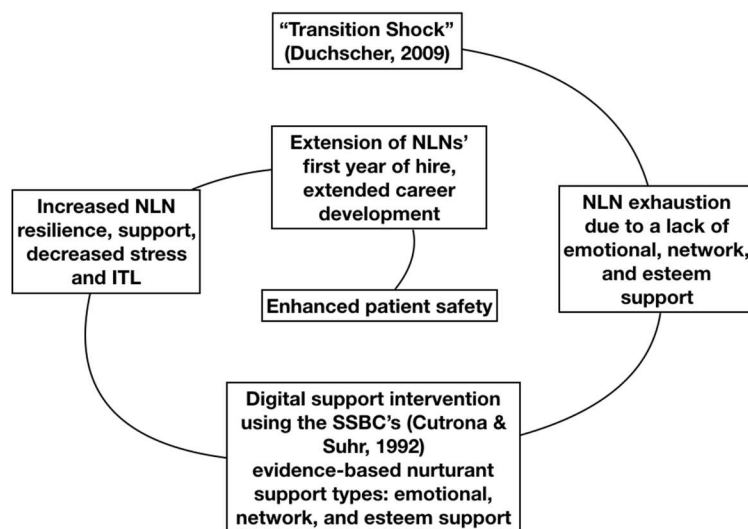


Figure 3. Proposed study's logical flow using the *Theory of Transition Shock* (Duchscher, 2009) and the SSBC's nurturant support types to enhance patient safety (Cutrona & Suhr, 1992).

This proposal builds upon the logic of previous nursing research (Duchscher, 2009) and social science research (Cutrona & Suhr, 1992). It aligns with the National Institutes of Health [NIH] (2017) Mission and Goals which urges researchers to seek fundamental knowledge about the behaviors of living systems in order to enhance patient safety by reducing NLN stress, improving NLN quality of work-life, and engaging NLNs to promote a life-long career in the nursing profession.

Innovation

Resiliency is a trait that can be learned and innovation is key to find new ways to promote it in NLNs (Choi, Cheung, & Pang, 2013; Li et al., 2014). According to Hodges and colleagues (2010), career persistence and resiliency can be developed by understanding NLNs' preferred socialization methods.

This study is innovative for three reasons. First, this study examines the new workforce entering the profession and utilizes what society deems to be a drawback, digital communication practices of our youth (Colbert et al., 2016) to enhance NLNs' job retention and performance. Second, this study offers a potentially cost-effective intervention using what already exists through personal mobile devices (Smartphones) and NLNs' abilities to text message. Social support has been discovered to build professional identities and increase confidence in NLNs which has been correlated with positive patient outcomes (Eley, Eley, Bertello, & Rogers-Clark, 2012). Third, this study we be able to be initiated in a short amount of time (6 weeks to decrease NLNs' ITL their first job). Text messages will be sent to participants and responses will be surveyed to ascertain if using a social, digital intervention can influence NLNs' stress, resiliency, perceived sense of social support, and/or the intention to stay at current jobs.

This research expands the science of patient safety to challenge current socialization expectations/practices when hiring NLNs and abates newcomers from leaving their first job. The safety of patients is dependent upon well trained, confident, and skilled healthcare clinicians (ANA, 2018b). Using a cost-effective approach like text messaging to connect NLNs to much needed support, has the potential to engage them in their new role, accelerate their development, enhance safe care delivery, and decrease ITL.

Approach

Preliminary Work

A qualitative, unpublished mini-study was conducted in 2016 as a doctoral course requirement to understand the retention of NLNs in southern California (Concilio, 2016). Using an interpretive phenomenological approach, three participant interviews were conducted with NLNs to understand their lived experience working in an acute care hospital setting. NLNs' expressed uncontrollable feelings of worry, inadequacy, stress, and inability to rest. A limitation to this study was a small sample size. The initial analysis suggested that NLNs judged their progress heavily upon their preceptors' feedback and social acceptance of others who work on the unit. Similar NLN feelings and aspects of NLN social support during the first year of hire was reported in a recent integrative review of the literature (Concilio, 2019). These preliminary works informed the focus of the current, proposed study. Overwhelming work stressors and work relationships are some of the reasons that NLNs decide to leave their first job (Concilio, 2016; Duchscher, 2008; Holland, 2015). Therefore, a cost-efficient, digital support intervention is proposed as an intervention to help decrease NLNs' stress and garner their resiliency and perceived sense of support, in order to stay in practice.

Design

A prospective, RCT design with an experimental and control group is proposed for this study to determine if a digital support intervention impacts NLNs' stress, resiliency, perceived sense of support, and ITL. The research questions (RQ) are:

RQ1: What is the effect of a digital support intervention upon NLNs' stress?

RQ2: What is the effect of a digital support intervention upon NLNs' resiliency?

RQ3: What is the effect of a digital support intervention upon NLNs' perceived social support?

RQ4: What is the effect of a digital support intervention upon NLNs' ITL their first jobs during their first year of hire?

Settings

The setting for this proposed study will be four acute care hospitals in southern California that have similar hiring practices and residency programs. An email has been sent to the acute care facilities in San Diego to assess if any potential interest exists for this study (Appendix C). At this time, one facility replied with potential interest (J. Davidson, personal communication, December 14, 2018) .

Population

The population of interest for this study are NLN's working in acute care during their first year as a RN. A NLN is a nurse who has passed the National Council Licensure Exam-RN (NCLEX-RN) and has been hired in the role of a RN for the first time. NLNs predominately belong to the millennial generation (Rudavsky, 2018). Millennials are individuals born between 1981-1996 (ages 22-37) and the post-millennial generation are those born after 1997 (ages 19-21) (Pew Research Center, 2018). Participants will meet the following inclusion criteria: (a) NLNs, (b) ages 19-37 years, (c) proficient in English, (d) working in an acute care facility as a RN during the first year of hire, (e) have a working personal Smartphone, (f) have the ability to send and receive text messages, (g) have an active and working personal email account, and (h) be willing to participate for six weeks, (i) complete a demographic survey before the study, survey instruments at 3 weeks, 6 weeks, and at the conclusion of the study (j) agree to not use or carry their Smartphone while performing direct patient care and (k) assume any data charges for

text messages, if incurred. Exclusion criteria will include: (1) NLNs who have worked in the role of a RN on another floor or (2) NLNs who have worked as an RN at another organization, or (3) NLNs not 19-37 years of age.

Recruitment. After this proposal has been reviewed and approved by the Internal Review Boards (IRBs), interested NLNs will be recruited within each facility's NLN orientation program. Once permission is granted, fliers will be distributed to NLNs within the orientation program. The flyer includes NLN inclusion criteria, Principal Investigator's (PI) contact information, and compensation participants may earn upon completion the study (Appendix D). After potential participants have been recruited, the PI will meet them in person at their work site or at a location of their choosing, to obtain informed consent and complete baseline surveys.

Protection of Research Participants. Protection of Research Participants (Appendix E) will be discussed before participants consent to be a part of the study. The Protection of Research Participants explains that participation is voluntary, refusal to participate will not result in consequences or loss, risks or discomfort are no more than that posed in everyday life, and how data will be secured (National Bioethics Advisory Commission, 2016).

Consent. A consent is an agreement that participants sign; it is an understanding of the study and its risks (Shahnazarian, Hagemann, Aburto, & Rose, 2017). The consent form will be read aloud to each participant, and if the participant agrees, s/he will be asked to sign the consent form (Appendix F).

Sample and Sampling Procedures with Power Analysis

A two-tailed significance criteria will be set at 0.0125 and the power at .80. Using the predetermined sample size by G*Power and increasing recruitment by 30% to control for attrition (Heo, 2014), $[(74 * 0.30) + 74 = 96.2]$, the target recruitment size will be 96

participants. The target sample will be divided by half: the experimental group ($n=48$) and the control group ($n=48$). A large effect size ($r = 0.8$), $\alpha = 0.0125$ (α adjustment: $0.05/4$ outcome variables), and power = 0.80 was used to determine the sample size. Only one facility has stated interest, therefore a large effect size (0.80) will be used to detect if there is an effect within a smaller sample (Sullivan & Feinn, 2012).

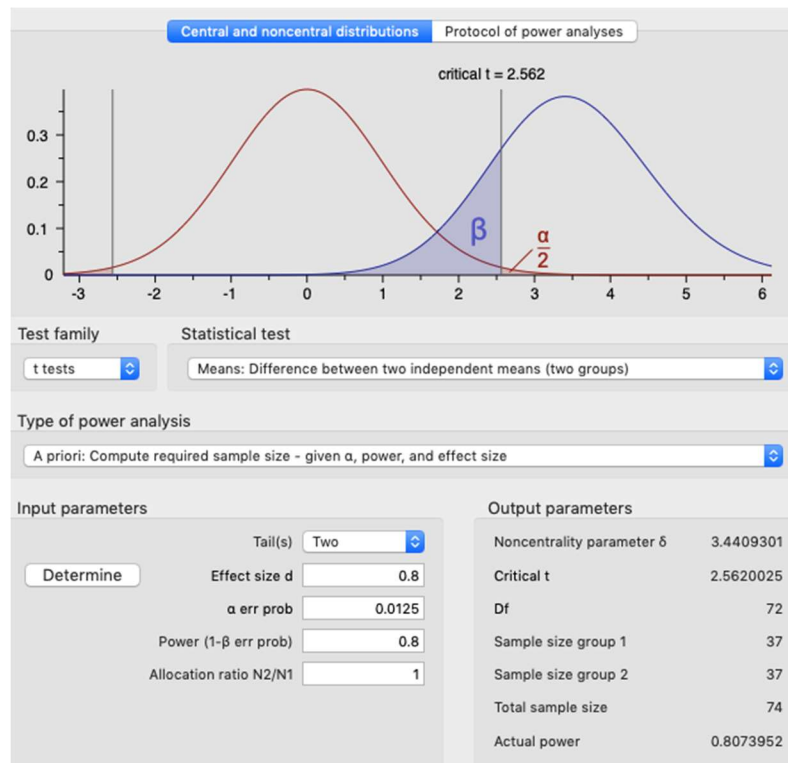


Figure 4. Sample size determination using G*Power software (Buchner, 2013).

Variables and Instruments

Participants will complete a demographic survey, at baseline, to collect characteristics to best assess this sample. Variables of stress, resilience, perceived support, and ITL will be measured using the PSS, the CD-RISC-25, the SSS, and an ITL survey respectively. The End of Study Questionnaire will be distributed after week 6 and will inquire if NLNs have received external support and if so, how often. The finding(s) may help researchers understand if the

frequency of external support received, contributes to NLNs overall experience during their first year of hire.

Demographic Survey. A 15-item demographic survey, created by the PI, will be completed by participants once (at baseline) to collect data relevant to the study purpose and research questions (Appendix G).

The Perceived Stress Scale (PSS). The PSS, created by Cohen et al. (1983), assesses a person's perception of stress experienced over the past month and answers RQ1: What is the effect of a digital support intervention upon NLNs' stress? To our knowledge, the PSS has not been utilized in NLNs during their first year of hire but has been used in two samples of college students and one sample of participants in a smoking-cessation program (ages 22-35 years; Cronbach's $\alpha = .84$ and $.85$) (Cohen et al., 1983). The PSS takes 5-10 minutes to complete (Mind Garden Inc., 2018). It is a 10-item, Likert-type scale with five points. Scores are obtained by using the item responses that range from 0 to 4 (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often) with items 4, 5, 7, and 8 reversely scored. The summed scores of the PSS will be used for one of the dependent variables and will be discussed further as a key variable. Participants will be asked to think about their current work situation when answering survey questions. The possible range of scores, after adding all points, will range from 0 to 40, with higher scores signifying greater perceived stress (Appendix H). Participants will be asked to complete the PSS at baseline, and at the end of weeks 3 and 6. Permission to use the PSS is not necessary to obtain when used is for academic research purposes (Cohen, 2015).

