

Resilience and Associated Factors in Pediatric Nurses

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A dissertation

submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

University of Washington

2021

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Program Authorized to Offer Degree:

Nursing

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Abstract

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The purpose of this dissertation was to explore pediatric nurse resilience and the contextual factors surrounding it, and propose a heuristic framework of pediatric nurse resilience. A convergent mixed-methods approach to secondary analysis was utilized and the resulting findings informed the heuristic framework. The first study explored associations between years of nursing experience, work-related committee involvement, employment status, and resilience. Existing data, which included a demographic questionnaire and the Connor-Davidson Resilience Scale, from 125 pediatric nurses was analyzed with multiple linear regression. In the second study, a focused content analysis of participant interview transcripts was conducted to generate themes, which were merged with quantitative findings to explore the contextual factors surrounding pediatric nurses with varying levels of resilience. Findings from the first study suggested that years of nursing experience, work-related committee involvement, and employment status is not significantly associated with resilience in pediatric nurses. The data did, however, demonstrate that variance in resilience increased with years of nursing experience, suggesting that nursing experience may help or hinder resilience. Five themes emerged from the

focused content analysis to describe contextual factors that support or constrain nurse resilience. Three themes supportive of resilience were: 1) Sharing the Burden, 2) Support from Administration, 3) Taking a Break. Two themes were described as making resilience more difficult: 1) "Can't be a good nurse," and 2) "Feeling like a number." A joint table that combined qualitative themes with quantitative results did not reveal any patterns, suggesting that nurses can demonstrate resilience despite the absence or presence of social support from coworkers or administrators, use of breaks as a coping mechanism, barriers to care, or feeling underappreciated. The heuristic framework, developed from study findings and extant research, presents resilience as a person-centered network of protective factors both in the environment and the individual. Within this network, protective factors may interact with and across environmental and individual levels to synergize and produce more resilience or decrease the influence of another factor on resilience. The findings and framework suggest that resilience is highly complex and individualized. Future research should utilize longitudinal and mixed-methods approaches to explore the intricacies of the relationship between protective factors and resilience in pediatric nurses.

Acknowledgements

I offer my heartfelt gratitude to my committee members. Dr. Mayumi Willgerodt, thank you for being a constant source of support through this project, simultaneously encouraging me when the work seemed insurmountable and challenging me to think differently and dig deeper. Dr. Elaine Walsh, thank you for your continued mentorship and reminding me to show myself grace. Dr. Debra Ridling, thank you for bringing your much-needed expertise and levity that made meetings truly enjoyable. Lastly, to Dr. Kevin King, thank you for your attentiveness and dedication to this project. I truly appreciate each one of you and will never forget this gift you have given me by serving on my committee.

I would also like to thank the Robert Wood Johnson Foundation and the Hester McLaws Scholarships for supporting me to pursue my degree and research without concessions due to financial constraints. Your support demonstrates your commitment to nurses and the advancement of nursing science. Thank you for investing in nursing and the development of nurse scholars.

Lastly, I would like to thank my family for their support and encouragement over the last three years. To my children, Harvey and Wesley, when I was stressed or discouraged, you reminded me that small things can bring great joy. To my parents, I will never forget or take for granted your sacrifices to support our family through this time. To my wife, Rosanne, words cannot express what you mean to me or the incredible strength and love you have displayed over the last three years. I love you.

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Chapter I

Introduction

The challenges facing nurses can no longer be ignored or given tacit acknowledgement. Surveys conducted by the American Nurses Association (ANA) have consistently found stress and the effects of stress to be nurses' top concerns (American Nurses Association, 2011). In addition to the adversity nurses already face, the COVID-19 pandemic threatens to further constrain the nursing workforce. In a recent poll, 29% of healthcare workers were considering leaving healthcare as a result of pandemic stressors (Guskin, 2021). Furthermore, 55% of healthcare-worker respondents described feeling burned out at work, a condition that occurs as a result of repeated failure to recover from job stress (Guskin, 2021). Supporting resilience is often proposed as a means to combat burnout and stress among workers.

Resilience is generally defined as the protective factors in the individual and their environment that produce better than expected results in the face of adversity. However, the factors utilized for resilience are culturally and contextually sensitive (Ungar, 2008). Scholars have emphasized the importance of context by describing the three “deadly sins” of resilience research, which include (a) being conceptually loose concerning how we describe resilience in settings that are not our own, (b) failing to actively seek evidence in a broad range of contexts and applying findings outside of that context, and (c) utilizing poor methodology when we measure resilience in places where cultural goals and resources are not familiar to us (Southwick et al., 2014). Despite the recognition that the resources and context are different from other subspecialties, nursing resilience research has largely focused only on nurses caring for adult patients (Zander et al., 2010). Without further exploration of pediatric nurse resilience, healthcare employers and policymakers will have to rely on findings in nurses outside the

specialty to inform their actions to support pediatric nurse resilience, which may have limited applicability to the adversity pediatric nurses face.

The purpose of this dissertation was to explore the full network of protective factors among pediatric nurses. The aims were to (a) explore environmental and individual factors and their associations with resilience among pediatric nurses; (b) explore contextual factors surrounding pediatric nurses with varying levels of resilience, including their social support, work environment, and coping mechanisms; and (c) develop a framework of nurse resilience based on findings from the first two aims and extant literature. A convergent mixed-methods secondary analysis consisting of a quantitative and qualitative strand was conducted to satisfy the first two aims. The first aim was addressed by conducting quantitative analyses of previously gathered survey data at a large pediatric healthcare organization. The second aim was addressed by merging quantitative results with themes generated by a qualitative analysis of interview transcripts with a subset of nurses in the survey sample. Combining results from the quantitative and qualitative strands allowed for a deeper exploration of individual and environmental factors that may contribute to or hinder pediatric nurse resilience and informed the development of a heuristic framework of nurse resilience (Aim 3).

The following papers detail the methods, findings, and resulting heuristic framework of the researcher's exploration of pediatric nursing resilience. The first paper explores the associations between years of nursing experience, work-related committee involvement, employment status, and resilience. The second paper explores the contextual factors surrounding pediatric nurses with varying levels of resilience, including aspects of social support, the work environment, and coping mechanisms. Lastly, the third paper reviews resilience theories with recent evidence in nursing resilience to generate a framework for nursing resilience research.

These papers represent a first step in understanding resilience in pediatric nurses and how factors within and surrounding the nurse may affect resilience.

References

American Nurses Association. (2011). ANA health and safety survey.

<https://www.nursingworld.org/practice-policy/work-environment/health-safety/health-safety-survey/>

Guskin, E. (2021). KFF and Washington Post Frontline Health Care Workers Survey [White Paper]. Retrieved 4/24/2021, from <https://www.washingtonpost.com/context/washington-post-kff-frontline-health-care-workers-survey-feb-11-march-7-2021/ba15a233-9495-47a9-9cdd-e7fa1578b1ca/>

Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014).

Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *European Journal of Psychotraumatology*, 5.

<http://offcampus.lib.washington.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2015-02818-001&site=ehost-live>

Ungar, M. (2008). Resilience across cultures. *British Journal of Social Work*, 38(2), 218-235.

<https://doi.org/10.1093/bjsw/bcl343>

Zander, M, Hutton, A., & King, L. (2010). Coping and resilience factors in pediatric oncology nurses. *Journal of Pediatric Oncology Nursing*, 27(2), 94-108.

<https://journals.sagepub.com/doi/pdf/10.1177/1043454209350154>

Chapter II

Predictors of Resilience in Pediatric Nurses

Introduction

Pediatric nurses face a multitude of stressors, including increased volume and complexity of patients, moral and ethical distress, and workplace violence (Berry et al., 2013; Burston & Tuckett, 2013; Kotzer et al., 2006; Rees et al., 2018). Resilience describes individuals' abilities to resist, recover, and grow from adversity (Szanton & Gill, 2010). Nurses are at risk for developing burnout when their job stressors exceed their capacity for resilience. Burnout is a psychological syndrome consisting of emotional exhaustion, depersonalization, and decreased personal accomplishment (Leiter, Michael & Maslach, 2003). A recent survey of pediatric nurses found that 29% of nurses had high scores for burnout (Berger et al., 2015). High levels of burnout found in nurses suggest the importance of identifying strategies to protect against burnout—one strategy is to increase nurses' resilience.

The Connor-Davidson Resilience Scale (CD-RISC) is one of the most common tools used to measure resilience. The CD-RISC combines aspects of hardiness, factors found to significantly contribute to positive adjustment following trauma, and protection from the development of psychiatric disorders in the face of adversity (Connor & Davidson, 2003). In general, nurses consistently score lower in CD-RISC resilience compared to the non-nursing general population (Connor & Davidson, 2003; Gillespie et al., 2009; Hernandez et al., 2016; Rushton et al., 2015; Russo et al., 2018). While data specific to pediatric nurses are limited, there is some evidence that pediatric nurses report lower resilience compared to nurses from other specialties (McGarry et al., 2013).

Nurse scientists, nursing faculty, and hospital administrators have long been interested in learning how to bolster resilience to combat the growing stress nurses face and to prevent burnout, which is negatively associated with resilience (Mealer et al., 2012). However, resilience within an individual is subject to the interaction between individual and environmental factors, and few studies have included a sizable representation of pediatric nurses to examine this interaction (Tusaie & Dyer, 2004). The lower CD-RISC scores reported in the literature among pediatric nurses indicate there may be some factor unique to pediatric nurses that influences their resilience. Therefore, the purpose of this study was to explore associations between individual (years of nursing experience) and environmental (work-related committee involvement and employment status) factors and resilience scores among pediatric nurses using an existing dataset. Examining these associations will lay the foundation for future research aimed at understanding individual and environmental influences on resilience and the development of strategies to support pediatric nurses' resilience.

Background

One must explore both the individual and their environment to adequately examine resilience. Early research in the science of resilience focused on individuals' characteristics that were associated with positive outcomes in those exposed to adversity, which scholars described as protective factors (Richardson, 2002). The protective factors and coping mechanisms utilized and the outcome that constitutes resilience for an individual will vary based on the nature of the adversity (Southwick et al., 2016). Protective factors in the individual and their environment are thought to assist an individual to overcome adversity with less discomfort, recover more quickly, or grow from the adversity (Richardson, 2002). Protective factors can be attributed to the individual or their environment.

Individual Protective Factors. Numerous individual characteristics are associated with resilience in response to adversity, including optimism, intelligence, creativity, humor, a belief system that provides meaning, active coping strategies, social skills, memory, and perceived social support (Barbarin et al., 2001; Cann & Collette, 2014; Chang & Sanna, 2001; Cheetham-Blake et al., 2019; Davis, 2001; Horn & Feder, 2018; McKnight & Loper, 2002; Myers, 2000; Simonton, 2000; White et al., 1989). Similarly, studies with nurses have found a positive association between job satisfaction, coping skills, social support, extraversion, a lower level of neuroticism, self-efficacy, and resilience, suggesting these factors protect against the adversity nurses face (Brown et al., 2018; Ding et al., 2015; Gillespie et al., 2007; Hsieh et al., 2017; Russo et al., 2018). An individual can passively or actively use these protective factors to counteract the risk factors they face.

Among individual protective factors, nursing experience has received the greatest attention from scholars. As nurses encounter and cope with stressors, their experiences can be instructional and make future coping easier and stressors less disruptive (Richardson, 2002). A 2019 review of personal and work-related factors associated with nurse resilience found mixed results regarding an association between resilience and nursing experience (Yu et al., 2019). Four studies supported a significantly positive or negative association, and seven studies did not. Of the six studies that used the CD-RISC, one supported a positive association between years of experience and resilience (Gillespie et al., 2009), two supported a negative association (Mealer et al., 2017, 2012), and three did not suggest an association (Brown et al., 2018; Gillespie et al., 2007; Rushton et al., 2015). Notably, none of these studies contained a substantial sample of pediatric nurses. Pediatric nurses were most heavily represented—4% of the overall sample—in a study of resilience and development of posttraumatic stress disorder (PTSD) in intensive-care-

unit (ICU) nurses, wherein increased years of practice was positively associated with scores on a leadership subscale developed from the CD-RISC ($r = 0.09$, $p = 0.02$; Mealer et al., 2017).