The Connor-Davidson Resiliency Scale-25 (CD-RISC-25). Resilience is necessary for nurses to endure daily stressors so they may continue perform at a basic level of safety (Hart et al., 2014). To date, there is no gold standard to measure resilience (Windle, Bennett, & Noyes,

2011). The CD-RISC-25 was developed to provide a valid and reliable measure of resilience among three referent groups: the general population and the psychiatric clinical population, and to monitor resilience training effects in groups/group therapy (Connor & Davidson, 2003) and will answer RQ2: What is the effect of a digital support intervention upon NLNs' resiliency? The CD-RISC-25 is "a brief self-rated assessment to help quantify resilience and as a clinical measure to assess treatment response" by measuring the concepts of hardiness, patience, the ability to endure stress, spirituality, coping, and confidence (Davidson & Connor, 2016, p. 77). The CD-RISC-25 is a 25-item self-report scale that uses a five-point Likert-type scale ranging from 0 (not true at all) to 4 (true nearly all the time). Total scores, ranging from 0-100, assess resilience and a score of 100 denotes the highest level of resiliency; the tool takes 5-10 minutes to complete (CD RISC, 2011). The summed scores of the CD-RISC-25 will be used for one of the dependent variables and will be discussed further as a key variable. The CD-RISC-25 has demonstrated reliability (Cronbach α , 0.64-0.76) and convergent validity (social support $r = 0.36$; stress $r = 0.32$). Participants will be asked to complete the CD-RISC-25 at baseline, and at the end of weeks 3 and 6. Permission to use the CD-RISC-25 was received by both Connor and Davidson for this proposed study, the Scale and permission for use is located in Appendix I.

The Social Support Scale (SSS). Perceived social support will be measured using the SSS (Dolbier & Steinhardt, 2000) and will be used to answer RQ3: What is the effect of a digital support intervention upon NLNs' perceived social support? A perceived sense of social support has been proven to play a vital role in a continued quest to understand causes to doubt oneself, which is a crucial component when examining the ITL one's job (Dolbier & Steinhardt, 2000; Shu-Sha et al., 2017). The SSS was evaluated using a sample of corporate and university employees and a sample of undergraduate students; to our knowledge, the SSS has not been

utilized to assess NLNs' sense of support during their first year of hire. The SSS is a global measure designed to measure one's perceived social support (Dolbier & Steinhardt, 2000). The SSS "provides a sense support measurement that is global and assesses someone's perceptions of both quantitative and qualitative aspects of support" (Dolbier & Steinhardt, 2000, p. 171) by measuring hardiness, coping strategies (approach-coping and avoidance coping), perceived stress, and symptoms of illness. Respondents answer 21 items on a 4-option Likert-type scale labeled between 0 (not true at all) to 3 (completely true) (Dolbier & Steinhardt, 2000) and will take 20-25 minutes to complete (Versta, 2011). The summed scores of the SSS will be used for one of the dependent variables and will be discussed further as a key variable. The SSS demonstrated high reliability (Cronbach's $\alpha = .86$ and test-retest reliability was $r = .91, p < .001$). Concurrent validity was reported and positively related to two measures of social support (social provision scale $r = .72$ and interpersonal support evaluation list $r = .78$). Participants will be asked to complete the SSS at baseline, and at the end of weeks 3 and 6. Permission to use the SSS was received by Dolbier for this proposed study. The SSS and permission for use is located in Appendix J.

The Intention to Leave Survey. NLNs' ITL has become a healthcare crisis in the US as an insufficient number of new nurses are entering the workforce to replace nurses that are soon to retire (RWJF, 2014). ITL current job will be assessed at baseline (in person) and at the end of the study (via email) and will help answer RQ4: What is the effect of a digital support intervention upon NLNs' ITL their first jobs during their first year of hire? The ITL Survey is an unpiloted, 4-item, PI-developed questionnaire to measure NLNs' ITL their current job (Appendix K). Participants will be asked what percentage, if any, represents their ITL their

current position and also what percentage represents their ITL to leave their current organization. The ITL Survey will take fewer than 5 minutes to complete.

End of Study Questionnaire. The End of Study Questionnaire, created by the PI, is one question survey (emailed at the end of study, week 6) asking participants how frequently they communicated with mentors, peers, friends, and/or family about their first-year practicing as a NLN (Appendix L). The End of Study Questionnaire information will help researchers understand if external support, or a quantified amount of external support, may impact the variables within this study.

Intervention

The intervention for this study is digital and is defined as text messages that convey either **support** messages (experimental group) or **medical fact** messages (control group) in order to determine their impact on NLNs' stress, resilience, perceived sense of support, and ITL. The rationale for the intervention used in this study is based on the frequent use of technology and mobile phones by persons in the US to socialize (International Telecommunications Union, 2017). "Information attention and decision-making" shape a person's behavior and change his/her response to a work environment and also impact interpersonal relationships and perceptions (Colbert et al., 2016, p. 731). According to The Pew Research Center (2018) and Prensky (2012), Americans who are 21 to 37 years of age (NLNs), feel their devices are integral to their life and their socialization.

Texts sent to the **experimental group** will be based on SSBC nurturant support messages and are intended to decrease stress ITL, increase resilience, and perceived sense of support. The SSBC nurturant support texts are comprised of three themes of support: emotional, network, and esteem (Cutrona & Suhr, 1992). The experimental group's supportive text messages were created

by the PI and require content validation. Polit and Beck (2006) recommend five or fewer experts to rate items and all experts must agree to consider the content as valid. Experts (MSN educators) will complete the validation survey using a Qualtrics Survey Platform (Qualtrics, 2019) then the PI will place ratings into a table and calculate the results. “For each item, the content validity index (I-CVI) will be computed as the number of experts giving a rating of 3 or 4, (thus dichotomizing the ordinal scale into relevant and not relevant), divided by the number of experts” (Polit & Beck, 2006, p. 491). An I-CVI, no lower than .78, is acceptable (Polit & Beck, 2006). Should the I-CVI be lower than .78, the PI will generate new text messages and resend the survey in an attempt to validate that each text message’s content aligns with the SSBC’s three nurturant types. Once the I-CVI is .78 or higher, the validated text messages will be placed into the text message script under its nurturant support type (Appendix M). The I-CVI will be sent to MSN educators (educators to be suggested by the orientation liaison) via email using Qualtrics Survey Reporting (Qualtrics, 2019) (Appendix N) to validate the experimental group’s text messages. Five MSN educators will complete a survey to validate 24 text messages based on a 4-point scale by comparing the text message content to one of the SSBC’s nurturant support type: emotional, network, and esteem support (Appendix O). Permission was received from Cutrona to use the SSBC code for this proposed study (Appendix P).

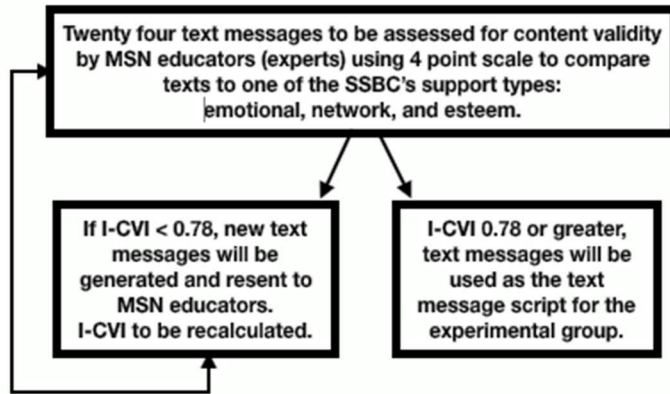


Figure 5. Content validity process for experimental group's text message script.

Conversely, the **control group** will receive medical facts and are not meant to support or correlate with the SSBC and are not known to affect stress, resilience, perceived social support, or ITL one's job. The control group's text messages will not be validated for content as they are derived from "MedlinePlus.gov (2017)" which is a peer-reviewed and evidence-based source.

Text messaging is a two-way form of digital communication; a sender and receiver exchange information (Premadasa & Meegama, 2016). In this study, the text messages are intended to be one-directional, from the PI to the participant. Participants are not expected to reply. If participants reply to any of the text messages, the PI will screen the content and only reply if it is a question regarding the study or a request to seek counseling. Additionally, participants will be instructed by the PI to access their Smartphones to read texts while on a break, after their shift, or when not at work; participants will be instructed to not use Smartphones to read texts while working.

Weeks	Baseline	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	End
Data Collection: Tools/Intervention								
Demographic Survey	👤 Q 📱							
Perceived Sense of Stress	👤 Q 📱			Q 📱				Q 📱
Connor Davidson-Resiliency Scale-25	👤 Q 📱			Q 📱				Q 📱
Social Support Scale	👤 Q 📱			Q 📱				Q 📱
Intention to Leave Survey	👤 Q 📱							Q 📱
Digital Intervention		📱	📱	📱	📱	📱	📱	
Text reminder to complete tools/surveys				📱			📱	
End of Study Questionnaire								Q 📱

Table 1. Data Collection: Tools/Intervention schedule (in weeks) for proposed study. Adapted from D. F. Polit and Beck (2012, p. 194).

Note. 👤 = completed in person, Q= completed via Qualtrics 📱 = delivered via text message.

The Intervention Frequency. A series of four text messages will be sent to all study participants (experimental and control groups) by the PI every Monday, Wednesday, Friday, and Saturday (M, W, F, S) at 1pm for six weeks, for a total of 24 different texts for each group. Obermayer, Riley, Asif, and Jean-Mary (2004) sent text messages using the aforementioned frequency, to college students who wanted to stop smoking; the results revealed mobile text messages, four times a week for six weeks, supported a change in behaviors with 45% of participants reporting abstinence and 42% of those participants' results were verified by testing for nicotine using a saliva biomarker. Additionally, Stephens (2012) employed the same text message frequency as Obermayer et al. (2004) to study undergraduate nursing students.

Data Collection

Data Management. The Gumberg Library (2018) and Whyte (2017) recommend research data should be stored for at least three years after the completion of a study. Facilities

participating in the study will have access to the data. Paper forms/surveys will be transported by the PI to her private home and will be locked in a cabinet. All electronic data will be stored on the PI's password protected, personal computer. There will be no cost incurred to stored data.

Plans for Data Analysis

Data Organization. After meeting potential participants and screening if participants meet the inclusion criteria, the PI will collect consent and survey data using Qualtrics (Qualtrics, 2019). A QR (Quick Response) code will be displayed for participants to complete the consent and surveys. Participants will be provided privacy while completing the consent and surveys. The PI will then generate (unique) numbers and assign them to each participant's Smartphone numbers. The unique numbers will be stored on a password-protected computer that is solely owned and operated by the PI. The participants' unique numbers will be placed into an online random sequence generator (Random.org, 2019) that has been verified in two studies to be "sound" (Foley, 2001; Kenny, 2005). Next, participants' unique numeric identifiers will be separated into two groups by the random generator with the exception of male participants. To enhance similarity among the control and experimental groups, male participants will be evenly distributed between groups (every other male, in sequential order of data collection, will be placed into each group) and not randomized (Polit & Beck, 2017). Data from participant surveys will be downloaded into SPSS directly.

Key Variable Creation. The dependent (outcome) variables are the characteristics being measured: (1) stress (2) resiliency, (3) perceived social support, and (4) ITL to answer the primary research question: What is the effect of a digital support intervention upon NLNs' stress, resiliency, support, and ITL their first jobs during their first year of hire? The first variable to be measured will be the amount of stress that the participant self-reports, this will be measured on a

scale from 0-4 and treated as an interval level of measurement. It will be measured using the PSS. The second variable will measure resiliency on a scale from 0-4 and treated as an interval level of measurement and will be measured using the CD-RISC-25. The third variable is perceived social support, it will be measured on a scale of 0-3 and treated as an interval level of measurement and will be measured by the SSS. Once data is collected, reliability checks will be completed on the scores obtained for the PSS, CD-RISC-25, and SSS. The fourth variable will measure the ITL at their current job by percentage increments of 10 (i.e. 0%, 10%, or 20% etc.) and will be treated as a ordered categorical level of measurement.

Assumption Tests. The assumption of normality will be examined for the outcome of variables (stress, resiliency, support, and ITL) to decide parametric versus not parametric tests are met. Missing data will be imputed using case mean substitution (El-Masri & Fox-Wasylyshyn, 2005). Non-normally distributed continuous variables will be transformed to meet the assumptions of the statistical procedures. The PI will compare raw survey data to electronically entered data to check for data entry errors. Data will be screened for accuracy, assessed for missing items, outliers, linearity, and tested for the necessary statistical assumptions. Data analysis will be conducted with SPSS Version 25.0 by the PI and a statistical expert on the dissertation committee.

Descriptive analysis. Descriptive statistics will be computed for all variables for the total sample, including demographics. Data analysis procedures will include univariate descriptive statistics (frequencies, percentages, means, and standard deviations).

Internal consistency and measurement validity. To validate the text message script construct with the SSBC, five experts (MSNs) will be asked to verify that each text message aligns with emotional, network, or esteem behaviors.

Inferential analysis. The Independent *t*-test will be used to examine the variability within and between the experimental and control groups in order to determine if they are statistically significantly different. Prior to that analysis, the data will be examined to be sure the distribution of the outcome variables are normal and the variance of the two groups being studied are very similar (Polit & Beck, 2010). To perform the analysis, a *t*-value will be calculated by looking at each of the group's means, calculating the standard deviations, variances, and counting the number of participants in each group. Next, we will find the critical *t* value (found on a *t* table for 2-tailed tests using the degrees of freedom and *p*-value of 0.05 corrected for multiple tests it is set at 0.0125). If the *t*-value is less than the critical *t*-value, we will not reject the null hypothesis that there is no statistical difference between the groups and if the *t* value is greater than the critical *t* value, we will reject the null hypothesis which states there is no statistical significance between the groups after receiving the text messages (Polit & Beck, 2017).

Study Limitations

In an effort to minimize limitations, the researcher will describe each limitation's consequence upon the study findings, discuss possible alternatives, and propose methods to minimize each limitation's impact (Chasan-Taber, 2014).

Self-reported data. Self-reported data can rarely be independently verified. This is a potential source of bias that may lead to further limitations because humans (1) have difficulty remembering how they have felt, (2) may recall events that occurred one time and displace feelings to the current time, (3) justify feelings based upon their own agenda, and (4) may exaggerate (University of Southern California Libraries, 2018). To minimize these limitations,

the text message script will repeat the nurturant content twice: emotional support will be repeated on (weeks 1 and 4); network (weeks 2 and 5); and esteem support messages (weeks 3 and 6).

Time. Time is a constraint as it is limited in this proposed study; it spans a brief 6-week period. This timeframe may limit the findings and not reveal the best understanding of millennial socialization preferences that impact NLNs' intentions to stay at their current jobs during their first year of hire. Conversely, Cohen et al. (1983) recommended assessing stress levels for a term longer than one month which this study proposes (6 weeks), therefore, this limitation is minimized.

Confounding variables. Extraneous and confounding variables will be examined for their influence upon the independent and dependent variables in this study. Such variables include: number of hours worked each week, gender, age, shift are they working (days or nights), number of weeks they have been in their current jobs, degree(s) they have earned, and the percentage of external social support. These factors may reveal characteristics in this sample that may not be explained or examined in current nursing literature.

Potential Problems and Potential Strategies

Training programs differ. Counterbalance is the expected outcome if one facility has more social support for NLNs than another facility. A socially supportive training program will create predictable responses. In this case, the experimental group's SSS would not change over the time of the study (Lewis-Beck, Bryman, & Futing Liao, 2004). To control this counterbalance, the PI will investigate the facility's social support practices for NLNs and discuss this limitation should a facility incorporate support strategies more than preceptor support and/or a nurse residency program.

Extraneous and confounding variables, such as the number of hours worked each week, gender, age, which shift are they working (days or nights), how many weeks have they been in this current job and what degree(s) they have earned will be tracked for their influence upon the outcome variables in this study. These demographic variables may reveal characteristics in this sample that may not be explained or examined in current nursing literature.

Attrition. In a previous research study examining the use of text messages and exploring nursing student resiliency, 17% of the data was lost due to participant attrition (Stephens, 2012). To help control for attrition, the PI will recruit more participants than estimated in order to minimize a type II error. Additionally, to encourage participants to complete this study, a \$200 gift card will be raffled among those who complete the study (Bructon et al., 2011).

Smartphone usage. Acute care facilities recommend bedside employees do not use their Smartphones while working at the bedside (Gill, Kamath, & Gill, 2012). In order to be included in this proposed study, participants must agree to not use their Smartphones while providing direct patient care but may access text messages while in designated break areas or when off duty. Additionally, text messages are intended to be one-directional which may cause participants to lose interest in this study. Yet, Ahn and Choi (2016) used a one-way text messaging intervention to help modify obese subjects' lifestyles and it was found to be simple and effective in managing obesity. Smartphone usage should not pose a limitation to this study.

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Appendix B: Text Message Script and Schedule

<u>Experimental Group</u> SSBC Nurturant Support Message	<u>Control Group</u> Medical Facts
<u>Week 1– Emotional Support</u>	<u>Week 1</u>
Monday: Speak with someone this week that understands or knows you well.	Monday: “DVT usually affects the deep veins of the legs” (MedlinePlus.gov, 2018e).
Wednesday: Your attention to detail reminds you that you are meant to be a nurse.	Wednesday: “Calcium has many important jobs. The body stores more than 99 percent of its calcium in the bones and teeth to help make and keep them strong” (MedlinePlus.gov, 2018g).
Friday: You are doing a great job and you are making a difference in people’s lives as a nurse.	Friday: “A concussion is a type of brain injury. It involves a short loss of normal brain function” (MedlinePlus.gov, 2018l).
Saturday: You chose nursing because you care for others. You are caring and the little things you do, they matter.	Saturday: “Cirrhosis is scarring of the liver. Scar tissue forms because of injury or long-term disease” (MedlinePlus.gov, 2018i).
<u>Week 2 – Network Support</u>	<u>Week 2</u>
Monday: We’d like for you to attend a professional nursing organization meeting in your area or online. Find out more information: https://nurse.org/orgs.shtml	Monday: “Each spring, summer, and fall, trees, weeds, and grasses release tiny pollen grains into the air. Some of the pollen ends up in your nose and throat. This can trigger a type of allergy called hay fever” (MedlinePlus.gov, 2018q).
Wednesday: Go to a nursing event near you. Find an event: https://www.nursingnetwork.com/nursing-events	Wednesday: “Hormones are your body’s chemical messengers. They travel in your bloodstream to tissues or organs” (MedlinePlus.gov, 2018r).
Friday: Wondering about other newly licensed nurses? Be a part of the community at https://allnurses.com/general-nursing-discussion/new-grad-nurse-1174755.html#post9943239	Friday: “A cataract is a clouding of the lens in your eye. It affects your vision. Cataracts are very common in older people. By age 80, more than half of all Americans either have a cataract or have had cataract surgery” (MedlinePlus.gov, 2018h).
Saturday: “The Nurse Zone” is a great place to find out more about how to connect with other graduate nurses:	Saturday: “Lymphoma is a cancer of a part of the immune system called the lymph system. There are many types of

<https://www.americanmobile.com/nursezone/article-topic/?topic=NewGraduates>

lymphoma. One type is Hodgkin disease. The rest are called non-Hodgkin lymphomas” (MedlinePlus.gov, 2018t).

Week 3 – Esteem Support

Monday: Always do your best so you can be proud that you gave it your best shot.

Wednesday: Forget your past mistakes and focus on your successes encouraging yourself to greater achievements in the future.

Friday: Listen to your inner voice and follow it for it is wisdom and knows what is best for you.

Saturday: You can do this!

Week 4- Emotional Support

Monday: Your nursing career combined with who you are, make you dedicated, caring, and valuable person.

Week 3

Monday: “An ostomy is surgery to create an opening (stoma) from an area inside the body to the outside. It treats certain diseases of the digestive or urinary systems. It can be permanent, when an organ must be removed” (MedlinePlus.gov, 2018v).

Wednesday: “Bronchitis is an inflammation of the bronchial tubes, the airways that carry air to your lungs. It causes a cough that often brings up mucus. It can also cause shortness of breath, wheezing, a low fever, and chest tightness. There are two main types of bronchitis: acute and chronic” (MedlinePlus.gov, 2018a).

Friday: “Cold sores are caused by a contagious virus called herpes simplex virus (HSV). There are two types of HSV. Type 1 usually causes oral herpes, or cold sores. Type 1 herpes virus infects more than half of the U.S. population by the time they reach their 20s. Type 2 usually affects the genital area” (MedlinePlus.gov, 2018k).

Saturday: “The average person has 5 million hairs. Hair grows all over your body except on your lips, palms, and the soles of your feet. It takes about a month for healthy hair to grow half an inch. Most hairs grow for up to six years and then fall out. New hairs grow in their place” (MedlinePlus.gov, 2018p).

Week 4

Monday: “Breastfeeding offers many benefits to your baby. Breast milk contains the right balance of nutrients to help your infant grow into a strong and healthy toddler. Some of the nutrients in breast milk also help protect your

Wednesday: You ask for help when you need it because you want to do your best for your patients.

Friday: Your friends often remind you that your best attribute is the way you show others you care.

Saturday: Think of yourself through the eyes of someone that knows and loves you.

Week 5 – Network Support

Monday: Plan a lunch or a night out with other new nurses this week.

Wednesday: Log onto to “Nurse’s Café” and get some advice from seasoned nurses:
<https://www.nursescafe.com/t/advice-from-seasoned-nurses-for-new-nurses/354>

infant against some common childhood illnesses and infections. It may also help your health” (MedlinePlus.gov, 2018f).

Wednesday: “The prostate is a gland in men. It helps make semen, the fluid that contains sperm. The prostate surrounds the tube that carries urine out of the body. As men age, their prostate grows bigger. If it gets too large, it can cause problems. An enlarged prostate is also called benign prostatic hyperplasia (BPH)” (MedlinePlus.gov, 2018o).

Friday: “If you have anemia, your blood does not carry enough oxygen to the rest of your body. The most common cause of anemia is not having enough iron. Your body needs iron to make hemoglobin. Hemoglobin is an iron-rich protein that gives the red color to blood. It carries oxygen from the lungs to the rest of the body” (MedlinePlus.gov, 2018b).

Saturday: “Joints are places where two bones meet, such as your elbow or knee. Over time, a swollen joint can become severely damaged. Some kinds of arthritis can also cause problems in your organs, such as your eyes or skin” (MedlinePlus.gov, 2018c).

Week 5

Monday: “If you have diabetes, your blood glucose, or blood sugar, levels are too high. Over time, this can damage the covering on your nerves or the blood vessels that bring oxygen to your nerves. Damaged nerves may stop sending messages or may send messages slowly or at the wrong times” (MedlinePlus.gov, 2018m).

Wednesday: “Clostridium difficile (C. difficile) is a bacterium that causes diarrhea and more serious intestinal conditions such as colitis” (MedlinePlus.gov, 2018j).

Friday: Try to learn more about others just starting out in nursing or the specialty you work in. Log onto: <https://www.ultimatenurse.com/forum/>

Saturday: You are now a registered nurse. “Just Us” is designed to help aspiring student nurses by forming a support group from a network of registered nurses. Helping others is a great way to help ourselves. Log onto: <http://justusnurses.com/forum/>

Week 6 – Esteem Support

Monday: You are very smart and know what it takes to be successful.