Environmental Protective Factors. Involvement in organizational structures, such as work-related committees, may represent an environmental protective factor that provides nurses opportunities to garner support from other nurses, solve problems, and enact change. Shared governance committees are a type of work-related committee utilized in hospitals to empower nurses to practice the highest quality care, and partner with other healthcare professionals to improve patient outcomes. The potential nursing empowerment and shared decision-making that occurs in these shared-governance committees may increase nurse agency to engage in problem-solving—a form of active coping—thus increasing resilience. There is reason to believe that shared-governance committees may support resilience in nurses through support of self-efficacy. One of the most effective methods of creating a sense of efficacy is through experience of mastery, when individuals succeed at influencing events that affect their lives. Shared-governance committees give nurses support and a forum to advocate for needed changes to their practice and work environment, providing opportunities for experience of mastery. One study found that self-efficacy accounted for 60% of the variance in their model of resilience among a sample of 1,430 nurses (Gillespie et al., 2007). These results suggest further research is needed to determine whether work-related committees, such as shared governance, support nurses' resilience.

Employment status—working full or part time—appears to be an important consideration in resilience research. Time away from work is often cited as beneficial to reduce stress in individuals and may increase resilience as well (Westman et al., 2001). Time away provides the individual with opportunities for recovery from job stress by means of detachment from work,

relaxation, and social activities (Demerouti, 2015). The time a nurse needs away from work to recover from adversity varies from person to person; thus, nurses may benefit from flexibility in their required hours of work per week. Most hospitals offer some level of flexibility in employment status for nurses. Aside from full-time, which is typically 72–80 hours of work per 2-week period, nurses may work a fraction of a full-time position, such as 60 hours per 2-week period, or per diem, picking up shifts as needed. However, no studies were found that analyzed part-time employment status as a predictor of resilience. The ability to work part-time may serve as an environmental protective factor by providing more time for self-care while also reducing exposure to occupational stress.

Protective factors are not equally effective against all forms of adversity. For example, scholars have often focused on social support in relation to resilience and general well-being. Although social support may be one of the most commonly described protective factors, it does not always alleviate stress associated with adversity and may worsen distress (Rafaeli & Gleason, 2009). Scholars hypothesize that social support and any given protective factor may be more or less well suited to the risk an individual faces (Taylor, 2011). The lack of research in pediatric nurses' resilience makes it challenging to identify which protective factors could best shield this population's resilience against the risks they face.

Theoretical Framework

The conceptual framework guiding this study was developed from the society-to-cells framework, the resilience process, and the dynamic network approach to resilience, as seen in Figure 1 (Kalisch et al., 2019; Richardson, 2002; Szanton & Gill, 2010). The society-to-cells framework emphasizes an ecological perspective on resilience by considering how interactions between factors within the individual and their environment transact to create periods of

resilience or vulnerability (Szanton & Gill, 2010). Richardson (2002) described the process by which an individual utilizes protective factors and accomplishes resilience as a process of a stressor disrupting individual homeostasis followed by actions taken to restore homeostasis or acclimate to a new normal. Lastly, Kalisch et al. (2019) add to our understanding of how individual and environmental protective factors interact by proposing that these factors function as a dynamic network wherein protective factors can create synergistic effects and prevent adverse effects of stress from compounding. Therefore, resilience in nurses is conceptualized as a network of protective factors that an individual accesses, consciously or unconsciously, to diminish the effects of stressors or increase the individual's ability to endure stressors. Arrows in the figure denote that individual and environmental factors around the nurse interact with each other, creating periods of particular resilience and vulnerability across domains.

Proposed environmental factors include work-related committee involvement and employment status. Work-related committee involvement potentially supports resilience through opportunities for social support and problem-solving. Likewise, employment status is an environmental protective factor where part-time employment status is theorized to support resilience by allowing increased opportunity for utilization of social support and respite from stressors (Demerouti, 2015). Years of nursing experience is conceptualized as an individual protective factor that supports resilience by (a) bolstering self-efficacy with previous experiences of accomplishment and (b) improving one's coping ability by applying previously successful coping strategies (Bandura et al., 1999; Richardson, 2002).

Purpose

The purpose of this study was to explore environmental and individual factors and their association with resilience among pediatric nurses. This study was conducted as part of a larger mixed-methods study of pediatric nurse burnout and resilience.

Methods

This study is a secondary analysis of data from "Exploring Clinical Nurses' Perceptions of Resilience." The purpose of the "Exploring Clinical Nurses' Perceptions of Resilience" study was to (a) determine factors that influence resilience and burnout among clinical nurses and (b) ascertain what clinical nurses perceive as supportive behaviors from peers and leaders at a large pediatric medical center. The current study offers a deeper examination of select environmental—involvement in work-related committees and employment status—and individual—years of experience—factors associated with pediatric nurses. This study utilized select survey items from data collected between October 2017 and July 2018. The parent study received Institutional Review Board (IRB) approval from the study facility's IRB. The current study was deemed exempt by the University of Washington's IRB.

Subjects and Setting

Participants in this study were recruited from a quaternary care, Magnet-accredited, pediatric hospital that serves as a major referral center for the Pacific Northwest in the United States. Over 2,000 nurses in 15 nursing units and 30 clinics were invited to participate through email invitation and announcements during staff and shared governance meetings. Subjects were eligible to participate if they provided direct care to patients in an outpatient or inpatient setting in the clinical nurse role. Individuals from all genders and racial and ethnic groups were eligible to participate.

Data Collection

Participants completed a consent form, demographic questionnaire, and the CD-RISC-25 survey online via the Institute of Translational Health Sciences' (ITHS) REDCap. Because the facility endorsed and conducted the parent study, participants were permitted to complete the survey at their worksite or at another location convenient for them.

Measures

Demographic Questionnaire. Demographics were collected using a questionnaire developed by the parent study's principal investigator. Responses to questions of nursing experience, work-related committee involvement, and age were used for this study (see Appendix A). Table 1 displays the example items and rationales for each variable. Variables were selected because nurse age and years of experience are individual protective factors associated with nurse resilience (Mealer et al., 2017, 2012). Work-related committee involvement and employment status were the variables chosen to represent nurses' utilization of environmental protective factors for their resilience.

In the current study, years of experience was measured by creating three categorical variables: < 2 years, 3–10 years, and > 10 years. These categories were created based on Benner's (1984) novice-to-expert theory that indicates differential skill attainment and understanding in nursing through accumulation of experience. Nurses with less than 2 years of experience are believed to experience some situations in nursing for the first time. Nurses with 3 to 10 years of experience are more competent and proficient in their jobs, able to recognize patterns in clinical situations, and view situations as a whole, which in turn, supports more efficient problem-solving and the finding of meaning in difficult times, which may impact their own perceptions of resilience. Nurses with greater than 10 years of experience practice nursing

intuitively, are able to prioritize their work and stressors, and respond out of their wealth of knowledge and experiences, which may further limit the impact of factors that place resilience at risk (Benner, 1984). Creating these categories provided a relatively even split of the sample.

Employment status was measured in the current study by asking how many hours per 2-week pay period the nurses worked (per diem, 32 hours, 48 hours, 60 hours, 72 hours, or 80 hours). Responses were merged to create two categories: part-time (less than 72 hours per pay period) and full-time (greater than 72 hours per pay period).

Participation in work-related committees was measured by merging responses to all work-related activities respondents indicated in the questionnaire. Activities included shared governance councils, a unit-based staffing committee, and "other," where nurses could indicate other activities, as they wished. Appendix A offers the full demographic questionnaire and measures created for this study.

CD-RISC-25. Resilience was measured using the self-report CD-RISC (Connor & Davidson, 2003). The CD-RISC is a 25-item questionnaire wherein participants respond on a 0–4 scale, with 0 meaning "not true at all" and 4 meaning "true nearly all the time." The CD-RISC produces a score between 0 and 100, with higher scores indicating more resilience. Scores are further grouped into low (scores $\leq 25\%$), moderate ($25\% < \text{scores} \leq 50\%$), high ($50\% < \text{scores} \leq 75\%$), and higher (scores $> 75\%$) resilience (Connor & Davidson, 2003). The CD-RISC was originally validated for use in the general population and found to have excellent reliability (Cronbach $\alpha = 0.89$; Connor & Davidson, 2003). Initial factor analysis revealed a five-factors scheme. However, because factors varied across cultures, the developers recommend avoiding subscale scoring (Davidson & Connor, 2017).

The CD-RISC's validity has been documented among the general population, primary care outpatients, and participants in studies of generalized anxiety disorder and PTSD with positive correlations with the Kobasa Hardiness Scale ($r = 0.83$, $p < 0.001$) and Sheehan Social Support Scale ($r = 0.36$, $p < 0.0001$) and negative correlations with the Perceived Stress Scale ($r = -0.76$) and Sheehan Stress Vulnerability Scale ($r = -0.32$, $p < 0.0001$; Connor & Davidson, 2003). The CD-RISC has been further examined in studies of pediatric healthcare professionals (McGarry et al., 2013), operating room (OR) nurses (Gillespie et al., 2009), and U.S. critical-care nurses (Mealer et al., 2016).

Data Analysis

Data were cleaned and examined for outliers. Missing data were handled using listwise deletion. Subjects missing any responses for employment status (hours/pay period), work-related activities, years of experience, or CD-RISC items were removed from analysis.

Descriptive statistics were calculated for all demographic variables and the CD-RISC score. Scatter plots and modified box plots of resilience by years of experience, work-related committee involvement, and employment status were generated to examine distribution and linearity of sample across variables. Multiple linear regression analyses were conducted to assess the outcome of resilience score (CD-RISC) as predicted by years of experience, work-related committee involvement, and employment status. First, dummy variables were created for the predictor variables of years of experience and employment status based on the levels described previously and work-related committee involvement was used as a binary variable. Analyses were conducted using R (R Core Team, 2020), supplemented with data manipulation and summaries created using the dplyr package (Wickham et al., 2020) and graphing using the ggplot2 package (Wickham, 2016). Appendix B presents the R code used in the analysis.

Results

Characteristics of Sample

A total of 127 nurses participated in the study. Fifteen respondents had missing data and were eliminated from analysis, leaving a sample of 112 for this study. Most respondents were in the younger age categories, with 66.9% of respondents aged 20–39 years. Respondents were evenly distributed across categories of years of nursing experience, work-related committee involvement, and employment status. CD-RISC scores in the overall sample ranged from 41–100, with a mean score of 74.62 (sd=10.91). See Table 2 for sample characteristics.

Resilience and Associations

Average total CD-RISC scores across work-related committee involvement and employment status categories differed only slightly. See Table 2 for mean CD-RISC-25 scores by presence of explanatory variable. Notably, the range of total CD-RISC scores was wider in categories of more years of experience, as seen in Figure 2.

Regression models were created to determine the relative contribution of study variables to a model of mean resilience. A multivariable linear regression using years of experience, work-related committee involvement, and employment status explained 3.3% of the variance in CD-RISC total score (adjusted $R^2 = -0.033$, $p = 0.98$). Table 3 lists the Beta coefficient, standard error, t -statistic, and associated P -value for each explanatory variable. Years of experience, work-related committee involvement, and employment status did not significantly explain resilience in pediatric nurses.

The likelihood of having a missing CD-RISC response was significantly different across categories of age ($p = 0.02$), years as a nurse ($p = 0.006$), and years in the facility ($p = 0.0001$). For age categories, the odds of having a missing CD-RISC response were higher for subjects

aged 50 to 59 ($OR = 6.96$, $CI: 1.34, 52.67$) when compared to other age categories. Having greater than 20 years of nursing experience or being in the categories with 21–30 years or more than 30 years of experience was also associated with higher odds of a missing CD-RISC response ($OR = 7.5$, $CI: 2.12, 26.52$). Likewise, having 21–30 years working in the facility associated with higher odds of a missing CD-RISC response ($OR = 18.69$, $CI: 4.56, 76.66$) compared to other levels of tenure at the facility.

Discussion

We aimed to examine the resilience of pediatric nurses in this study by exploring environmental and individual factors and their relationship to resilience in pediatric nurses. Specifically, we examined associations between years of nursing experience, work-related committee involvement, employment status, and CD-RISC scores. Findings indicate a lack of significant association between years of experience as a nurse, work-related committee involvement, or employment status with resilience.