Wednesday: You have had many challenges in nursing school, and you are prepared to succeed each day you come to work.

Friday: You are a kind and compassionate person and your patients are counting on your care.

Friday: “Diphtheria is a serious bacterial infection. You can catch it from a person who has the infection and coughs or sneezes. You can also get infected by coming in contact with an object, such as a toy, that has bacteria on it” (MedlinePlus.gov, 2018n).

Saturday: “Bone marrow is the spongy tissue inside some of your bones, such as your hip and thigh bones. It contains stem cells. The stem cells can develop into the red blood cells that carry oxygen through your body, the white blood cells that fight infections, and the platelets that help with blood clotting” (MedlinePlus.gov, 2019a).

Week 6

Monday: “You have two kidneys, each about the size of your fist. They are near the middle of your back, just below the rib cage. Inside each kidney there are about a million tiny structures called nephrons. They filter your blood. They remove wastes and extra water, which become urine” (MedlinePlus.gov, 2018s).

Wednesday: “Asthma is a chronic disease that affects your airways. Your airways are tubes that carry air in and out of your lungs. If you have asthma, the inside walls of your airways become sore and swollen. That makes them very sensitive, and they may react strongly to things that you are allergic to or find irritating” (MedlinePlus.gov, 2018d).

Friday: “Canker sores are small, round sores in your mouth. They can be on the inside of your cheek, under your tongue, or in the back of your throat. They usually have a red edge and a gray center. They can be quite painful. They are not the same as cold sores, which are caused by herpes simplex” (MedlinePlus.gov, 2019b).

Saturday: At times this job is difficult, but you can do it!

Saturday: “Healthy nails are usually smooth and consistent in color. Specific types of nail discoloration and changes in growth rate can be signs of lung, heart, kidney, and liver diseases, as well as diabetes and anemia. White spots and vertical ridges are harmless” (MedlinePlus.gov, 2018u).

Appendix C: Email to Acute Care Facilities to Determine Interest in Proposed Study

Dear Research Director,

I am a PhD student at Duquesne University School of Nursing in Pittsburgh, PA and seeking an acute care facility that may be interested in participating in my research study.

After selecting a topic, “newly licensed nurse resiliency,” my research aims are to understand how to build new nurses’ resilience. The Robert Wood Johnson Foundation (2012) stated one out of five new nurses will leave their first job within their first year of hire. This topic is timely and imperative to study to ensure an ample number of registered nurses to support the growing population of aging and those with chronic diseases.

In order to continue my journey to earning a PhD, I am searching for potential sites to perform my study. Participants should be newly licensed nurses within their first year of hire. The aim of the study is to examine the effects of a digital intervention (text messaging using personal Smartphones) on newly licensed nurses in a 6-week period to assess stress, resiliency, perceived social support, and intention to stay at their current job. To participate in the study, newly licensed nurses will be asked to not use or carry their personal Smartphone with them while at the bedside. Additionally, once approved by the IRB, I will defer to the facility’s preference in order to recruit potential participants (i.e., fliers and/or use of gatekeeper such as the NLN orientation liaison). Once interested, I would ask for a meeting place, within your facility, where I may meet with potential participants, assess if they meet the inclusion criteria, and answer any questions they may have.

Do you think your acute care facility may be interested in participating in this study?

Thank you for your time.

Sincerely,

Lisa Concilio
PhD Student
Duquesne University, School of Nursing
ConcilioL@duq.edu

Appendix D: Flier for Recruitment



Looking for Newly Licensed Nurses to Participate in a Research Study

Your responses make a difference and impact Newly Licensed Nurses' first year of hire.

- Are you in your first year of practice as a registered nurse?**
- Are you between the ages of 19-37?**
- Do you own a Smartphone?**

Be a part of this 6 week research study!
Each study participant who completes study requirements will earn a \$20 gift card and the first 4 participants who complete the study will earn an additional \$50 gift card.

Contact: (724) 343-2222 or ConcilioL@duq.edu

Earn a \$20 gift card by participating in a 6 week research study with an additional chance to win another \$50 gift card.

Earn a \$20 gift card by participating in a 6 week research study with an additional chance to win another \$50 gift card.

Earn a \$20 gift card by participating in a 6 week research study with an additional chance to win another \$50 gift card.

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Earn a \$20 gift card by participating in a 6 week research study with an additional chance to win another \$50 gift card.

Appendix E: Protection of Research Participants

Per the National Bioethics Advisory Commission (2016), the protection of research participants will be outlined in this following paragraph. Prior to initiating this pilot study, the PI will apply to Duquesne University's Internal Review Board (IRB) and also to interested acute care facilities of southern California's IRBs. Once IRBs have granted approval for this study, recruitment of participants and data collection will begin. Informed consent, using Qualtrics Survey Platform (Qualtrics, 2019), will be obtained from all participants prior to initiation of the intervention and the consent form (Appendix F) will be explained in its entirety and time is to be allowed for questions. Participants will be informed: (a) there will be minimal risks from participating in the study, (b) their participation is voluntary, (c) they may refuse to participate, and (d) they may withdraw from the study, without consequence, at any time for any reason. Each participant will be given an information sheet containing the PI's contact information and for the compliance officer within the office of research at Duquesne University. Participants will be assured that information will be protected by using a unique numeric identifier and information will be password protected by the PI on her personal computer. Additionally, any paperwork will be secured in a locked cabinet in the PI's home. All text and/or email communication sent to participants will be using unique numeric identifiers.

After completion of the study, data will be securely maintained in the PI's home for three years per Duquesne University's data management guidelines (Gumberg Library, 2018). Subject names and personal identifiers linked to data will be destroyed. Participants will be informed that no personal or identifying data will be shared with anyone not approved for access, including employer, and choosing to participate or not participate would not affect their employment or license in any way. Participants will be informed their signatures do not obligate them to participate in any future research studies. If an informant notifies the principal investigator of the desire to withdraw, all data from the informant will be destroyed. Although it is not anticipated that the intervention will cause undue distress for the informants, if informants do become distressed during the intervention, the intervention will be stopped, and the individual will be referred to counseling services. While this study poses minimal risks to participants, some participants may realize their need to improve or enhance personal characteristics and or behaviors based on the information they receive during the intervention. This may result in embarrassment or the desire to change. Should the participant contact the PI with any distress as a result of this study, a list of resources will be provided by the acute care facility's employee assistance program.

Appendix F: Consent Form



DUQUESNE UNIVERSITY

600 FORBES AVENUE ♦ PITTSBURGH, PA 15282

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

TITLE:

The Impact of a Digital Support Intervention on Stress, Resiliency, Perceived Social Support and Intention to Leave among Newly Licensed Nurses: A Randomized Controlled Trial

INVESTIGATOR:

Lisa Concilio, MSN-ED, RN, CCRN,
PhD Candidate, Duquesne University School of Nursing

ADVISOR:

Joan Such Lockhart, PhD, RN, CNE, ANEF, FAAN, Professor
Duquesne University School of Nursing

SOURCE OF SUPPORT:

This study is being conducted as fulfillment of the requirements for dissertation for a doctoral degree in nursing at Duquesne University.

STUDY OVERVIEW:

The study will help nurse researcher determine if support, delivered via text message, impacts Newly Licensed Nurses' intentions to leave their current jobs. You will be asked to receive a text message four times a week for six weeks. You will be asked to complete surveys before the study, after three weeks, and at six weeks (the end of the study). You are asked to not read/use your Smartphone while performing direct patient care.

PURPOSE:

You are being asked to participate in a research project that is investigating Newly Licensed Nurses during their first year of hire. The purpose of this 6-week research study is to examine to the effect(s) of a digital support intervention on their stress, resilience, perceived support, and intention to leave current jobs.

In order to qualify for participation, you must meet the inclusion criteria listed here:

(a) Newly Licensed Nurses, (b) ages 19-37 years, (c) proficient in English, (d) working in an acute care facility as a RN during the first year of hire, (e) have a working personal Smartphone, (f) have the ability to send and receive text messages, (g) have an active and working personal email account, and (h) be willing to participate for six weeks, (i) complete a demographic survey before the study, survey instruments at 3 weeks, 6 weeks, and at the conclusion of the study (j) agree to not use their Smartphone while performing direct patient care and (k) assume any data charges for text messages, if incurred. Exclusion criteria will include: (1) NLNs who have worked in the role of a RN on another floor or (2) NLNs who have worked as an RN at another organization, or (3) NLNs not 19-37 years of age.

PARTICIPANT PROCEDURES:

To participate in this study, you will be asked to meet the Principal Investigator, in person, by phone, or by a video meeting and complete a demographic survey and four additional surveys, use your personal Smartphone but do not use or carry it while directly working with patients, and complete three surveys (sent via text) at the end of week 3. At the end of week 6, you will be contacted via text to complete five surveys, two of which are very brief. These are the only requests that will be made of you.

RISKS AND BENEFITS:

There are minimal risks associated with this participation but no greater than those encountered in everyday life. A benefit of participating in this pilot study is that your responses will be added to the responses of other study participants to increase knowledge about your experiences. The present research is designed to reduce the possibility of any negative experiences as a result of participation. Risks to participants are kept to a minimum. However, if your participation in this study causes you any concerns, anxiety, or distress, please contact the Principal Investigator, Lisa Concilio, who will refer to you designated counseling services within your organization.

COMPENSATION:

There will be a \$20 gift card to those that complete the study requirements. Additionally, the first four participants completing the study at the end of week 6, regardless of study site, will be awarded another \$50 gift card.

CONFIDENTIALITY:

Your participation in this study and any personal information that you provide will be kept confidential at all times and to every extent possible. Your name will never appear on any survey or research instrument used for this study. Your responses to questions will appear as de-identified quotes, so anything that could identify you or anyone to which you refer, will be removed. The study will be published or presented at professional meetings but at no time will your identity be shared or known. All written materials and consent forms will be stored separately in a locked file in the Principal Investigator's home and will be kept for 3 years. The written materials and consent forms will be destroyed after a 3 year period has elapsed from the study's completion date.

RIGHT TO WITHDRAW:

You are under no obligation to participate in this study. You are free to withdraw your consent to participate at any time by notifying the Principal Investigator. Any data already collected; will be destroyed.

SUMMARY OF RESULTS:

A summary of the results of this research will be supplied to you, at no cost, upon request. Participants will check the “yes” box on the demographic survey in order to receive the study results, via email, after the study is completed.

FUTURE USE OF DATA:

Any information collected will be deidentified and kept for use in future related studies, and/or provided to other researchers. The data may be used in future studies to help nurse researchers and leaders better understand those entering the workforce and how to enhance employee retention in an effort to promote patient safety.

VOLUNTARY CONSENT:

I have read this informed consent form and understand what is being requested of me. I also understand that my participation is voluntary and that I am free to withdraw at any time, for any reason without any consequences. Based on this, I certify I am willing to participate in this research project.

I understand that if I have any questions about my participation in this study, I may contact Lisa Concilio (Principal Investigator) at Concilio@duq.edu, the Advisor: Joan Such Lockhart at 412-396-6540 or email at Lockhart@duq.edu. If I have any questions regarding my rights and protection as a subject in this study, I can contact Dr. David Delmonico, Chair of the Duquesne University Institutional Review Board for the Protection of Human Subjects at 412-396-1886 or at irb@duq.edu.

Participant's Signature

Date

Researcher's Signature

Date

Appendix G: Participant Demographic Survey

Instructions: Please choose a response for each of the following:

1. What is your age:

_____ years

2. Do you identify as a (choose one):

Male

Female

Other

3. Ethnicity (choose **all** that apply):

American Indian or Alaska native (form example: Navajo Nation, Blackfeet Tribe, Mayan, Aztec, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, etc.)

Asian (for example: Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese, etc.)