The mean resilience scores of pediatric nurses in this study were slightly lower than the general population reference score obtained in the CD-RISC's initial validation (Connor & Davidson, 2003), suggesting that pediatric nurses may experience less resilience. Although the mean scores found in this study are lower than the general population, they are similar to nurses in other subspecialties; the mean resilience scores in this sample were 74.6, while OR and ICU nurses caring for adults on average report a resilience score of 75.9 and 74.3, respectively (Gillespie et al., 2007; Rushton et al., 2015). These findings warrant further examination to better understand what factors contribute to these differences.

The finding that pediatric nurses have similar resilience scores to nurses in other specialties, lower than the non-nursing general population, suggests that the lower resilience

scores may not be related to the nursing subspecialty, but rather to something more universal in nurses' experiences. Several potential explanations for these findings exist. There may be individual characteristics shared by those who choose to go into the nursing profession that are associated with susceptibility to lower resilience. However, it is more likely that the difference in scores is a result of an environmental factor, such as repetitive exposure to distressing situations. Alternately, adversity common to nursing work may cause stress that is difficult to recover from, creating lower resilience over time. All this suggests that further study is needed to explore nurses' environments to determine if characteristics or a lack of resources in the environment are causing nurses to report lower resilience than the non-nursing general population.

The lack of association between work-related committee involvement and resilience is consistent with findings from Brown et al. (2018) who examined associations of employment and resilience at a Magnet hospital, a hospital likely to utilize shared governance nursing committees. There are several possible explanations for this finding. Committee involvement and associated work may represent an additional burden to nurses, causing greater stress. Alternately, because shared governance involves both administration and staff nurses in decision-making, it may be that either administrators' different leadership styles or committee effectiveness may make changes slower or harder to realize, resulting in frustration instead of relieving stress by way of group problem-solving. There is some evidence that leaders who demonstrate a transformational leadership style—which takes an active role in problem-solving and focuses on the common good—increase subordinate resilience compared with those leaders who use transactional and laissez-faire leadership styles, which focus on rewarding behaviors and avoiding problems when possible (Harland et al., 2005). Further research is needed to explore whether a relationship exists between leadership style and work-related committees or committee

productivity that would moderate a protective effect from committee involvement on nurse resilience. This study provides a beginning foundation to explore the extent to which committee involvement within the hospital influences perceptions of resilience by providing an organized structure within and outside the nurse's unit that serves as a supportive environment.

The finding that results do not demonstrate an association between resilience and employment status is not surprising. This study is among the first to examine employment status as a predictor of resilience. Working part-time provides nurses more time where they are not at work, which allows them to recover from job stress. However, we only surveyed the participants regarding their employment status at the study facility, and a recent survey by AMN Healthcare (2019) found that approximately one in five nurses hold a second job. A second job may negate any potential gains in recovery time from working part-time. Another potential explanation for the lack of association is that working part-time may reduce job-stress exposure but not affect resilience. However, we did not measure job stress in this study. Further research is needed to evaluate whether a relationship exists between the degree of exposure measured in hours worked and job stress.

Scholars have previously explored associations between resilience and years of experience and came to varying conclusions. The lack of association between years of experience and resilience in this study aligns with the results of other studies (Brown et al., 2018; Gillespie et al., 2007; Pannell et al., 2017; Ren et al., 2018; Rushton et al., 2015). Pannell et al. (2017) reported no significant difference between nurses with more than 5 years of experience compared to those with less than 5 years in their study examining stress resiliency of neonatal intensive care unit (NICU) nurses in the United States. Conversely, other studies found an association between years of experience and resilience (Gillespie et al., 2009; Kutluturkan et al.,

2016; Mealer et al., 2017, 2012; Zheng et al., 2017). The inconsistency of findings across studies could be a consequence of sample size. Those studies that reported an association between experience and resilience using the CD-RISC had large sample sizes (greater than 700–1,000), which may have provided sufficient power to find the effect of experience on resilience (Gillespie et al., 2009; Mealer et al., 2017, 2012).

While not the study's primary focus, the finding that the range of resilience scores increases over years of experience is worth noting. Other scholars have suggested that experience bolsters resilience by reducing stress and supporting coping, a core practice involved in resilience (Gillespie et al., 2009; Moore et al., 1996; Xianyu & Lambert, 2006). However, the findings presented in this study suggest experience can play either a positive or negative role in one's resilience and that years of experience influence one's perceptions of their capacity for resilience. This finding provides a unique contribution to this body of work, and future research should explore the various ways experience may influence resilience.

Environmental factors that were explored in this study were not significantly associated with resilience in pediatric nurses. We hypothesized that the variable of work-related committee involvement, representing nurses' utilization of organizational structures as an environmental resource, would support resilience. We did not find any significant association between committee involvement and resilience. However, the lack of a finding may be due to limitations in our study design. Further research should explore whether committee productivity or nursing managers' leadership styles moderate the relationship between committee involvement and resilience.

The lack of an association between employment status and resilience suggests the amount of time spent at work does not protect against adversity. It was hypothesized that part-time

employment status would represent the nurse's utilization of scheduling flexibility, an environmental resource, to provide themselves more time to recover from adversity and decrease job stress. But a lack of financial environmental resources outside of work may prohibit some nurses from utilizing scheduling flexibility. Alternately, working more (i.e., full-time employment status) may represent a nurse's action to be resilient to adversities outside of work. Future studies should consider stressors both within and outside the work environment. Additionally, future research should capture all nursing hours worked, including any outside the study facility to more fully explore a relationship between schedule flexibility and resilience.

In this study we explored years of nursing experience as an individual factor that contributes to nursing resilience. We did not find evidence to support nursing experience as an individual protective factor. However, the increased variability of CD-RISC score as nursing experience increased suggests nurses' perceptions of the outcome of adversity may be more consequential to resilience than the experience alone. Nurses who successfully overcome adversity may report higher levels of resilience. Alternately, nurses who are unable to recover from adversity may report lower levels of resilience. Further studies should explore how nurses' resilience in response to adversity changes over time to test this hypothesis.

Study findings inform the further development of a framework of resilience in pediatric nurses. This study's framework describes resilience in pediatric nurses as the sum capacity to endure stress afforded from the individual and environmental protective factors surrounding a nurse and the interactions between these factors.

Limitations

This study has several limitations worth noting. First, the smaller sample size likely lacked the power to find small effect sizes in the variables measured. Future research with larger

samples of pediatric nurses is necessary to confirm the lack of association. Second, we collected the surveys in the analyzed sample over a 10-month period to improve recruitment. There is some risk that external and internal conditions to the study setting affecting resilience changed during data collection. Changes over time could potentially confound the study's chosen predictor variables. Future research should use large samples accompanied by detailed surveys evaluating the qualities of the work stressors and work environment to ascertain factors protective of nurses' resilience, when they are most effective, and whether interactions exist between them. Third, we gathered a more extensive range of employment status and committee types in the demographic survey but collapsed them due to the small sample size. A study that examines employment status and work-related committee involvement in more granular detail with a larger sample may be better able to identify the elements that contribute most to individual nurse resilience. Fourth, this study's small convenience sample precludes any generalizability, and further research with larger numbers is required. Fifth, this study is cross-sectional; therefore, results of regression analyses must be interpreted cautiously. Lastly, we did not conduct the primary data collection. Therefore, our conceptualization of variables was limited by what was previously gathered. There are likely other environmental factors related to nurse resilience that we could not explore because they were not available. Nonetheless, this study provides a first look at environmental protective factors that may influence nurse resilience.

Conclusion

In conclusion, findings from this study suggest pediatric nurses' resilience levels are similar to those in nurses caring for adults. While we found no support for an association between years of experience as a nurse, work-related committee involvement, employment status, and resilience, we noted a greater variance of resilience in nurses with more years of

experience, suggesting that exposure to nursing work may be both helpful and harmful to nurse resilience. More quantitative research is needed, with larger samples, as is qualitative research to determine modifiable contributors to pediatric nurses' resilience. Future studies into the psychological well-being of pediatric nurses are needed to explore the potential impacts of workplace stressors and their lower resilience compared to the general population.

References

- Ablett, J. R., & Jones, R. S. P. (2007). Resilience and well-being in palliative care staff: A qualitative study of hospice nurses' experience of work. *Psycho-Oncology*, 16(8), 733–740. <https://doi.org/https://doi.org/10.1002/pon.1130>
- AMN Healthcare. (2019). Survey of registered nurses: A challenging decade ahead. Retrieved 3/5/2021, from <https://www.amnhealthcare.com/uploadedFiles/MainSite/Content/Campaigns/AMN-2019-RN-Survey-Report.pdf>
- Ang, S. Y., Uthaman, T., Ayre, T. C., Lim, S. H., & Lopez, V. (2019, Mar). Differing pathways to resiliency: A grounded theory study of enactment of resilience among acute care nurses. *Nursing & Health Sciences*, 21(1), 132–138. <https://doi.org/10.1111/nhs.12573>
- Bandura, A., Freeman, W., & Lightsey, R. (1999). *Self-efficacy: The exercise of control*. Springer.
- Barbarin, O. A., Richter, L., & deWet, T. (2001). Exposure to violence, coping resources, and psychological adjustment of South African children. *American Journal of Orthopsychiatry*, 71(1), 16–25. <https://doi.org/10.1037/0002-9432.71.1.16>
- Benner, P. E. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Addison-Wesley Pub. Co., Nursing Division.
- Berger, J., Polivka, B., Smoot, E. A., & Owens, H. (2015, Nov 1). Compassion fatigue in pediatric nurses. *Journal of Pediatric Nursing*, 30(6), e11–e17. <https://doi.org/https://doi.org/10.1016/j.pedn.2015.02.005>

- Berry, J. G., Hall, M., Hall, D. E., Kuo, D. Z., Cohen, E., Agrawal, R., Mandl, K. D., Clifton, H., & Neff, J. (2013). Inpatient growth and resource use in 28 children's hospitals: A longitudinal, multi-institutional study. *JAMA Pediatrics*, 167(2), 170–177.
<https://doi.org/10.1001/jamapediatrics.2013.432>
- Brown, R., Wey, H., & Foland, K. (2018). The relationship among change fatigue, resilience, and job satisfaction of hospital staff nurses. *Journal of Nursing Scholarship: An official Publication of Sigma Theta Tau International Honor Society of Nursing*, 50(3), 306–313.
<https://doi.org/10.1111/jnu.12373>
- Burston, A. S., & Tuckett, A. G. (2013). Moral distress in nursing: Contributing factors, outcomes and interventions. *Nursing Ethics*, 20(3), 312–324.
<https://doi.org/10.1177/0969733012462049>
- Cann, A., & Collette, C. (2014, August 13). Sense of humor, stable affect, and psychological well-being. *Europe's Journal of Psychology*, 10(3), 464–479.
<https://doi.org/10.5964/ejop.v10i3.746>
- Chang, E. C., & Sanna, L. J. (2001). Optimism, pessimism, and positive and negative affectivity in middle-aged adults: A test of a cognitive-affective model of psychological adjustment. *Psychology and Aging*, 16(3), 524–531. <https://doi.org/10.1037/0882-7974.16.3.524>
- Cheetham-Blake, T. J., Turner-Cobb, J. M., Family, H. E., & Turner, J. E. (2019, May). Resilience characteristics and prior life stress determine anticipatory response to acute social stress in children aged 7-11 years. *British Journal of Health Psychology*, 24(2), 282–297. <https://doi.org/10.1111/bjhp.12353>

- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience scale (CD-RISC) [Article]. *Depression and Anxiety, 18*(2), 76–82. <https://doi.org/10.1002/da.10113>
- Davidson, J. R. T., & Connor, K. M. (2017). *Connor-Davidson Resilience Scale (CD-RISC) Manual*. www.cd-risc.com
- Davis, J. T. (2001, Sept 1). Gone but not forgotten: Declarative and nondeclarative memory processes and their contributions to resilience. *Bulletin of the Menninger Clinic, 65*(4), 451–470. <https://doi.org/10.1521/bumc.65.4.451.19842>
- Demerouti, E. (2015). Strategies used by individuals to prevent burnout. *European Journal of Clinical Investigation, 45*(10), 1106–1112. <https://doi.org/https://doi.org/10.1111/eci.12494>
- Ding, Y., Yang, Y., Yang, X., Zhang, T., Qiu, X., He, X., Wang, W., Wang, L., & Sui, H. (2015). The mediating role of coping style in the relationship between psychological capital and burnout among Chinese Nurses. *PloS One, 10*(4), e0122128. <https://doi.org/10.1371/journal.pone.0122128>
- Gillespie, B. M., Chaboyer, W., & Wallis, M. (2009, July 1). The influence of personal characteristics on the resilience of operating room nurses: A predictor study. *International Journal of Nursing Studies, 46*(7), 968–976. <https://doi.org/https://doi.org/10.1016/j.ijnurstu.2007.08.006>
- Gillespie, B. M., Chaboyer, W., Wallis, M., & Grimbeek, P. (2007). Resilience in the operating room: Developing and testing of a resilience model. *Journal of Advanced Nursing, 59*(4), 427–438. <https://doi.org/10.1111/j.1365-2648.2007.04340.x>

- Harland, L., Harrison, W., Jones, J. R., & Reiter-Palmon, R. (2005). Leadership behaviors and subordinate resilience. *Journal of Leadership & Organizational Studies*, 11(2), 2–14.
<https://doi.org/10.1177/107179190501100202>
- Hernandez, S. H. A., Morgan, B. J., & Parshall, M. B. (2016). Resilience, stress, stigma, and barriers to mental healthcare in U.S. Air Force nursing personnel. *Nursing Research*, 65(6), 481–486. <https://doi.org/10.1097/nnr.0000000000000182>
- Horn, S. R., & Feder, A. (2018). Understanding resilience and preventing and treating PTSD. *Harvard Review of Psychiatry*, 26(3), 158–174.
<https://doi.org/10.1097/hrp.0000000000000194>
- Hsieh, H. F., Chang, S. C., & Wang, H. H. (2017). The relationships among personality, social support, and resilience of abused nurses at emergency rooms and psychiatric wards in Taiwan. *Women and Health*, 57(1), 40–51.
<https://doi.org/10.1080/03630242.2016.1150385>
- Kalisch, R., Cramer, A. O. J., Binder, H., Fritz, J., Leertouwer, I., Lunansky, G., Meyer, B., Timmer, J., Veer, I. M., & van Harmelen, A. L. (2019). Deconstructing and reconstructing resilience: A dynamic network approach. *Perspectives on Psychological Science*, 14(5), 765–777. <https://doi.org/10.1177/1745691619855637>
- Kotzer, A. M., Koepping, D. M., & LeDuc, K. (2006, Jul-Aug). Perceived nursing work environment of acute care pediatric nurses. *Pediatric Nursing*, 32(4), 327–332.
- Kutluturkan, S., Sozeri, E., Uysal, N., & Bay, F. (2016). Resilience and burnout status among nurses working in oncology. *Annals of General Psychiatry*, 15, 33.

- Leiter Michael, P., & Maslach, C. (2003). Areas of worklife: A structured approach to organizational predictors of job burnout. In L. P. Pamela & C. G. Daniel (Eds.), *Emotional and physiological processes and positive intervention strategies* (Vol. 3, pp. 91–134). Emerald Group Publishing Limited. [https://doi.org/10.1016/S1479-3555\(03\)03003-8](https://doi.org/10.1016/S1479-3555(03)03003-8)
- McGarry, S., Girdler, S., McDonald, A., Valentine, J., Lee, S. L., Blair, E., Wood, F., & Elliott, C. (2013, Sep). Paediatric health-care professionals: Relationships between psychological distress, resilience and coping skills. *Journal of Paediatrics and Child Health*, 49(9), 725–732. <https://doi.org/10.1111/jpc.12260>
- McKnight, L. R., & Loper, A. B. (2002). The effect of risk and resilience factors on the prediction of delinquency in adolescent girls. *School Psychology International*, 23(2), 186–198. <https://doi.org/10.1177/0143034302023002744>
- Mealer, M., Jones, J., & Meek, P. (2017). Factors affecting resilience and development of posttraumatic stress disorder in critical care nurses. *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, 26(3), 184–192. <https://doi.org/10.4037/ajcc2017798>
- Mealer, M., Jones, J., Newman, J., McFann, K. K., Rothbaum, B., & Moss, M. (2012). The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: Results of a national survey. *International Journal of Nursing Studies*, 49(3), 292–299. <https://doi.org/10.1016/j.ijnurstu.2011.09.015>
- Mealer, M., Schmiede, S. J., & Meek, P. (2016). The Connor-Davidson Resilience Scale in critical care nurses: A psychometric analysis. *Journal of Nursing Measurement*, 24(1), 28–39. <https://doi.org/10.1891/1061-3749.24.1.28>

- Moore, S., Kuhrik, M., Kuhrik, N., & Katz, B. (1996). Coping with downsizing: Stress, self-esteem and social intimacy. *Nursing Management*, 27(3), 28–30.
- Myers, D. G. (2000). The funds, friends, and faith of happy people. *American Psychologist*, 55(1), 56–67. <https://doi.org/10.1037/0003-066X.55.1.56>
- Pannell, L. M., Rowe, L., & Tully, S. (2017). Stress resiliency practices in neonatal nurses. *Advances in Neonatal Care: Official Journal of the National Association of Neonatal Nurses*, 17(4), 274–281. <https://doi.org/10.1097/ANC.0000000000000366>
- R Core Team. (2020). R: A language and environment for statistical computing. In *R foundation for statistical computing*. <https://www.R-project.org>
- Rafaeli, E., & Gleason, M. E. J. (2009). Skilled support within intimate relationships. *Journal of Family Theory & Review*, 1(1), 20–37. <https://doi.org/10.1111/j.1756-2589.2009.00003.x>
- Rees, C., Wirihana, L., Eley, R., Ossieran-Moisson, R., & Hegney, D. (2018). The effects of occupational violence on the well-being and resilience of nurses. *The Journal of Nursing Administration*, 48(9), 452–458. <https://doi.org/10.1097/NNA.0000000000000648>
- Ren, Y., Zhou, Y., Wang, S., Luo, T., Huang, M., & Zeng, Y. (2018, January 10). Exploratory study on resilience and its influencing factors among hospital nurses in Guangzhou, China. *International Journal of Nursing Sciences*, 5(1), 57–62.
<https://doi.org/https://doi.org/10.1016/j.ijnss.2017.11.001>
- Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58(3), 307–321. <https://doi.org/10.1002/jclp.10020>

- Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, 24(5), 412–420.
<https://doi.org/10.4037/ajcc2015291>
- Russo, C., Calo, O., Harrison, G., Mahoney, K., & Zavotsky, K. E. (2018). Resilience and coping after hospital mergers. *Clinical Nurse Specialist*, 32(2), 97–102.
<https://doi.org/10.1097/nur.0000000000000358>
- Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American Psychologist*, 55(1), 151–158. <https://doi.org/10.1037/0003-066X.55.1.151>
- Southwick, S. M., Sippel, L., Krystal, J., Charney, D., Mayes, L., & Pietrzak, R. (2016). Why are some individuals more resilient than others: The role of social support. *World Psychiatry*, 15(1), 77–79. <https://doi.org/10.1002/wps.20282>
- Szanton, S. L., & Gill, J. M. (2010). Facilitating resilience using a society-to-cells framework: A theory of nursing essentials applied to research and practice. *Advances in Nursing Science*, 33(4), 329–343. <https://doi.org/10.1097/ANS.0b013e3181fb2ea2>
- Taylor, S. E. (2011). Social support: A review. In *The Oxford handbook of health psychology* (pp. 189–214). Oxford University Press.
- Tusaie, K., & Dyer, J. (2004, Jan-Feb). Resilience: A historical review of the construct. *Holistic Nursing Practice*, 18(1), 3–8.
- Westman, M., & Etzion, D. (2001). The impact of vacation and job stress on burnout and absenteeism. *Psychology & Health*, 16(5), 595-606.
<https://doi.org/10.1080/08870440108405529>

- White, J. L., Moffitt, T. E., & Silva, P. A. (1989). A prospective replication of the protective effects of IQ in subjects at high risk for juvenile delinquency. *Journal of Consulting and Clinical Psychology*, 57(6), 719–724. <https://doi.org/10.1037/0022-006X.57.6.719>
- Wickham, H. (2016). *ggplot2: Elegant graphics for data analysis*. Springer-Verlag. <https://ggplot2.tidyverse.org>
- Wickham, H., Francois, R., Henry, L., & Muller, K. (2020). *dplyr: A grammar of data manipulation*. <https://CRAN.R-project.org/package=dplyr>
- Xianyu, Y., & Lambert, V. A. (2006). Investigation of the relationships among workplace stressors, ways of coping, and the mental health of Chinese head nurses. *Nursing & Health Sciences*, 8(3), 147–155. <https://doi.org/https://doi.org/10.1111/j.1442-2018.2006.00281.x>
- Yu, F., Raphael, D., Mackay, L., Smith, M., & King, A. (2019). Personal and work-related factors associated with nurse resilience: A systematic review. *International Journal of Nursing Studies*, 93, 129–140. <https://doi.org/10.1016/j.ijnurstu.2019.02.014>
- Zheng, Z., Gangaram, P., Xie, H., Chua, S., Ong, S. B. C., & Koh, S. E. (2017). Job satisfaction and resilience in psychiatric nurses: A study at the Institute of Mental Health, Singapore. *International Journal of Mental Health Nursing*, 26(6), 612–619. <https://doi.org/10.1111/inm.12286>

Table 1*Measurement Table*

Variable	Item (Range)	Rationale
Resilience (CD-RISC-25)	[Instrument items may not be shared due to copyright] 0 = Not at all true 1 = Rarely true 2 = Sometimes true 3 = Often true 4 = True nearly all the time (Score range = 0 – 100)	Instrument with convergent validity demonstrated by resilience being positively correlated with hardiness and social support and negatively correlated with stress and disability (Connor & Davidson, 2003)
Environmental		
Work-related Committee Involvement	“Are you currently involved in any of the following work-related activities? (Please select all that apply)” Items characterized as work-related committees: Coordinating council Nursing ethics Operations Council Professional Development council Quality Research Council Unit-based Staffing Committee Other (free text comments reviewed for inclusion)	Hospital committee involvement is thought to provide an opportunity for nurses to engage in social support and group problem-solving, which have been described as ways that nurses support their resilience (Ablett & Jones, 2007; Ang et al., 2019).
Employment Status	“What is your FTE?” (full-time equivalent) 0.1-0.75 categorized as part-time. 0.9-1.0 categorized as full-time 0.1 (per diem) 0.4 (32 hours/pay period) 0.6 (48 hours/pay period) 0.75 (60 hours/pay period) 0.9 (72 hours/pay period) 1.0 (80 hours/pay period)	A part-time employment status is hypothesized to afford nurses more time for self-care resulting in greater resilience.

Variable	Item (Range)	Rationale
Individual		
Nursing Experience	“How many years have you been a nurse?”	Nursing experience has been significantly associated with nurse resilience and is thought to contribute to reframing that minimizes the impact of stressors and the development of new protective factors (Mealer et al., 2017; Mealer et al., 2012).
	Less than 1 year	
	1-2 years	
	3-5 years	
	6-10 years	
	11-20 years	
	21-30 years	
	More than 30 years	

Table 2*Sample Demographics and Mean Total CD-RISC-25 Scores*

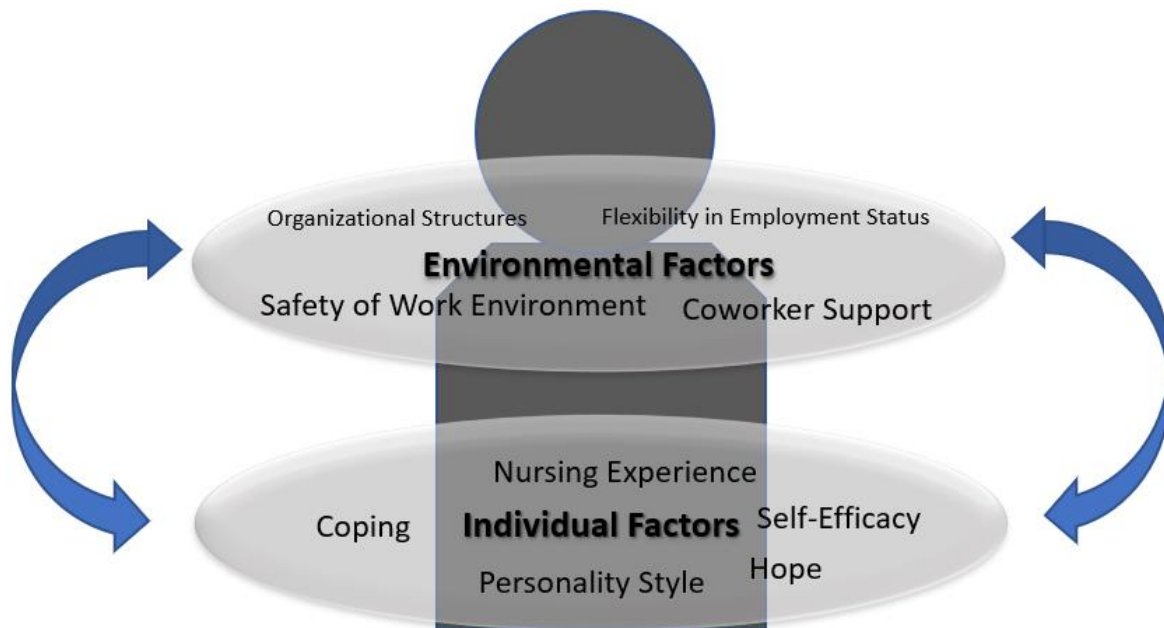
Sample Descriptor	n (%)	Mean CD-RISC-25 (sd)
Age		
20-29 years	38 (34)	
30-39 years	37 (33)	
40-49 years	13 (12)	
50-59 years	14 (13)	
60-69 years	10 (9)	
Years of nursing experience		
Less than 3	24 (21)	75.38(8.60)
3-10	43 (38)	73.98 (10.48)
More than 10	45 (40)	74.84 (12.49)
Work-related Committee Involvement		
Involved	64 (57)	74.92 (9.82)
Not Involved	48 (43)	74.23 (12.30)
Employment Status		
Part-time (Less than 72 hours/2 weeks)	49 (44)	74.47 (11.13)
Full-time	63 (56)	74.75 (10.81)
Years working at study facility		
Less than 1	8 (7)	7.1
1-2	28 (25)	25.0
3-5	25 (22)	22.3
6-10	19 (17)	17.0
11-20	16 (14)	14.3
21-30	5 (5)	4.5
More than 30	11 (10)	9.8

Table 3*Linear Model Values*

Predictor Variable	Standardized β coefficient	95% <i>Confidence</i> <i>interval</i>	<i>t</i> -statistic	<i>P</i> -value
Intercept	74.6	(68.2, 81)	23.2	< 0.001
Part-time employment			Reference	Reference
Full-time employment	0.35	(-4.1, 4.8)	0.16	0.88
< 3 years nursing experience			Reference	Reference
3-10 years nursing experience	-1.33	(-7.0, 4.3)	-0.47	0.64
More than 10 years nursing experience	-0.30	(-6.2, 5.6)	-0.10	0.92
No Committee involvement			Reference	Reference
Committee involvement	0.75	(-3.5, 5.0)	0.35	0.73

Figure 1

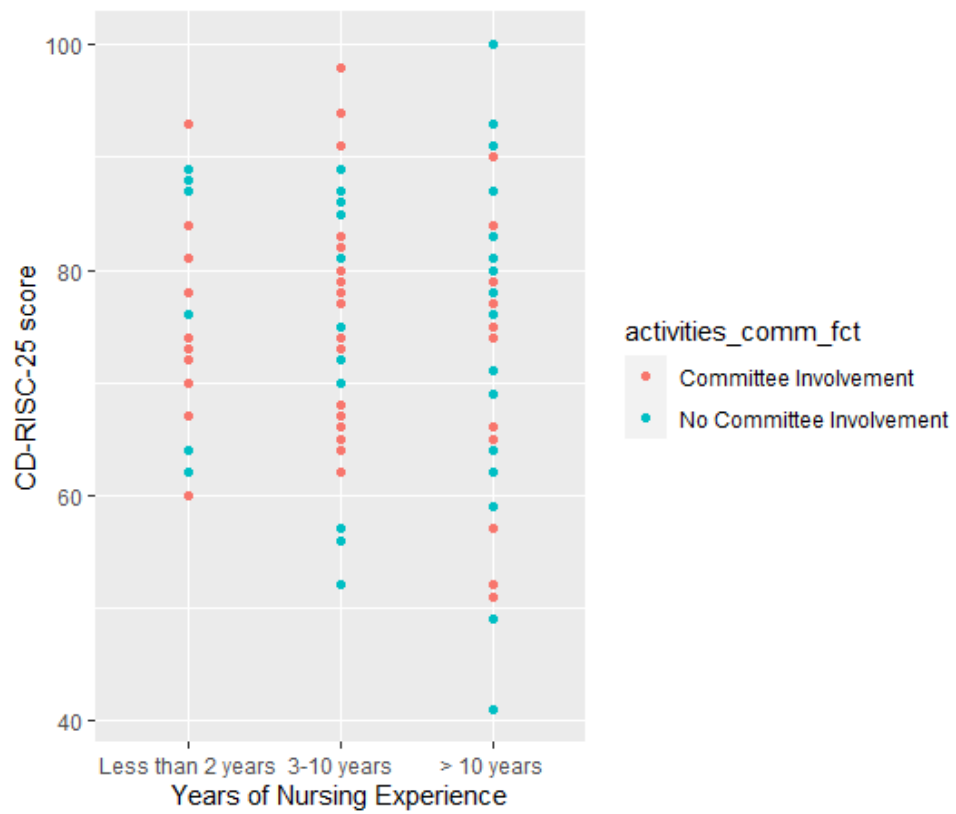
Framework for Nurse Resilience



Note. Adapted from Szanton S.L., & Gill, J.M. (2010).

Figure 2

Plot of CD-RISC-25 Score by Years of Nursing Experience



Chapter III

Paper 2

The Resilience of Pediatric Nurses in Context

Introduction

In the most recent American Nurses Association (ANA) health and safety survey, 74% of nurses listed stress as a top concern (ANA, 2011). The top sources of stress from nursing included high workloads, conflicts with other nurses and physicians, a lack of leadership support, and the emotional burdens of providing care (McVicar, 2003). In addition, many studies around the world are finding nurses subjected to increasing amounts of occupational violence. Recent surveys, which included nurses from Asia, Europe, the Middle East, and Australia, found reported rates of occupational violence ranging from 53%–62.8% (Rees et al., 2018; Spector et al., 2014). These rates are troubling because stress that consistently overwhelms one's ability to adapt and recover may be detrimental to nurses' mental health (Kalisch et al., 2019). Moreover, there is reason to believe this may already be occurring. Results from a survey of U.S. ICU nurses suggested that approximately two in 10 nurses were suffering from symptoms of anxiety and one in 10 were suffering from symptoms of depression (Mealer et al., 2012b).

Resilience is an individual's ability to cope with and recover from stressors and may moderate the effects of stress on symptoms of depression and anxiety in healthcare workers (Havnen et al., 2020). In addition to protecting an individual from stress, multiple studies have found that resilience is positively associated with good mental health (Gloria & Steinhardt, 2016; Hourani et al., 2012; Hu et al., 2015). However, resilience is difficult to conceptualize and predict because factors that contribute to an individual's resilience are culturally and contextually specific (Ungar, 2008). What is protective for one individual may have less or no benefit for the

resilience of another. While there is great interest among healthcare workers, employers, and schools of nursing in supporting nurse resilience, most resilience research has focused on investigating characteristics associated with resilience, ignoring cultural and contextual influences. This study aimed to address that gap by exploring the contextual factors surrounding pediatric nurses with varying levels of resilience, including aspects of social support, the work environment, and coping mechanisms.

Background

Resilience functions as a network of resources, characteristics, and coping mechanisms, which an individual accesses to adapt to and recover from stressors (Kalisch et al., 2019). The impacts of unique stressors in pediatric nursing, such as moral and ethical stressors related to the relationships between the nurse, family caregiver, and physician, may be best mitigated by some methods of resilience enactment over others. However, due to the lack of research in pediatric nurse resilience, it is unclear which characteristics of an individual and their environment or which behaviors best address the stressors they face. Previous nursing research has suggested the importance of social support, the work environment, and coping mechanisms to support nurse resilience (Ang et al., 2019; Jackson et al., 2018; Öksüz et al., 2019).

Social Support

Social support is the “perception or experience that one is loved and cared for by others, esteemed and valued, and part of a social network of mutual assistance and obligation” (Taylor, 2011, p. 192). Social support may take the form of informational, instrumental, or emotional support (Taylor, 2011). Informational support describes one person helping another to understand their situation and consider how to be resilient to the stressor. Instrumental support occurs when individuals receive tangible things such as financial assistance or services. Lastly,

emotional support is the provision of warmth and caring and communicating that an individual is valued.

Not all manners of social support are beneficial. The perception of being supported by one's social network seems to be more beneficial than their actual utilization of support (Broadwell & Light, 1999; Wethington et al., 1987). In addition, receiving visible support—recognized as support by the recipient—compared to invisible support can fail to relieve, or can even worsen, stress (Rafaeli & Gleason, 2009). Research suggests one reason for this may be that visible support emphasizes a recipient's struggle and undermines their self-efficacy (Bolger & Amarel, 2007). These factors make it important to identify the social support managers and peers offer that most benefits nurses.

Nurses receive social support through their friendships with coworkers, support from their supervisor, and talking to coworkers about their stressors (Ang et al., 2019; Jackson et al., 2018; Zander et al., 2013). A grounded theory study of ICU nurses found that participants processed their stressors at work by debriefing with coworkers (Jackson et al., 2018). The participants also utilized relationships with coworkers to “decontaminate” themselves, separating themselves from workplace adversity (Jackson et al., 2018). The ability to share difficulties with coworkers is vital because nurses may be reluctant to share their experiences with friends and family to avoid burdening them emotionally (Zander et al., 2013). These findings suggest nurses benefit from the perceived support of their supervisors and coworkers and sharing their difficulties with coworkers.

Work Environment

Elements in the work environment may contribute to or detract from resilience. Studies of pediatric nursing are rare within the body of literature exploring characteristics of the nurse work

environment related to resilience. However, findings in populations of nurses caring for adults suggest job stressors and factors associated with job satisfaction may affect resilience (Brown et al., 2018; Hernandez et al., 2016; Rushton et al., 2015; Saber, 2014; Yu & Lee, 2018).

A large amount of job stress may make it more difficult for nurses to perceive that they are recovering or growing from their adversity, leading them to perceive themselves as less resilient. Hernandez et al. (2016) and Rushton et al. (2015) found a moderate to strong negative correlation between resilience and job stress in both ICU nurses ($r = -0.44$) and air force nursing personnel ($r = -0.53$; Hernandez et al., 2016; Rushton et al., 2015). Aside from the stressors of increased workloads and limited staffing, the emotional labor of nursing also negatively correlates with resilience ($r = -0.25$; Yu & Lee, 2018). Nurses may also face adversity from moral and ethical conflicts between the care they are tasked to provide and personal convictions and grief (Burston & Tuckett, 2013; Carton & Hupcey, 2014). These stressors may co-occur and compound their effects to overwhelm nurses' resilience.

Resilience may increase with higher rates of job satisfaction and factors associated with increased job satisfaction. Several surveys of U.S. nurses found a moderately strong association between resilience and job satisfaction (Brown et al., 2018; Kim et al., 2019). Demonstrating this strong relationship, one multisite study demonstrated that job satisfaction increased by 0.73 ($p < 0.001$) for every 1-point increase in resilience score after controlling for change fatigue, age, gender, marital status, educational level, years of nursing experience, hospital unit of employment, and accreditation status (Brown et al., 2018). Factors associated with job satisfaction that may support resilience include empowerment, positive affect, feeling rapport and appreciation from medical doctors (MDs), autonomy, leadership support, supportive registered nurse (RN)/RN relationships, distributive justice, the opportunity to learn new things,

and variety of work (Karlsson et al., 2019; Saber, 2014). Unfortunately, few studies have explored these factors as predictors of resilience.