Black or African (for example: African American, Jamaican, Haitian, Nigerian, Ethiopian, Somalian, etc.)

Hispanic, Latino, or Spanish origin (for example: Mexican or Mexican American, Puerto Rican, Cuban, Salvadoran, Dominican, Colombian, etc.)

Native Hawaiian or Other Pacific Islander (for example: Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc.)

White (for example: German, Irish, English, Italian, Polish, French, etc.)

I prefer not to answer.

Some other race, ethnicity, or origin: _____

4. Numbers of hours you are hired to work per week during the time of this study:

_____ hours/week

5. During the time of this study, what shift will you be working? (example: 7a-7p or 7p to 7a)

6. At the start of this study, how many weeks have you working at this current job?

_____ weeks

7. What nursing degree(s) or diploma(s) have you earned?

Diploma

ADN (Associate)

BSN (Bachelor of Science in Nursing)

MSN (Master of Science in Nursing)

Other degrees held: _____

8. Are you proficient in English?

Yes No

9. Do you have a working personal Smartphone that can send and receive text messages? (choose one)

Yes No

10. Your personal Smartphone number: _____

11. Your active, **personal** email account: _____

12. Have you ever worked in another facility or organization as a registered nurse? (choose one)

Yes No

13. Have you ever worked on another floor in this facility as a registered nurse? (choose one)

Yes No

14. Should you complete all study surveys at baseline, at the end of week 3, and at the end of week 6, your gift card(s) will be mailed to you.

What is your mailing address?

15. After this research study has ended and the Principal Investigator's dissertation is complete, would you like the results of this study emailed to you?

Please choose:

Yes No

Appendix H: Perceived Stress Scale (PSS)

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last four weeks**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Item	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and “stressed”?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Appendix I: Connor-Davidson Resiliency Scale
Connor-Davidson Resilience Scale 25 (CD-RISC-25) ©

For each item, please mark an “x” in the box below that best indicates how much you agree with the following statements as they apply to you over the last month. If a particular situation has not occurred recently, answer according to how you think you would have felt.

	not true at all	rarely true	sometimes true	often true	true nearly all the time
	(0)	(1)	(2)	(3)	(4)
1. I am able to adapt when changes occur.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I have at least one close and secure relationship that helps me when I am stressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. When there are no clear solutions to my problems, sometimes fate or God can help.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I can deal with whatever comes my way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Past successes give me confidence in dealing with new challenges and difficulties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I try to see the humorous side of things when I am faced with problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Having to cope with stress can make me stronger.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I tend to bounce back after illness, injury, or other hardships.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Good or bad, I believe that most things happen for a reason.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I give my best effort no matter what the outcome may be.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I believe I can achieve my goals, even if there are obstacles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Even when things look hopeless, I don't give up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. During times of stress/crisis, I know where to turn for help.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Under pressure, I stay focused and think clearly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I prefer to take the lead in solving problems rather than letting others make all the decisions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I am not easily discouraged by failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I think of myself as a strong person when dealing with life's challenges and difficulties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I can make unpopular or difficult decisions that affect other people, if it is necessary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. In dealing with life's problems, sometimes you have to act on a hunch without knowing why.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. I have a strong sense of purpose in life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. I feel in control of my life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. I like challenges.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. I work to attain my goals no matter what roadblocks I encounter along the way.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I take pride in my achievements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Appendix J: Sense of Support Scale (SSS)

Read each item carefully and circle the number that best describes what is generally true for you today.

Item	Not at all true	Usually not true	Usually true	Completely true
1. I participate in volunteer/service projects.	0	1	2	3
2. I have meaningful conversations with my parents and/or siblings.	0	1	2	3
3. I have a mentor(s) in my life I can go to for support/advice.	0	1	2	3
4. I seldom invite others to join me in my social and/or recreational activities.	0	1	2	3
5. There is at least one person I feel a strong emotional tie with.	0	1	2	3
6. There is no one I can trust to help solve my problems.	0	1	2	3
7. I take time to visit with my neighbors.	0	1	2	3
8. If a crisis arose in my life, I would have the support I need from family and/or friends.	0	1	2	3
9. I belong to a club (e.g. sports, hobbies, support group, special interests).	0	1	2	3
10. I have friends from school that I see socially (e.g. movie dinner, sports, etc.).	0	1	2	3
11. I have friendships that are mutually fulfilling.	0	1	2	3
12. There is no one I can talk to when making important decisions in my life.	0	1	2	3
13. I make an effort to keep in touch with friends.	0	1	2	3
14. My friends and family feel comfortable	0	1	2	3

asking me for help.				
15. I find it difficult to make new friends.	0	1	2	3
16. I look for opportunities to help and support others.	0	1	2	3
17. I have a close friend(s) whom I feel comfortable sharing deeply about myself.	0	1	2	3
18. I seldom get invited to do things with others.	0	1	2	3
19. I feel well supported by my friends and/or family.	0	1	2	3
20. I wish I had more people in my life that enjoy the same interests and activities as I do.	0	1	2	3
21. There is no one that shares my beliefs and attitudes.	0	1	2	3

Appendix K: Intention to Leave (ITL) One's Job Survey

1. Which percent represents your intention to leave **your current position**?

Choose one.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

2. Which percent represent your intention to leave **this organization**?

Choose one.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

3. Which percent represents your intention to leave the **nursing profession**?

Choose one.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

4. Please identify what would impact a decision to stay or leave your current position.

Choose all that apply.

Change in management

Supportive teamwork

Monetary reward

Change in shift

The ability to provide a better quality of care

The ability to create a safer work place for employees and/or patients

Ratio of patient to nurse assignment

Other:

Appendix L: End of Study Questionnaire

1. How often, during the course of this 6-week study, did you discuss with your mentor, peers, friends, or family about your first-year practicing as a Newly Licensed Nurse?

Circle or underline one.

Daily

Twice a week

Three times a week

Four times a week

More than four times a week

Not at all

If none of these, please type

in: _____

Appendix M: Calculating the I-CVI (Polit & Beck, 2006)

Ratings on a 24-Item Scale by Five Experts: Items Rated 3 or 4 on a 4-Point Relevance Scale

Item	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Number in Agreement	Item CVI (I-CVI) (#of 3 or 4 ratings / # of experts)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
Proportion Relevance	(# of responses/# of experts)						

Mean I-CVI, no lower than .78, is acceptable (Polit & Beck, 2006).

Appendix N: Email to NLN Educators to Validate Support Message Content

MSN Prepared Nurse Educators Needed for Research Study

Greetings.

We are researching the impact of 6 weeks of a digital communication intervention on Newly Licensed Nurses' (within the first year of hire) for a research study: "The Impact of a Digital Support Intervention on Stress, Resilience, Support, and Intention to Leave among Newly Licensed Nurses: A Randomized Controlled Trial."

Masters-prepared nurse educators are needed for this research study **to validate text message content in three areas of support: emotional support, network support, and esteem support.**

The survey should take less than 25 minutes to complete. A \$20 Target gift card will be awarded should you choose to complete this survey.

If interested, please contact Concilio1@duq.edu and the survey will be sent to you via email or text (please choose your preference upon responding to this email).

Thank you,

Lisa Concilio MSN-ED, RN, CCRN
PhD Candidate
Duquesne University, School of Nursing

Appendix O: Itemized Content Validity Questionnaire (I-CVI)

Name and credentials: _____

Do you currently work with newly licensed nurses during the first year of hire? Y ☐ N ☐

Do you currently work as a manager where you work with newly licensed nurses? Y ☐ N ☐

Please rate the 24 items on a 4-point scale of relevance by circling: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

You will be rating if the item matches the construct: **Emotional Support.**

Emotional support encourages connectedness with others and helps you recall things you appreciate about yourself.

Item 1: Speak with someone this week that knows and cares about you.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 2: Your attention to detail reminds you that you are meant to be a nurse.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 3: You are doing a great job and you are making a difference in people's lives as a nurse.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 4: You chose nursing because you care for others. You are caring and the little things you do, they matter.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 5: Your nursing career combined with who you are, make you dedicated, caring, and valuable person.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 6: You ask for help when you need it because you want to do your best for your patients.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 7: Your friends often remind you that your best attribute is the way you show others you care.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 8: Think of yourself through the eyes of someone that knows and loves you.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

You will be rating if the item matches the construct: **Network Support**. Network support provides messages to connect with others who share common interests and concerns.

Item 9: We'd like for you to attend a professional nursing organization meeting in your area or online. Find out more information: <https://nurse.org/orgs.shtml>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 10: Go to a nursing event near you. Find an event:
<https://www.nursingnetwork.com/nursing-events>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 11: Wondering about other newly licensed nurses? Be a part of the community at
<https://allnurses.com/general-nursing-discussion/new-grad-nurse-1174755.html#post9943239>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 12: "The Nurse Zone" is a great place to find out more about how to connect with other graduate nurses: <https://www.americanmobile.com/nursezone/article-topic/?topic=NewGraduates>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 13: Plan a lunch or a night out with other new nurses this week.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 14: Log onto to "Nurse's Café" and get some advice from seasoned nurses:
<https://www.nursescafe.com/t/advice-from-seasoned-nurses-for-new-nurses/354>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 15: Try to learn more about others just starting out in nursing or the specialty you work in. Log onto: <https://www.ultimatenurse.com/forum/>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 16: You are now a registered nurse. "Just Us" is designed to help aspiring student nurses by forming a support group from a network of registered nurses. Helping others is a great way to help ourselves. Log onto: <http://justusnurses.com/forum/>

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

You will be rating if the Item matches the construct, **Esteem Support**.
Esteem support provides positive messages about the characteristics of nurses and emphasizes accomplishments.

Item 17: Always do your best so you can be proud that you gave it your best shot.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 18: Forget your past mistakes and focus on your successes encouraging yourself to greater achievements in the future.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 19: Listen to your inner voice and follow it for it is wisdom and knows what is best for you.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 20: You can do this!

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 21: You are very smart and know what it takes to be successful.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 22: You have had many challenges in nursing school, and you are prepared to succeed each day you come to work.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 23: You are a kind and compassionate person and your patients are counting on your care.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Item 24: At times this job is difficult, but you can do it.

Please circle: 1= not relevant, 2 = somewhat relevant, 3 = quite relevant, 4 = highly relevant.

Appendix Q: Project Timeline

Calendar Months												
Activity	1	2	3	4	5	6	7	8	9	10	11	12
Committee Approval	X	X	X									
Apply to IRB		X	X	X								
Nurse Educators to validate text message content			X	X								
Recruitment				X	X							
Perform Study					X	X						
Data Collection						X	X					
Data Analysis								X	X			
Manuscript Prep										X		
Dissemination											X	
Final Report											X	

Project Timeline in months for “The Impact of a Digital Support Intervention on Stress, Resiliency, Perceived Social Support, and Intention to Leave among Newly Licensed Nurses: A Randomized Controlled Trial.” Adapted from D. F. Polit and Beck (2012, p. 194).

Appendix R: Budget

Budget

Gift card for 5 Nurse Educators for completing Content Validity Index (\$20/Nurse Educator)	\$100
NLNs that complete the study requirements (approximately 100 NLNs; \$20/NLN)	\$2000
Raffle to win one \$200 gift card for one NLN that completes the study	\$200
Text message service for 6 weeks (ensures text message recipient privacy)	\$70
Total cost of study	\$2,370

Appendix S: Text Message Service

Lisa,

I wanted to reach out to you personally and give you a code that will take 5% off of your first purchase with us. I would be happy to answer any questions you may have!

With our service, your recipients will receive a individual text from a "normal" 10-digit phone number. **They will not be able to see who else is receiving the message as well.** Using our service to send text messages is a simple process, simply upload your contacts, type out your text message, and send it out. It will then go out to your entire list. The phone number your text messages come from is randomly assigned to your account. You can select the area code for the phone number and then a number is assigned to your account. Every text message sent from your account will come from that same number each time. You will also be able to receive replies as well. If any of your recipients reply your will be able to see their texts online through your account and even respond directly back to individuals if needed.

We have 'Unlimited Usage' accounts that sounds like it may be perfect for you and allow you to contact your members as often as you like. You can purchase the service one month at a time and simply allow the account to expire when it is no longer needed. There are no contracts, start up costs or hidden fees. It really is just one flat monthly rate and you can pay as you go for as long as you like.

For a group of up to 100 phone numbers the monthly cost would be \$23.99. You can see our pricing at anytime by visiting our website at www.CallMultiplier.com/pricing.

You can see all the options available and learn firsthand how user friendly the service is by going to www.CallMultiplier.com. – From the main page just click the green 'GET STARTED' button in the center area of the screen.

To the left you will see a green 'Unlimited Usage' button next to a greyed out 'Credits' side – below that is drop down for you to 'Select Group Size' and 'Select Months'.

Once you select these it will display the price above a green 'Buy Now' button.

- Select the number of members you will need – then select the number of months you want to purchase. You can select one month, three, six or 12 – take note that if you select 6 months there is a 5% discount and a 10% discount for 12 months.
- This will show you a price and have a green 'Buy Now' button.
- When you click the 'Buy Now' button it will let you set your account and fill out contact information but near the bottom of that first page you will see a box labeled offer code....if you will enter the code **JS519** it will discount whatever your first purchase is by an additional 5%!

All accounts are 'all inclusive' and there are no additional fees for texting, long distance or any of the functions or reports you will have available to you. You will have access to real time reports and can upload or change lists with any .csv file or excel spreadsheet. That, with the 24 hour customer service at no additional cost is part of why CallMultiplier not only meets your needs, but exceeds them.

Please let us know if we can be of any assistance at all during any part of this process. Our support team is available 24/7 and would be happy to answer any other questions you may have. We look forward to working with you.

Sincerely,

Hannah Duckwall
CallMultiplier Sales

CallMultiplier, Inc.
201 Robert S. Kerr Avenue
Suite 210
Oklahoma City, OK 73102

<http://www.CallMultiplier.com>
Toll Free: 877-225-5025

RESULTS

Manuscript #2**Abstract**

Background: The nursing shortage has been deemed a public health crisis with the turnover rate of newly licensed nurses (NLNs) growing. One out of five NLNs are leaving the profession due to work dissatisfaction and feelings of inadequacy, risking patient safety.

Method: A prospective, randomized control trial evaluated the impact of a six-week digital intervention (text messaging) on NLNs' self-reported stress, resiliency, sense of support, and intention to leave (ITL) their jobs, organization and/or profession. Messages to the experimental group (n=10) conveyed emotional, esteem, and networking support; messages to the control group (n=11) were medical facts.

Results: A digital intervention in the form of medical facts increased NLNs' sense of social support. Stress, resilience, ITL their job, organization, or profession did not change for either groups.

Conclusion: A digital intervention, such as a text messaging, can potentially increase NLNs' sense of support during the first year of hire.

**The Impact of a Digital Intervention on Perceived Stress, Resiliency, Social Support,
and Intention to Leave among Newly Licensed Nurses: A Randomized Controlled
Trial**

Newly licensed nurses (NLNs) leaving their first job within the first year of hire is a public health concern as nursing shortages have been correlated with poor patient outcomes (National Academy of Medicine [NAM], 2017; Robert Wood Johnson Foundation [RWJF], 2014). A supply of adequately trained nurses is needed to care for patients, yet onboarding and the constant training of NLNs adds to the workload of an already challenged RN (The Joint Commission [TJC], 2009). While improving the work environment, conducting resiliency building programs, and incorporating mentorship programs have been interventions used to improve nurse retention, these ideas stalemate as patients suffer the results of a long-standing nursing shortage (Shatto & Lutz, 2017). The inability to stay in nursing has been viewed as a lack of resiliency (Concilio et al., 2019). Decreased resiliency has been correlated with an inability to problem-solve and maintain a sense of control which negatively affects patient outcomes (Spence Laschinger et al., 2016). Stress and sense of social support affect NLN resilience and intention to leave one's job, organization, and/or the profession (Duchscher, 2007; RWJF, 2014).

According to the American College of Nursing Fact Sheet [AACN] (2018), the United States (US) will experience a nurse preceptor shortage as seasoned professionals begin to retire. The lack of preceptor support decreases NLNs' ability to socialize and develop (Lalonde & McGillis Hall, 2017). Newly licensed nurse turnover is not only a healthcare crisis (Kishore et al., 2018; RWJF, 2014) but a broken link in a causal chain as

novice nurses are teaching novice nurses, a cycle that leads to poor patient outcomes (Kyer, 2018). No randomized control trials (RCT) involving resiliency and/or the effect of social support on NLN attrition in the US have been published in the past decade. This study explored the impact of a digital intervention on NLNs' perceived stress, resilience, support, and intention to leave (ITL) their current jobs, organizations, and/or profession.

Literature Review

Nurses who stay in the profession are resilient, respect the profession, and respect their daily work (McAllister & Lowe, 2011). According to the Institute for Healthcare Improvement [IHI] (2020), the coronavirus (COVID-19) will test healthcare workers' resilience further than ever before. In spring of 2020, graduating nursing students were unable to complete in-person clinical hours due to the unprecedented COVID-19 pandemic (American Association of Colleges of Nursing [AACN], 2020). Forward-thinking health care leaders are forced to supplement existing training programs to help expedite NLNs into the workforce. Expanding facility training programs will be costly as more NLNs leave their first year of practice, and tax money will be needed to absorb the high cost (Kovner et al., 2016). Prioritizing expert nurses (preceptors) to care for COVID-19 patients (Sarwari, 2020) further delays NLN training and will decrease socialization and professional development (Cubit & Ryan, 2011).

Newly licensed nurses leaving their first job within the first year of hire is a public health concern as nursing shortages have been correlated with poor patient outcomes (NAM, 2017; RWJF, 2014). Enhancing NLN professional socialization practices by using a digital intervention (text messages), may have the potential to

improve critical thinking, confidence, help NLNs manage stressful situations, and assist new clinicians to work well in teams (Anselmo-Witzel et al., 2020; McKenzie, 2020).

Theoretical Framework

Professional socialization is a process in which a NLN adopts the values, skills, attitudes, and knowledge associated with the practice of nursing (Kramer et al., 2011) and has been studied to improve one's resiliency and job performance while transitioning into practice (Boamah et al., 2017). Duchscher recognized the stressful period of transition to practice as "transition shock" (2007, p. 24). The conceptual framework of "Transition Shock" is built upon four identified expressions NLNs experience as they adapt from the role of student to licensed nurse: physical, emotional, intellectual, and socio developmental. Duchscher states that NLNs become emotionally exhausted as they transition, develop a need for validation, and crave positive reinforcement as they have lost their connection previously formed in nursing school. The oppressive hierarchal environment renders the NLN at a socio-developmental disadvantage as NLNs' role uncertainties decrease their abilities to express growth needs for fear of judgment. Based upon a social constructivist philosophy, nurses' abilities are enhanced through interactions with others (Dahnke & Dreher, 2011).

Methods

Design and Research Questions

A prospective RCT was conducted to determine the impact of a six-week digital intervention (independent variable) on NLNs' levels of perceived stress, resiliency, social support, and ITL their current job in the first year of hire (dependent variables). The research questions (RQ) included: 1). What is the effect of a digital intervention upon

DIGITAL INTERVENTION ON NEWLY LICENSED NURSES

NLNs' stress? 2). What is the effect of a digital intervention upon NLNs' resiliency? 3). What is the effect of a digital intervention upon NLNs' social support? and 4). What is the effect of a digital intervention upon NLNs' ITL their first jobs/organizations/the nursing profession during their first year of hire?

NLNs were randomly assigned to either an experimental or control group. The *experimental group* received supportive text messages meant to impact resilience and based upon the Social Support Behavioral Code (SSBC) (Cutrona & Suhr, 1992) and validated by a volunteer panel of five expert RNs using three categories: emotional, esteem, and networking support. The RNs held master's degrees in nursing and currently worked with NLNs and completed a validation survey using a Qualtrics Survey Platform (Qualtrics, 2019). After expert ratings were entered into a content validity index table (I-CVI), preliminary analysis revealed that three of the 24 original text messages had lower than acceptable I-CVI scores of .78. As a result, three new text messages were generated and distributed in a revised survey to the same experts; the new messages achieved an I-CVI score of 0.78 or greater. Experts received a \$20 gift card upon completing the survey. Conversely, the NLNs assigned to the *control group* received texts of medical facts that were not meant to support or correlate with the SSBC and are not known to affect stress, resilience, social support, or ITL one's job. The control group's text messages were not validated for content as they were derived from "MedlinePlus.gov (2017)" which is a peer-reviewed and evidence-based source.

Table 1 provides a sampling of text messages that were sent to experimental and control group participants. Each group received a total of 24 unique messages during the study.

Participants and Protection of Human Subjects

The study sample was limited to NLNs who were in their first year of hire and employed in two urban, healthcare systems located in western Pennsylvania and southern California. Institutional review board (IRB) approvals were obtained. Participants were informed they were under no obligation to participate and could opt out of the study without any consequence. Text messages were sent digitally using a commercial text message service; all smartphone numbers and personal information were concealed and kept confidential. All data were stored on the first author's password protected, personal computer. Participants were urged to contact the first author during the study if they had any concerns, anxiety, or distress, and would have been referred to their respective organization's counseling service.

Eligibility Criteria. The eligibility criteria was: (a) NLNs, (b) ages 19 to 37 [millennials and post-millennials, as the majority joining the workforce (NursingLicensure.org, 2020; Pew Research Center, 2018)], (c) proficient in English, (d) working in an acute care facility as a RN during the first year of hire, (e) have a working personal smartphone, (f) have the ability to send and receive text messages, (g) have an active and working personal email account, and (h) be willing to participate for six weeks, (i) complete instruments at baseline, week three, and week six, (j) agree to not use or carry their smartphone while performing direct patient care and (k) assume any data charges for text messages, if incurred. Newly licensed nurses excluded from the study were those who had worked as an RN on another floor or at another organization.

An initial power analysis revealed that a sample size of 96 was needed to determine if a digital intervention would impact NLNs' stress, resilience, sense of support

and ITL. However, a decision to stop recruitment after five months was made by the research team due to the negative effect that the COVID-19 pandemic was having on recruitment. In addition, the team wanted to maintain the NLNs who were currently enrolled in the study and who might benefit from the intervention, especially during the pandemic.

Instruments

Demographic Data. Participants' gender, age, ethnicity, hours worked per week, shift worked, and degree earned were collected at the commencement of the study.

Perceived Sense of Stress. Stress was measured using the Perceived Stress Scale (PSS) containing 10 statements that were answered on a Likert scale (0 - never to 4 - very often); total scores range from 0 to 40 with higher scores reflecting higher levels of stress (Cronbach's $\alpha = .86$) (Cohen, Kamarck, & Mermelstein, 1983). The PSS has not been utilized with NLNs during their first year of hire, but has been used in two samples of college students and one sample of participants in a smoking-cessation program (ages 22-35 years; Cronbach's $\alpha = .84$ and $.85$) (Cohen et al., 1983). The PSS takes 5-10 minutes to complete (Mind Garden Inc., 2018).

Resiliency. Resiliency was measured using the Connor-Davidson Resiliency Scale-25 (CD-RISC-25) which contained 25 statements and were answered on a Likert scale (0 – not true at all to 5 – true nearly all the time); total scores range from 1 to 100 with higher scores reflecting higher levels of resilience (Davidson, 2018). The CD-RISC-25 has demonstrated reliability in nurses (Cronbach's $\alpha = .87$) (Mealer et al., 2016). The CD-RISC-25 takes 5-10 minutes to complete (CD RISC, 2011).