Coping Mechanisms

The enactment of resilience includes effective coping in the face of adversity (Tugade & Fredrickson, 2004). Coping in nurses is highly individualized and depends on one's preference and the nature of the problem they face (Zander et al., 2013). Spirituality and religion, social support, emotional expression, reflection, and problem-solving are some of the most commonly cited coping strategies nurses employ (Ablett & Jones, 2007; Dixon et al., 2005; Ekedahl & Wengström, 2007; Isikhan et al., 2004; Maytum et al., 2004; Zander et al., 2013). Although nurses may take different pathways to be resilient, there are some similarities in the goal of their coping actions.

Jackson et al. (2018) interviewed 11 Canadian critical-care nurses about resilience and burnout using grounded theory. The analysis suggested that nurses manage their exposure to workplace stress by protecting, processing, decontaminating, and distancing. Protecting was described to include strategies such as becoming emotionally detached and using depersonalization and humor. Processing consisted of either personal reflection, debriefing, or sharing with coworkers. Decontaminating and distancing were the activities nurses engaged in to emotionally and physically move past and separate themselves from workplace adversity. Notably, Jackson et al. (2018) conceptualized resilience as an indicator of how well nurses can manage their exposure to workplace adversity.

In summary, nurses are at risk of experiencing significant job stress. The literature indicates nurses utilize a dynamic, individualized network of factors to support their resilience, which likely includes social support, elements of the work environment, and coping mechanisms.

It remains unclear what cultural and contextual factors may make the various factors nurses employ more or less effective at bolstering resilience.

Theoretical Framework

A conceptual framework of nurse resilience was developed to guide this study based on the resilience process (Richardson, 2002), society-to-cells framework (Szanton & Gill, 2010), and the dynamic network approach to resilience (Kalisch et al., 2019). Nurse resilience is defined as a network of resources, characteristics, and coping mechanisms an individual accesses, consciously or unconsciously, to diminish the effects of stressors or increase their ability to endure stressors. Within this framework, social support may represent either an asset—something of value—a coping mechanism, or a characteristic of the work environment. Similarly, aspects of nurses' work environments may be resources or characteristics they utilize to be resilient. Factors that benefit or detract from resilience may interact with each other and modify overall resilience depending on the individual's culture and context. In addition, resilience is dynamic; it changes over time by responding to the previous enactment of resilience by the individual and those around them.

The current study explored factors in the work environment that nurses believe benefit or hinder their resilience. Based on the literature, we hypothesized that social support, stressors and supports in the work environment, and coping mechanisms would emerge as prominent factors. Therefore, this study aimed to explore the contextual factors surrounding pediatric nurses with varying levels of resilience, including their social support, work environment, and coping mechanisms.

Methods

This study is a secondary mixed-methods analysis of a previously conducted study that aimed to determine the factors that influence resilience and burnout among clinical nurses and ascertain what nurses at the facility perceived as supportive behaviors from peers and leaders. The current study aimed to explore the contextual factors surrounding pediatric nurses with varying levels of resilience, including their social support, work environment, personal characteristics, and coping mechanisms.

A mixed-methods approach was used. Creswell & Clark (2017) defined mixed-methods research as a study that (a) rigorously collects and analyzes qualitative and quantitative data as driven by a research question and hypotheses, (b) integrates the data and findings from these two sources, (c) organizes the above procedures into specific guiding research designs, and (d) frames those procedures in theory and philosophy.

Within the paradigm of mixed-methods research, this study most closely aligns with a convergent design. This design is appropriate for the study of resilience because neither the quantitative nor qualitative paradigm alone could provide the full story of resilience in pediatric nurses. The qualitative strand enables contextual understanding regarding the personal and environmental resources for pediatric nurse resilience and the coping mechanisms they utilize. The quantitative strand provides information about pediatric nurse resilience and nurses' characteristics with higher and lower resilience. Data sources for this study included surveys and semi-structured interviews. The parent study survey data were collected between October 2017 and July 2018. Interviews were conducted in 2018 and were recorded and transcribed verbatim. The hospital's IRB approved the parent study and this study. In addition, the University of Washington's IRB granted this study exempt status.

Subjects and Setting

Participants in this study were nurses working at a quaternary care, Magnet-accredited pediatric hospital that serves as a major referral center for pediatric patients in the Northwest United States.

The parent study used email invitations and announcements at staff and shared governance meetings to recruit participants from a pool of over 2,000 inpatient and outpatient clinical nurses. Individuals from all genders, racial groups, and ethnic groups were eligible to participate. A total of 127 nurses were recruited to complete the survey, 30 of which were interviewed.

Data Collection

Nurses who responded to the email with interest in participating were directed to the ITHS' REDCap to review and acknowledge an information statement, and then to complete the demographic questionnaire, CD-RISC-25, and Maslach Burnout Inventory for Healthcare Providers (MBI-HP). Although the MBI-HP and burnout were not part of this analysis, the original study used burnout and resilience levels to purposively sample for interviews. Participants were assigned a study code number to use with their data, which allowed the researchers to maintain a link between the participants' names and responses to perform purposive sampling of participants with varying survey responses for interviews. Surveys took approximately 15 minutes to complete.

The original study researcher then conducted a preliminary analysis and selected participants for interviews to obtain a sample representing nurses with varying levels of resilience and burnout. The parent study randomly selected seven out of 11 nurses from the low-resilience and high-burnout category and asked them to participate in the interviews. The parent

study also randomly selected 14 out of 65 nurses from the low-resilience and low-burnout category, and nine out of 26 nurses from the high-resilience and low-burnout category. Those who were no longer employed at the facility were replaced with randomly selected nurses from the respective categories. All those invited participated in the interviews.

Participants were given an additional information sheet before the interview and assured that their responses would be kept confidential and that they could discontinue participation at any time. Interviews took about 30 minutes to complete and were conducted by the parent study's principal investigator. Interviews took place in person at the facility or at an off-site location convenient for the participant, but always in a private area. All interviews but one were recorded, and all were transcribed. The participant who did not consent to being recorded agreed to field notes, which were used for this analysis.

Measures

Demographic Questionnaire. Participants completed a demographic questionnaire that ascertained their age range, years of nursing experience, primary work unit, employment and certification status, and involvement in work-related activities, such as shared governance (see Appendix A).

Resilience. Resilience was measured with the self-report CD-RISC's 25-item version (Connor & Davidson, 2003). Several scholars have used the CD-RISC in studies of pediatric healthcare professionals and nurses in several subspecialties (Gillespie et al., 2007; McGarry et al., 2013; Mealer et al., 2016). Response options for each item range from 0–4, with 0 representing "not true at all" and 4 representing "true nearly all the time." The CD-RISC-25 results in a score between 0–100, with higher scores indicating more resilience. The CD-RISC-25 operationally defines resilience to include individual characteristics reflecting control,

commitment, change viewed as a challenge, action orientation, strong self-esteem/confidence, adaptability, social problem-solving skills, humor in the face of stress, the strengthening effect of stress, secure/stable affectional bonds, previous experiences of success, patience and ability to endure stress/pain, and faith or belief in a benevolent intervention (Connor & Davidson, 2003). A full discussion of the CD-RISC-25's validity and psychometric properties was provided in the article describing the qualitative strand of our research (White et al., 2021).

Interview. Examples of interview items include the following: "Please tell me about the types of stresses that you face at work" and "Are there things that you would like to see done differently to reduce stress and increase resilience among nurses?" See Appendix C for interview protocol and questions. The validity of qualitative findings was addressed in multiple ways in this study. According to Creswell and Creswell (2018), themes' validities increase if themes are based on the convergence of multiple participant accounts or data sources. Other means to assure validity include clarifying the researcher's bias, presenting negative information, and using an external auditor (Creswell & Creswell, 2018). Additionally, the final results and reports were shared with the committee members to validate the results and conclusions made from the data. Lastly, the final report presents principal investigator biases through summaries of positionality memos.

Data Analysis

Qualitative Analysis. The qualitative and quantitative data were analyzed separately prior to integration (see Figure 1). ATLAS.ti 9 for Windows was utilized to conduct data management and analysis. Coding occurred in multiple phases of deduction and induction, using the constant comparative process as the basis for analysis (Glaser, 1965).

All interviews were coded in the first round with open coding, looking for positive and negative resources, characteristics of the work environment, and coping mechanisms the nurses described. It was necessary to code all interviews in the first round of coding because the participant resilience scores and interviews were not linked until qualitative analysis was completed. If only a portion of the interviews were coded, the sample might have overrepresented nurses with higher, lower, or average resilience scores.

The resulting codes from the first round of coding were synthesized using a matrix, merging codes that were similar and occurred infrequently and splitting codes that were too large (Miles et al., 2014). Next, the full interview sample was coded again using the developed coding scheme. The codes were split into groups by the number of occurrences (greater than 25, 15–25, and less than 15). Codes were placed in a network diagram according to their perceived relationship to develop themes. Lastly, each nurse's identified codes were colligated with their CD-RISC resilience score to identify contextual factors surrounding nurses with different resilience levels.

During analysis, memos were created to keep track of developing themes and coding decisions, providing an auditable record and supporting trustworthiness. Credibility was supported by the committee chair's review of codes and memos; this allowed another researcher to validate and question decisions made and to blind code several interviews. It was not possible to validate findings with the participants because the data were de-identified.

Quantitative Analysis. The data were cleaned prior to analysis. The nurses who participated in qualitative interviews were a subset of the larger survey dataset. Missing responses in the original data were a small enough percentage of the overall responses that they were deemed to not have an impact on the overall results. Descriptive statistics were calculated

for the total CD-RISC scores for the entire sample. Participants were assigned a “1” or “0” for the presence of each of the five themes that resulted from the qualitative analysis. Next, descriptive statistics were calculated by grouping participants with or without each theme. R was used for descriptive statistics, supplemented with data manipulation and summaries created using the dplyr package (R Core Team, 2020; Wickham et al., 2020).

Mixed Analysis. Next, data sources were integrated using a metamatrix, as Wendler (2001) described, to triangulate the resilience in pediatric nurses. Qualitative and quantitative data were juxtaposed, noting how themes coincided with scores and responses in the quantitative strand. A fuller picture of resilience in pediatric nurses emerged as more cases were analyzed and added to the meta-matrix.

Results

Table 1 presents the integrated qualitative themes and descriptions of social support, work environment, and coping mechanisms with the CD-RISC scores. The joint table suggests that no single aspect of the participants' social supports, work environments, or coping mechanisms could predict resilience as measured by the CD-RISC. Each participant had a unique combination of factors that supported or hindered their resilience. However, resilience scores were lower than average when participants encountered extreme or repetitive stressors, as Participants #58 and #126 described. The table also suggests that some participants, such as #87 and #34, could exhibit high CD-RISC scores despite limited support for resilience in their work environment. Participants with average resilience, such as #11 and #18, described stressors in their work environment but also discussed support for resilience from their coworkers, managers, and coping mechanisms.

Five themes, three supporting and two hindering resilience, emerged to describe the contextual factors surrounding nurses with varying levels of resilience. Nurses described their resilience as supported by (a) sharing the burden, (b) support from administration, and (c) taking a break. The following two factors that may hinder nurse resilience emerged: (a) the thought that “I can’t be a good nurse” and (b) feeling like a number. The 30 nurses interviewed had an average CD-RISC-25 score of 73.9 (sd=13.4). Two respondents had a total of three missing responses in the CD-RISC survey. Each theme presents the results for tests of independence and average CD-RISC scores.

Supporting Resilience

Sharing the Burden. Highlighting the teamwork of modern nursing work, nurses often described sharing the burden of their stressors with their coworkers as a factor in their resilience. The prominence of the “sharing the burden” theme demonstrates that nursing coworkers are a significant source of social support for nurses. “Sharing the burden” also describes a coping mechanism used by some nurses. Sharing the burden with coworkers was the contextual factor nurses most often described as supporting their resilience. Twenty-four nurses discussed sharing the burden with coworkers. The remaining six nurses described varying other sources of support, including their partner, manager, family, and friends. The average CD-RISC score was higher for the six nurses who did not cite sharing the burden with coworkers, with a mean CD-RISC score of 84.7 (sd = 10.6), compared to those who did, with a mean CD-RISC score of 71.2 (sd = 12.8). Nurses shared their burdens by sharing their frustrations, grief, solutions, and humor.