Sense of Social Support. Support was measured using the Sense of Support Scale (SSS) which contained 21 statements and answered on a Likert scale (0 - not true at all to 3 - completely true); total scores range from 0 to 63 with higher scores reflecting higher levels of social support (Dolbier & Steinhardt, 2000). The SSS was evaluated using a sample of corporate and university employees and a sample of undergraduate students. The SSS has not been utilized to assess NLNs' sense of support during their first year of hire. The SSS demonstrated high reliability (Cronbach's $\alpha = .86$) and takes 20-25 minutes to complete (Versta, 2011).

Intention to Leave Survey. Lastly, ITL was measured using the ITL Survey, an unpiloted, 3-item, first author developed questionnaire to measure NLNs' ITL in their current job, organizations, and the nursing profession. Results are reported in percentage increments (0%, 10%, 20%, etc.) and the survey takes fewer than 5 minutes to complete.

Procedures

Nurse educators who worked with NLNs within each research setting were recruited to serve as "gatekeepers" to inform their NLNs about the study using emails and fliers. Potential participants obtained more information about the study by accessing contact information included in these materials. The first author enrolled all eligible participants, conducted randomization, and managed the intervention and assessments. NLNs who initially agreed to participate were randomly assigned to either the experimental group or the control group; the only male participant was also randomly assigned. Randomization was conducted using an online random sequence generator (Random.org, 2019) verified in two studies to be "sound" (Kenny, 2005).

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At the start of the six-week study protocol, all participants completed baseline surveys that measured stress (PSS), resilience (CD-RISC-25), and social support (SSS) prior to receiving interventions (week one); all participants repeated these surveys at the end of week three and week six; in addition, at week six all participants completed the ITL survey that captured their intent to leave their jobs, organizations, and/or the nursing profession. Once all eligible participants completed baseline surveys, the intervention began. Each group received their respective 24 unique text messages over the six-week study period on Mondays, Wednesdays, Fridays, and Saturdays at 1pm. A \$20 gift card was sent to participants who completed the study requirements. Additionally, the first four participants who completed the study at the end of week six were awarded another \$50 gift card.

Data Analyses

Data were analyzed using SPSS v. 26 (IBM Corp, 2019) and coded as nominal and ordinal variables. Any missing data points were imputed using case mean substitution (El-Masri & Fox-Wasylyshyn, 2005). Due to the small sample size, Bayesian *t*-tests helped to determine the impact of a digital intervention on NLNs' perceived stress, resilience, sense of support, and ITL their current jobs, organizations, and/or the nursing profession. Bayesian techniques are able to accommodate a small sample size and help researchers recognize prevalent patterns in the data with precision (Dunson, 2001).

A $BF > 0$ indicates evidence to support varying degrees that there is no difference between the groups; a $BF < 0$ indicates there is a difference between the groups. Bayesian analysis can help researchers predict the likelihood if a digital intervention, sent four times a week for six weeks, would impact stress, resilience, sense of social support, and

ITL their current jobs, organizations, and the nursing profession with similar NLN cohorts.

Results

The Consort Flow Diagram illustrates the recruitment and attrition of study participants by experimental and control groups (Figure 1). Twenty-two NLNs initially agreed to participate and were randomly assigned to either the experimental group ($n = 11$) or control group ($n = 11$). All participants completed baseline surveys measuring stress (PSS), resiliency (CD-RISC-25), support (SSS), and ITL their job, organization, and/or profession. At the end of week three, one participant from the experimental group voluntarily withdrew ($n = 10$) and one participant from the control group did not complete surveys ($n = 10$). At the end of week six, 10 participants from the experimental group and 11 participants from the control group completed surveys ($N = 21$). Descriptive data were reported as means (M) and standard deviations (SD) (Table 2). Table 3 displays the prior data (variances [σ]) and the Bayes Factor (BF) for each study variable measured. Bayes Factors can be found in Figure 2.

Description of Study Sample

Sixteen of the participants were from California and six participants were from Pennsylvania. All but one of the 21 NLNs ($n=20$; 95.2%) were female and in the 21 to 30-year age range. Most NLNs self-reported their ethnicity as White ($n=16$; 76.2%), with the remaining reporting Hispanic/Latino ($n=4$; 19%) or Asian ($n=1$; 4.8%). Most NLNs were prepared at the BSN level ($n=16$; 76.2%), with the remaining having an ADN ($n=4$; 19%) or MSN ($n=1$; 4.8%). Study participants worked 36 to 40 hours per week in rotating ($n=9$, 42.9%), day ($n=5$; 23.8%), or night ($n=7$; 33.3%) shifts.

Effect of Digital Intervention

A prospective RCT evaluated the impact of a six-week digital intervention on NLNs' levels of perceived stress, resiliency, social support, and ITL their current job, their organization, and the profession.

Perceived sense of stress. In response to RQ 1, the effect of a digital intervention on NLNs' perceived stress indicated moderate evidence that there was no difference between the experimental and control groups at the end of week six. This finding was based on a BF of 2.125 at the end of week three and a BF of 2.366 at the end of week six (Figure 2). The PSS measure of stress demonstrated an internal consistency with a Cronbach's alpha level of .673.

Resilience. In response to RQ 2, the effect of a digital intervention on NLNs' resilience, results demonstrated there was no difference in resilience between the experimental and control groups. This finding was based on based on a BF of 3.703 at the end of week three and BF of 1.187 at the end of week six (Figure 2). Interestingly, resiliency scores increased after week three and then decreased for the experimental group and increased for the control group after week six. The CD-RISC-25 that measured resilience demonstrated an internal consistency with a Cronbach's alpha level of .890.

Sense of social support. In response to RQ 3, the effect of a digital intervention on NLNs' social support, results indicated very strong evidence that the sense of social support in both experimental and control groups was different. This result was based on a BF of .216 at the end of week three and a BF of .011 at the end of week six (Figure 2). The authors **can** be 95% certain that NLNs receiving a digital intervention (medical facts) would result in an improved sense of support in repeats of this study. The SSS that

measured sense of social support demonstrated an internal consistency with a Cronbach's alpha level of .884.

Intention to leave job, organization, and/or nursing profession. The final RQ 4 dealt with the effect of a digital intervention on NLNs' intent to leave their jobs, organizations, and/or profession. Regarding their *jobs*, study results demonstrated there was no difference between the experimental and control groups' ITL their first jobs. This finding was based on a BF of 2.459 at week six (Figure 2). The ITL surveys demonstrated an internal consistency with a Cronbach's alpha level of .602.

Regarding intent to leave their *organizations*, study results indicated no evidence in ITL their organization between the experimental and control groups, based on a BF of 2.597 at week six, (Figure 2).

Finally, regarding NLNs' intent to leave the *nursing profession*, there was no evidence the experimental and control groups' ITL were different or the same. This finding was based on a BF of 1.005 at week six (Figure 2).

Discussion

This study explored if a digital intervention (support message or medical facts) impacted NLN stress, resilience, sense of social support, ITL their job, organization, and/or the profession.

Stress and resilience. The nursing profession depends upon experiential knowledge at every stage of growth (Benner, 2001; Boychuk Duchscher, 2012). Powerful emotions such as overwhelming stress and poor self-esteem are associated with poor performances (Barton, 2009). Perfect performances are improbable in a NLN's first year of hire which increases feelings of stress (a moderating variable impacting resilience). As

noted from this study, NLNs' resiliency scores increased and then decreased in the experimental group but increased for the control group. Resiliency varies due to NLN inexperience in a constantly changing workplace, and thus, there was weak evidence supporting that the groups' resilience scores were the same. Due to the moderate to large effect size, NLN resilience scores within the first year of hire is an area that should be investigated further. The feelings of imperfection and dips in resilience can demotivate a NLN's career persistence which increases ITL. Frequent interprofessional simulations, customized critiques per NLN and repeated opportunities to improve while transitioning into practice can build NLN resiliency, enhance precision, decrease negative responses to stress, and promote patient safety (Lee & Sim, 2019; Rossler & Hardin, 2020). This study represented an advancement in nursing research tailored to better understand nurse workforce readiness.

Social support and intentions to leave. As NLNs leave nursing school and join health care institutions as employees, the likelihood of a preferred communication method used to convey improvement may ensure developing behaviors that align with a caring attitude in order to keep patients safe and abate the nursing shortage. In this study, a digital intervention using medical facts increased this newly licensed nurse cohort's feelings of support. Supporting newly licensed nurses' knowledge acquisition may help develop cognitive skills and decrease role uncertainty. "Factual information" is most likely viewed by newly licensed nurses as supportive due to the familiarity just experienced in school. Additionally, a "fact" is uncomplicated. Each newly licensed nurse is challenged hourly to learn and apply something new; factual knowledge may decrease cognitive dissonance and promote feelings of support.

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In general, a cost-effective, preferred method of socialization (text messaging) for those entering the workforce (Pew Research Center, 2018), may help increase much needed support during the first year of hire, especially as the COVID-19 virus continues to limit in-person contact (Centers for Disease Control, 2020). The positive interventional effects of digital support on ITL one's job are consistent with other behavior research studies (Bowling, 2019; Cutrona & Suhr, 1992; Stephens, 2012).

Limitations

Although this study had limitations, it represented an advancement in nursing research tailored to a targeted group and their characteristics, NLNs' resilience and workforce readiness. In general, the intervention (supportive versus medical facts) may have contributed to the study's outcomes. First, Bayesian analyses were dependent on the quality of the observed data in this study and may impact practical application but not general application to every cohort of NLNs. Second, a larger sample size and repeated studies are needed as these results represent this sample alone. The measures had good internal consistency but still introduced real measurement error into the study. Third, this study's sample reported ethnicity predominately as white and female, it did not represent African Americans. Although only one male was enrolled in this study, this sample is typical of similar NLN cohorts that could potentially receive the intervention. Lastly, recruiting participants from two different facilities and two different coasts could have skewed data due to different on-boarding and training practices. Understanding moderating variables of resilience in a more ethnically diverse sample would assist nurse researchers to create ways to promote NLN resilience over time and decrease ITL across the entire workforce. Newly licensed nurses entering the workforce utilize text messaging

as a primary form of communication (Smith, 2011). This study's findings likely understate the effects of incorporating a series of text messages to motivate NLNs to stay in their current job and obtain much needed training and support.

Implications for Nursing

An interdependent connection exists among nurse educators and acute care nurse preceptors to build NLN resilience. Nursing internship programs are encouraged to socialize NLNs into a team to safely care in order to care for patients which builds resilience (Cox et al., 2016). Prior to entering practice, NLNs are rarely given an opportunity, if at all, to practice with interprofessional teams in time-limited, pressure-induced situations (Rossler & Hardin, 2020). On the contrary, NLNs are evaluated based upon their abilities to work expeditiously and safely in concert with a team immersed in a fast-paced, chaotic environment. Support to assist NLNs' transition to practice are less than ever before due to COVID-19's negative impact as expert nurses (preceptors) being prioritized to care for critically ill patients. Despite such a small sample size, this study revealed NLN stress during the first year of hire is inversely proportional to a lack of support and resilience, thus directly contributing to the overwhelming nursing workforce shortage (Rush et al., 2013). The concentrated effort to include strategies that incorporate interprofessional teams is vital since NLNs struggle adapting to practice settings. The practical application from this study encourages nurse educators to reimagine support strategies to decrease the stress of nurse work-life to create a more resilient workforce (Concilio et al., 2019).

Conclusion

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As healthcare employers must accommodate COVID-19 safety measures, in-person support and funding for orientation programs will continue to be minimized (Health Affairs, 2020). A need exists to support NLNs' preferred method of social support that is also cost-effective, as well as, to work with schools of nursing to prepare NLNs for the complexities of nurse work-life. Using a cost-effective approach like text messaging to connect NLNs to much needed support, has the potential to engage them in their new role, accelerate their development, enhance safe care delivery, and decrease ITL.