Nurses often discussed sharing frustrations or “venting” to navigate the adversity they faced. One nurse stated, “I often feel better after just telling someone about it. And so, I think that’s helpful for me.” The respondents shared burdens in both formal and informal settings. One

nurse appreciated an end-of-shift debriefing led by unit-level leadership, which encouraged sharing, group problem solving, and continuous improvement. The respondent described the result of these debriefing sessions as follows: "(The debriefing sessions) keep the mentality of support and progress as a constant in work that sometimes feels overwhelming and often leaves many people feeling defeated."

Nurses also described finding opportunities to share their grief and humor to support their resilience both inside and outside of work settings. The organization provides a support-group setting during nursing shifts, when requested by nurse managers, that allows space for either quiet reflection and listening or an opportunity to share with others and a member of pastoral care staff. Several nurses mentioned this setting as being supportive to them. However, a few nurses were concerned that these meetings took place too infrequently or were difficult to find time for while in patient care. One respondent expressed that their nursing unit experienced 20 patient deaths within a month and a half in the previous year. The nurse described gathering outside of work with coworkers to share their grief: "One of our coworkers did a soup night at her house, and we all got to talk about the patients in a safe environment... and share really fun memories... and that was a huge de-stress and [helped with the grief]."

Some nurses did not mention or chose not to utilize coworkers to share their burden, but, in all instances, expressed sharing their burden with someone, whether a partner, friend, or their manager. One nurse shared that she stays focused on her patients while at work, keeps her frustrations to herself, and tends to problem-solve independently. However, she responded as follows when asked to share about people who provide support related to her work: "Well, I'd say my better half. He's my number one support. He listens well to when I talk about my day... [I] get it off my chest, and then be done... And he just lets me cry."

Support from Administration. Nurses often described nursing administration as a factor supportive of nurses' resilience. Support from administration represents both a source of social support for some nurses and an aspect of a supportive work environment for others depending on the relationship between the nurse and their manager. Nurses who described administration as supportive of their resilience had a lower average CD-RISC score of 71.6 (sd=13.8) compared to nurses who did not with an average CD-RISC score of 77.3 (sd=12.5). Nurses most appreciated an accessible manager who advocated for them and knew what they were going through.

Accessibility of support from administration took many forms. Some respondents described accessibility as their administrator's physical presence and the frequency with which they checked in. One nurse described this type of accessibility as follows: "Our management staff is regularly present on the floor, as well as makes it a point to meet with each individual staff member on a regular basis every other month." For others, it was just knowing that their manager would make time for them whenever they needed them. One nurse explained: "I know that their days are filled with meetings...but I always know that I can access them when I need to."

The nurses also described administration as supporting nurse resilience by advocating for them. One participant expressed her frustration with the amount of time she spent doing clerical work at the expense of patient care and escalated this concern to her manager. Her manager helped evaluate the situation and advocated for changes in the model of care that resulted in hiring administrative assistants to free up nurses to spend more time on things that needed their expertise. Another nurse contrasted managers who became focused on the hospital's business side with her manager who keeps the perspective of the bedside nurse's experience at the forefront. She described, "Our manager was very protective and would really delegate and slow

transitions, and that was helpful because, oftentimes, too many changes happen all at once and that makes thing... seem bigger than it is."

When the administrators could not change the situation, sometimes working alongside the nurses enough to empathize was sufficient for nurses to feel like their resilience was supported. One nurse described her manager coming in at 5:00 AM on Fridays to help patients with eating disorders and little energy to get out of bed for the day:

She sees what it's like to get all those kids with eating disorders up... and she helps. That means a lot. When the leadership comes and works side by side for even a little bit and can see all the things... that's just the best thing to support people, I feel.

Not all nurses considered administration a source of support. Some described management as a threat to their resilience. Two nurses expressed feeling like their manager was watching for them to mess up and was "out to get them." Another nurse worried about how going to her manager for support may negatively affect her career.

I don't trust management with my personal life. I have in the past, and I've been burned... I come to work and take care of my patients. I don't want what challenges I'm having to either negatively affect my career or... how I'm viewed while I'm working.

Taking a Break. Many nurses emphasized the importance of taking a break to support their resilience. Sixteen of 30 respondents mentioned utilizing breaks to support their resilience. The average CD-RISC score of nurses who described utilizing breaks to support their resilience was 76.1 (sd = 10), which was higher than nurses who did not with an average CD-RISC score of 71.3 (sd = 16.4). Breaks took multiple forms for nurses. Nurses took momentary breaks during their shift and by changing care assignments to care for a different patient.

Many nurses described taking momentary breaks when experiencing adversity at work. One nurse described the following when asked about the ways she copes with stress at work: "If I can just stop and just take deep breaths and just focus in... That's [an] in real-time thing... If I can take my break and go outside and walk around campus, or do stairs internally." Also, several nurses mentioned their managers or charge nurses send them on momentary breaks in stressful situations, such as following a patient death or an assault. One nurse described the practice on the unit when someone is assaulted: "When we get assaulted, we get a break from the floor. We get debriefing."

In other situations, nurses felt capable of doing good work but needed to change their care assignment to care for a different patient; they needed respite from a challenging family, patient, or situation. Several nurses described the importance of the relationship between a pediatric nurse and the patient's caregiver. They discussed how a good relationship was essential to provide the best care for the child and reduce stress for all involved. One nurse described contacting the charge nurse when she had a conflict with a parent. The nurse talked to the charge nurse. Then, she allowed the family to speak to the charge nurse. Finally, she advocated for having a different assignment the next day to benefit both the nurse and the family, acknowledging that "we just didn't hit it off." Nurses also needed to change their care assignment to protect themselves emotionally and sustain their resilience. One nurse advocated for nurses to take different patients more often when functioning as a primary care nurse, wherein patients have a preferred nurse(s) who works with them when available. She described her rationale as follows:

I took care of this one girl every single day for months. I mean, I love her. But she passed away, and it's really hard... I would never want to not have those experiences, but I think [it's important to recognize] that it's hard for people.

Although the types of breaks described were different, the theme of taking a break was important to nurses in describing their resilience.

Hindering Resilience

I Cannot Be a Good Nurse. The inability to practice what participants considered "good nursing" emerged as a significant theme in the interviews. Twenty-three out of 30 participants responded that either making a difference or doing their job well was the most important thing about their work. When personal limitations or barriers separate from themselves prevented participants from being a good nurse, it caused significant stress that threatened their ability to be resilient. The average CD-RISC score of nurses who discussed the theme of "I can't be a good nurse" was 72.1 (sd = 16), compared to an average of 76.5 (sd = 7.88) in those who did not discuss the theme. One participant described, "I feel like I'm being an unsafe nurse or not a good nurse because—not because I am not a good nurse, but because I couldn't be one." The participant described the feeling as a "huge stress area." Another nurse suggested a way to reduce the stress on nurses and maintain longevity:

Allow us to do our best. And what we do best, ... [is] take care of somebody... I want to make that child's day, even if it's a hair's breadth more, better than when they walked in my doors. That's my goal when I come into work every day.

Unfortunately, their efforts to make a difference were frustrated by limited time and staffing, insurance companies, organizational priorities or policies, environments not conducive to best practices, and hospital hierarchy. One nurse described the pressures of limited time

accompanied by financial pressures from the organization that limited their ability to be a good nurse:

This is the best employer I've ever had, but at the end of the day, it's a business... There's all these things I'm supposed to do and all these policies, especially in the ED. What I'm triaging is both acuity but also what I can do off-policy and not get in trouble for.

This nurse went on to discuss how she is given slightly too much work for the hospital to get the most out of its investment in her, but "at the same time, I should... use some extra time to... do that work-life balance thing they talk to me about all the time that's somehow my fault for not keeping." In this quote, the nurse expressed her feeling that nurses' resilience often falls inequitably on nurses' capacities to survive adversity while ignoring the organization's responsibility to moderate the level of stress put on nurses.

Feeling Like a Number. Nurses also described feeling unappreciated and disrespected in their interactions with physicians and/or management, conflicts with families, and the organization. Twelve out of 30 nurses described feeling either unappreciated or disrespected in their work environment in a way that threatened their ability to be resilient. The average CD-RISC score of nurses who described "feeling like a number" was 72 (sd = 11.2), which was lower than nurses who did not, with an average CD-RISC score of 75.1 (sd = 14.8). One nurse described her experience with a new physician, exemplifying how a significant stressor can overcome one's capacity for resilience. She was excited to work with the new attending physician, but her new colleague became demanding and particular. She confronted the physician about their behavior, and he became defensive and dismissed her as a subordinate. She described the effect that this situation had on her:

I found myself the last couple weeks-- it's been increasing over the weeks, but I'm taking it home. I'm angry. I'm in the car, and I'm... perseverating on things he said or did that was passive-aggressive. And it takes me a day to kind of shred that, shrug it off.

Another nurse described how they were brought into their manager's office to discuss their use of sick time, which the nurse considered a resource in their enactment of resilience. "I find it really offensive, and it makes me feel like a number to somebody." This nurse's sentiment of feeling undervalued was also found when an ICU nurse discussed how the institution responded to conflicts with patient's families:

I think right now, if you were to talk to some of the ICU nurses, they just feel like the hospital does not have their back. You're bending over backward, and we all understand the stress families are under... But [that] does not make it okay for them to make staff cry and fire them and-- I think if [the hospital] could be a lot more supportive, it would probably go a long way.

Whether the source was physicians, the organization, or patients' families, feeling like a number was an often-mentioned factor that threatened nurses' resilience.

Discussion

This study aimed to explore contextual factors surrounding pediatric nurses with varying levels of resilience, including their social support, work environment, and coping mechanisms. Multiple qualitative themes emerged from the interviews to describe the social support, aspects of the work environment, and coping mechanisms that supported pediatric nurses' resilience. The qualitative analysis suggested sharing the burden of stressors with coworkers, receiving support from administration, and taking a break are factors that support nurse resilience. Feeling like "I can't be a good nurse" or as if one's opinion, experience, or self was not valued or appreciated

(i.e., feeling like a number) hindered pediatric nurses' resilience. After mixing quantitative and qualitative data, results suggested that nurses who encounter extreme or repetitive stressors may exhibit CD-RISC scores lower than the average CD-RISC scores of other nurses at the same institution. Participants with average CD-RISC scores described stressors in their work environment but also discussed receiving support for resilience from their coworkers, managers, and coping mechanisms. Lastly, some participants reported a high CD-RISC score despite limited utilization of support for resilience in their work environment.

Social Support and Resilience

Every participant described receiving social support from coworkers, managers, or individuals outside of work. Twenty-four out of 30 participants described social support from their coworkers as supporting their resilience. The remaining six participants described receiving support from either a manager or individuals outside of work, suggesting that social support is a factor supporting pediatric nurses' resilience. The utilization of social support to be resilient to stressors is consistent with the buffering hypothesis of social support, which states that social support diminishes stress by preventing stress appraisal and/or causing reappraisal or positive responses to stress (Cohen & Wills, 1985). These findings are also consistent with previous studies' findings that social support positively correlates with resilience in healthcare workers under stress from the COVID-19 pandemic ($p < 0.001$), early-career nurses, and emergency room nurses ($p = 0.006$; Hou et al., 2020; Hsieh et al., 2017; Wang et al., 2018). Similarly, a qualitative study of ICU nurses with higher resilience and those with PTSD found that nurses with high resilience had a supportive social network and those with PTSD had a poor social network (Mealer et al., 2012a). Future studies should consider examining what aspects of the work environment limit nurses' abilities to support each other. Additionally, researchers should

explore how such work environments may have differential effects across different nurse demographics.

Support from Administration for Resilience

We found some evidence for the ability of nursing administration to support nurse resilience. Nurses often discussed receiving support for their resilience from an accessible administration that advocated for them. The qualitative finding of managers supporting resilience is consistent with other research findings in organizational leadership and nursing. Studies in organizational leadership have found positive associations between perceived leadership styles that embody positive actions by leaders—transformational and authentic leadership styles—and subordinate resilience (Gaddy et al., 2017; Harland et al., 2005). Harland et al. (2005) found that the perceived dimensions of transformational leadership, which include attributed charisma ($r = 0.21$), idealized influence ($r = 0.22$), intellectual stimulation ($r = .27$), and individual consideration ($r = .27$), positively correlated with subordinate resilience after controlling for employee optimism ($p < 0.05$). A similar study of U.S. Army officers and their subordinates found a positive correlation between an authentic leadership style in the officer and the subordinate's resilience ($r = 0.41$, $p < 0.05$; Gaddy et al., 2017).