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Table 1

Sample of Text Message Script

<u>Experimental Group</u> SSBC Nurturant Support Message	<u>Control Group</u> Medical Facts
<u>Week 1– Emotional Support</u>	<u>Week 1</u>
3/23: Monday: Speak with someone this week that understands or knows you well.	Monday: “DVT usually affects the deep veins of the legs” (MedlinePlus.gov, 2018a).
<u>Week 3 – Esteem Support</u>	<u>Week 3</u>
4/6: Monday: Always do your best so you can be proud that you gave it your best shot.	Monday: “An ostomy is surgery to create an opening (stoma) from an area inside the body to the outside. It treats certain diseases of the digestive or urinary systems. It can be permanent, when an organ must be removed” (MedlinePlus.gov, 2018c).
<u>Week 5 – Network Support</u>	<u>Week 5</u>
4/20: Monday: Connect with others that share your specialty and with other newly licensed nurses: https://nurse.org/orgs.shtml to find your nursing organization.	Monday: “If you have diabetes, your blood glucose, or blood sugar, levels are too high. Over time, this can damage the covering on your nerves or the blood vessels that bring oxygen to your nerves. Damaged nerves may stop sending messages or may send messages slowly or at the wrong times” (MedlinePlus.gov, 2018b).

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Table 2

Descriptive Data for Baseline, Week 3, and Week 6: Means (SD)

Variable	Baseline		Week 3		Week 6	
	experimental	control	experimental	control	experimental	control
PSS	20.3(4.05)	15.1(4.72)	18.5(5.15)	16.2 (4.87)	17.4(3.24)	16.2(2.93)
CD-RISC-25	72.7(10.83)	73.7(8.31)	74.5(10.87)	76.3(11.63)	72.8(11.28)	79.7(8.51)
SSS	42.0(6.75)	53.2(5.38)	43.0(6.83)	51.4(6.64)	41.3(5.87)	53.6(6.86)
ITL1	48.2(31.57)	23.6(30.1)			33(26.27)	23.6(24.20)
ITL 2	13.3(21.6)	20.6(25.7)			18(20.44)	25.5(23.82)
ITL3	11.8(21.83)	5.4(12.14)			5.0(7.07)	.91(3.02)

Note. PSS = Perceived Stress Scale (Score: 0-40); CD-RISC-25 = Connor Davidson Resiliency Scale (Score: 0-100); SSS = Social Support Scale (Score 0-63); ITL1 = Intention to leave current position (Range: 0-100%); ITL2 = Intention to leave organization in (Range: 0-100%); ITL3 = Intention to leave nursing profession in (Range: 0-100%).

Table 3

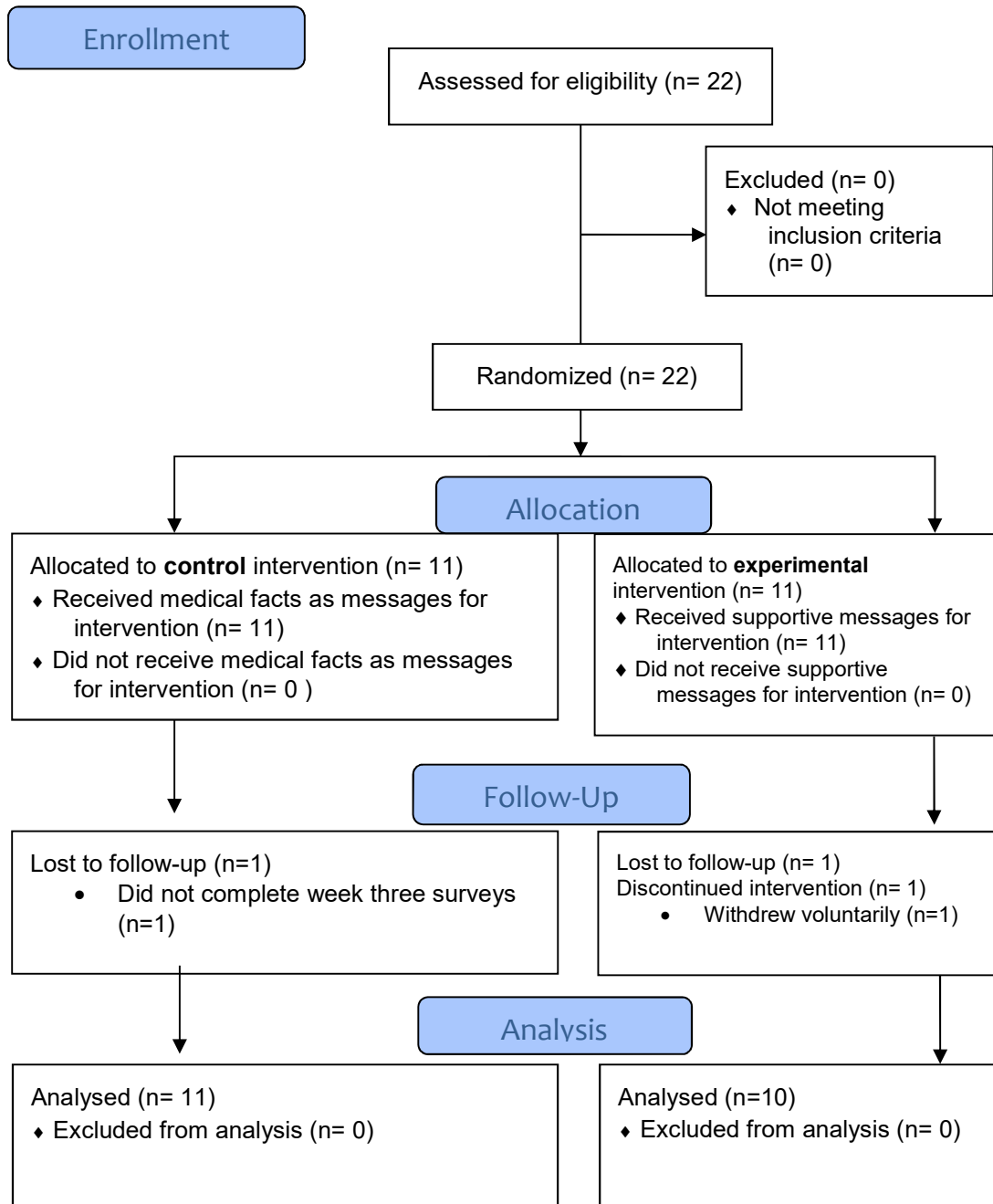
Priors used for Bayes Factor Analysis (Baseline Data)

Variable measured	<i>M</i>	<i>SD</i>	σ	<i>M</i>	<i>SD</i>	σ
	<u>Experimental group</u>			<u>Control group</u>		
PSS	20.27	4.05	16.42	15.09	4.72	22.29
CD-RISC-25	72.27	10.83	117.29	73.72	8.31	69.02
SSS	42.0	6.75	45.56	53.18	5.38	28.94
ITL1	48.18	31.57	996.67	23.64	30.09	905.41
ITL2	26.36	30.42	925.44	10.91	13.75	189.09
ITL3	11.82	21.83	476.37	5.45	12.14	147.28

Note. PSS = Perceived Stress Scale (Score: 0-40); Connor-Davidson Resiliency Scale (Score: 0-100); SSS = Social Support Scale (0-63); ITL1: Intention to leave current position (Range: 0-100%); ITL2: Intention to leave current organization (Range: 0-100%); ITL3: Intention to leave nursing profession (Range: 0-100%).

Figure 1

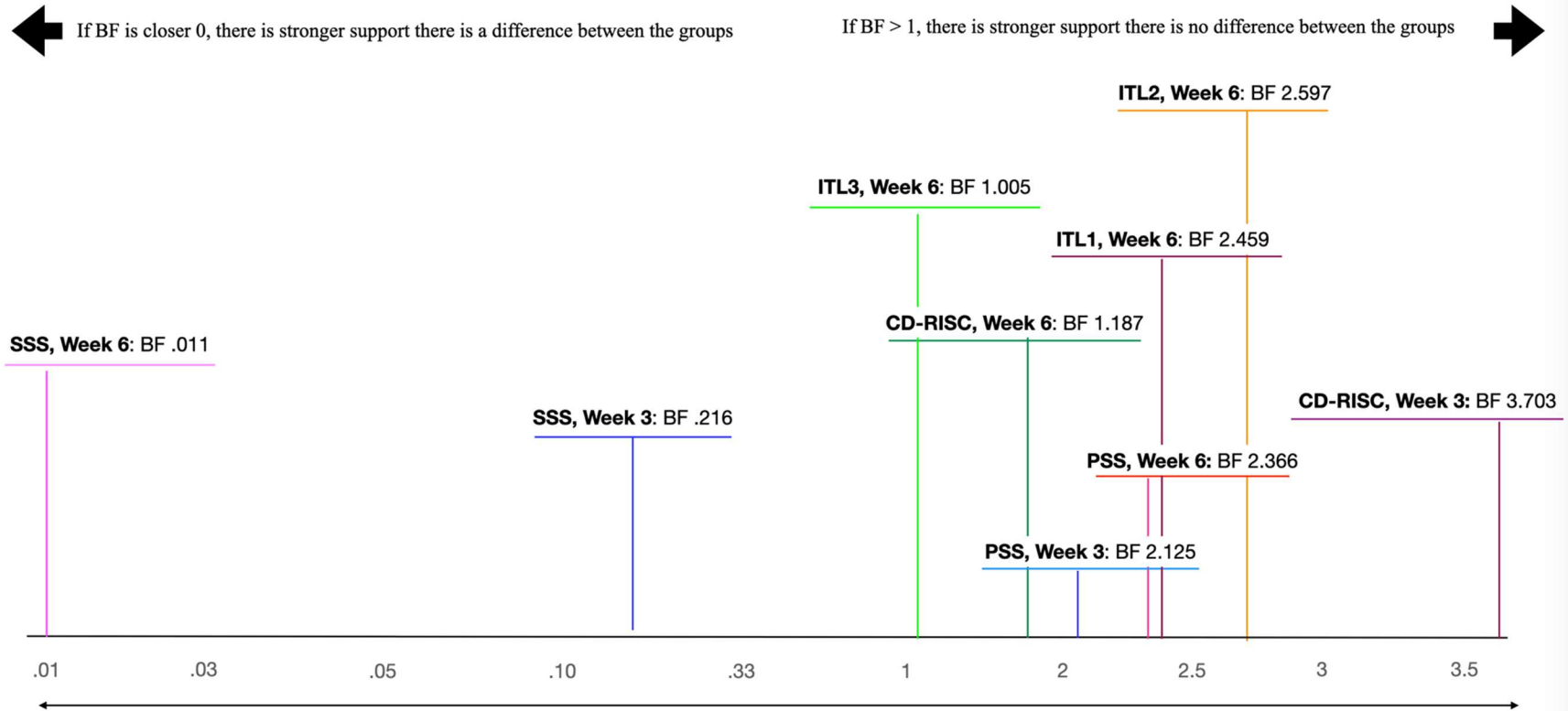
Consort Flow Diagram



DIGITAL INTERVENTION ON NEWLY LICENSED NURSES

Figure 2

Bayes Factors



Note: Bayes Factor (BF) = .01 to .0067: decisive evidence to support there is a difference between the groups; BF .03 to .01: very strong evidence to support there is a difference between the groups; BF .05 to .03: to strong evidence to support there is a difference

between the groups; BF .10 to .05: moderate evidence to support there is a difference between the groups; BF .33 to .10: substantial evidence to support there is a difference between the groups; BF 1 to .33: weak evidence to support there is no difference between the groups; BF 1 to 3: weak evidence to support there is no difference between the groups; BF 3-10: moderate evidence to support there is no difference between the groups (Lee & Wagenmakers, 2013).