Although many authors have described promoting employees' resilience as a leader's responsibility, there may be a mismatch between what nurses and their leaders perceive as the best way to promote resilience. A qualitative study of nurses' needs following a patient death included a major theme of the need for more managerial support for nurses' resilience, such as providing debriefings and empathy (Bacon, 2017). However, a qualitative study of 20 nurse leaders identified that nurse leaders sought to foster nurse resilience by “facilitating social connections, promoting positivity, capitalizing on nurses' strengths, nurturing nurses' growth,

encouraging nurses' self-care, fostering mindfulness practice, and conveying altruism" (Wei et al., 2019, pp. 683). It may be that these actions by leaders could include empathy and debriefings for stressful events. Future studies should clarify this potential relationship by examining nurses' resilience in the context of leader presence, behaviors, and leadership styles.

Taking a Break and Resilience

Most participants described using breaks to support their resilience. A break is characterized by interrupting the dynamic between an individual's emotions and their responsibilities and expectations of them and a state of emotional isolation (Moshe, 2014). Our finding is consistent with other research that found taking a break reduces stress, promotes mental clarity, and may provide needed time for reflective problem-solving (Berman & West, 2007; West et al., 2001). U.S. state labor laws mandate regular rest breaks for employees, but nurses also discussed using shorter, momentary breaks to be resilient, described as "stepping away" or "closing my eyes and taking a deep breath." Breaks provide an opportunity to pause the emotional impacts of activity and expectations and reflect on the rules and behaviors used to emotionally navigate the world (Moshe, 2014). Interventions such as mindfulness or reflective journaling may assist in these efforts. An intervention that included training in mindfulness-based stress reduction and written exposure therapy (a form of reflective writing with therapeutic feedback), exercise, and event-triggered counseling sessions resulted in a significant increase in resilience scores ($p = 0.01$) and decrease in depression symptoms ($p = 0.03$) in a group of ICU nurses (Mealer et al., 2014). Breaks are an important factor supporting nurse resilience, but it remains unclear what break methods best support nurse resilience or how to measure the effect of breaks given the variety of approaches nurses utilize for breaks.

Another finding in the theme of taking a break was the need for changing one's patient care assignment, which may also be termed respite. Respite is an important intervention for family caregivers due to the frequent and intense stressors they may face over an extended duration (Sörensen et al., 2006). While there are notable differences between family and nurse caregivers, they share some similarities in the nature of their stress. Depending on their role, nurses may experience frequent and intense stressors over an extended duration. These stressors may be even more impactful in the setting of a "primary care" model of nursing, where a nurse cares for the same patients every work shift. Nurses may not perceive themselves as resilient if they repeatedly do not have adequate time to recover from stressors at work and are unable to emotionally detach from the situation. Future research should explore the situations that create significant stressors for nurses and the recovery time required for nurses to perceive themselves as resilient.

Responsiveness of Resilience to Stressors

Some participants discussed feeling supported in their resilience from their coworkers and work environment but also exhibited lower CD-RISC scores in the context of repetitive or highly distressing situations. This result could be due to a mismatch between the resources available to the nurse to be resilient, such as a manager who is empathetic but lacks the skill or agency to relieve the stressor. Social support may be less supportive of resilience depending on the type of support being offered and whether it addresses the individual's need (Southwick et al., 2016). However, participants in our study also identified some of their stressors as being particularly distressing. Particularly distressing adversity may make it more difficult for nurses to recover prior to facing the next stressor. The feeling of never quite "catching up" from the last stressor may cause nurses to perceive themselves as less resilient. It is difficult to confirm this

failure to recover in nursing because most studies of healthcare providers' resilience have utilized cross-sectional designs, which limit the ability to identify the cause and trajectory of change in resilience (Tusaie & Dyer, 2004; Yu et al., 2019). Bonanno and Diminich (2013) identified six trajectories of functioning following potentially traumatic events. The most common trajectory, found in 35–65% of cases, is minimal-impact resilience, which is an increase in dysfunction following the event followed by a return to baseline within several months (Bonanno, 2004). It is unclear whether healthcare providers fit the prototypical trajectories Bonanno and Diminich (2013) identified or display a different resilience trajectory because few studies have examined healthcare providers' grief, stressors, and resilience over time. Future studies should follow nurses over time to measure their stressors, resilience, and recovery.

Implications

The findings of this study have implications for practice, research, nursing managers, and nursing employers.

Practice. Nursing work involves potential exposure to distressing situations and death, resulting in healthcare provider grief. Nurses may benefit from practices such as journaling, mindfulness, or sharing burdens with others, which encourage introspection and awareness of their needs for momentary breaks, sick day use, or a change in care assignment to preserve resilience.

Research. Scholars should further explore and measure impacts of events on nurses and what factors in the individual and their environment contribute to their enactment of resilience when facing adversity common to nursing.

Nursing Managers. Nurses expressed a need for “checking in” more often and empathy to best support their resilience. Nursing managers should consider building protected time into their schedule to connect with nurses.

Nursing Employers. Clearly, taking a break is an important strategy in nurses’ enactment of resilience. Employers wanting to bolster nursing resilience should assess the opportunities and spaces available for breaks, ranging from momentary reprieve to time away from work.

Limitations

This study had several limitations. First, there were 12–15 months between when participants completed the resilience and demographic survey and their interviews. Some participants had changed departments by the time interviews were conducted, which may have obscured some supportive factors to their resilience when combined with the length of time that had passed. The parent study established the gap between surveys and interviews to increase participation in the survey. Future studies should consider a cohort design to more accurately track the factors that support nurse resilience to work environment stressors. Second, the interview and CD-RISC posed questions that pertain to nurses’ perceptions of resilience and their work environment, which may not reflect actual conditions. Lastly, there may be other factors or interventions the participants were not aware of that would best support nurse resilience. However, we chose to focus on nurses’ perceptions in this study to identify the elements of their work environment they believed were most in need of support or change to bolster their resilience.

Conclusion

The degree of support provided by factors in the work environment for nurse resilience and the time required to be resilient varies between individuals. In general, we found that nurses utilize their coworkers and nurse leaders for sharing frustrations, empathy, and problem-solving. Taking scheduled and unscheduled breaks emerged as a critical component of the enactment of nurse resilience, allowing nurses time to reflect and emotionally distance themselves from the highly stressful situations present in their work environments. Finally, some nurses may require more time to enact resilience and recover from their stressors. Nursing leaders should be sensitive to nurses' needs for time away from work to recover from trauma and grief inherent in our profession's work. Future studies should address this need by developing standardized measures of grief and trauma in healthcare professionals and explore the time nurses need for recovery.

References

- Ablett, J. R., & Jones, R. S. P. (2007). Resilience and well-being in palliative care staff: A qualitative study of hospice nurses' experience of work. *Psycho-Oncology*, 16(8), 733–740. <https://doi.org/https://doi.org/10.1002/pon.1130>
- American Nurses Association. (2011). ANA health and safety survey. <https://www.nursingworld.org/practice-policy/work-environment/health-safety/health-safety-survey/>
- Ang, S. Y., Uthaman, T., Ayre, T. C., Lim, S. H., & Lopez, V. (2019, Mar). Differing pathways to resiliency: A grounded theory study of enactment of resilience among acute care nurses. *Nursing & Health Sciences*, 21(1), 132–138. <https://doi.org/10.1111/nhs.12573>
- Bacon, C. T. (2017, Oct/Dec). Nurses to their nurse leaders: We need your help after a failure to rescue patient death. *Nursing Administration Quarterly*, 41(4), 368–375. <https://doi.org/10.1097/naq.0000000000000253>
- Berman, E. M., & West, J. P. (2007). The effective manager . . . Takes a break. *Review of Public Personnel Administration*, 27(4), 380–400. <https://doi.org/10.1177/0734371x07307076>
- Bolger, N., & Amarel, D. (2007). Effects of social support visibility on adjustment to stress: Experimental evidence. *Journal of Personality and Social Psychology*, 92(3), 458–475. <https://doi.org/10.1037/0022-3514.92.3.458>
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1), 20–28. <https://doi.org/10.1037/0003-066X.59.1.20>

- Bonanno, G. A., & Diminich, E. D. (2013, Apr). Annual research review: Positive adjustment to adversity--trajectories of minimal-impact resilience and emergent resilience. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 54(4), 378–401.
<https://doi.org/10.1111/jcpp.12021>
- Broadwell, S. D., & Light, K. C. (1999). Family support and cardiovascular responses in married couples during conflict and other interactions. *International Journal of Behavioral Medicine*, 6(1), 40–63. https://doi.org/10.1207/s15327558ijbm0601_4
- Brown, R., Wey, H., & Foland, K. (2018). The relationship among change fatigue, resilience, and job satisfaction of hospital staff nurses. *Journal of Nursing Scholarship: An Official Publication of Sigma Theta Tau International Honor Society of Nursing*, 50(3), 306–313.
<https://doi.org/10.1111/jnu.12373>
- Burston, A. S., & Tuckett, A. G. (2013). Moral distress in nursing: Contributing factors, outcomes and interventions. *Nursing Ethics*, 20(3), 312–324.
<https://doi.org/10.1177/0969733012462049>
- Carton, E. R., & Hupcey, J. E. (2014). The forgotten mourners: Addressing health care provider grief—A systematic review. *Journal of Hospice and Palliative Nursing*, 16(5), 291–303.
<https://doi.org/10.1097/njh.0000000000000067>
- Castro, F. G., Kellison, J. G., Boyd, S. J., & Kopak, A. (2010). A methodology for conducting integrative mixed methods research and data analyses. *Journal of Mixed Methods Research*, 4(4), 342–360. <https://doi.org/10.1177/1558689810382916>
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357. <https://doi.org/10.1037/0033-2909.98.2.310>

- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience scale (CD-RISC) [Article]. *Depression and Anxiety, 18*(2), 76–82. <https://doi.org/10.1002/da.10113>
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*. Sage.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design* (5th ed.). Sage.
- Dixon, D., Vodde, R., Freeman, M., Higdon, T., & Mathiesen, S. G. (2005, August 2). Mechanisms of support. *Social Work in Health Care, 41*(1), 73–89. https://doi.org/10.1300/J010v41n01_05
- Ekedahl, M., & Wengström, Y. (2007, July 1). Nurses in cancer care—Stress when encountering existential issues. *European Journal of Oncology Nursing, 11*(3), 228–237. <https://doi.org/https://doi.org/10.1016/j.ejon.2006.09.005>
- Gaddy, J. W., Gonzalez, S. P., Lathan, C. A., & Graham, P. K. (2017, January 2). The perception of authentic leadership on subordinate resilience. *Military Behavioral Health, 5*(1), 64–72. <https://doi.org/10.1080/21635781.2016.1243495>
- Gillespie, B. M., Chaboyer, W., Wallis, M., & Grimbeek, P. (2007). Resilience in the operating room: Developing and testing of a resilience model. *Journal of Advanced Nursing, 59*(4), 427–438. <https://doi.org/10.1111/j.1365-2648.2007.04340.x>
- Glaser, B. G. (1965). The constant comparative method of qualitative analysis. *Social Problems, 12*(4), 436–445.
- Gloria, C. T., & Steinhardt, M. A. (2016). Relationships among positive emotions, coping, resilience and mental health. *Stress and Health, 32*(2), 145–156. <https://doi.org/https://doi.org/10.1002/smi.2589>

- Harland, L., Harrison, W., Jones, J. R., & Reiter-Palmon, R. (2005). Leadership behaviors and subordinate resilience. *Journal of Leadership & Organizational Studies*, 11(2), 2–14.
<https://doi.org/10.1177/107179190501100202>
- Havnen, A., Anyan, F., Hjemdal, O., Solem, S., Gurigard Riksfjord, M., & Hagen, K. (2020, Sep 4). Resilience moderates negative outcome from stress during the Covid-19 pandemic: A moderated-mediation approach. *International Journal of Environmental Research and Public Health*, 17(18). <https://doi.org/10.3390/ijerph17186461>
- Hernandez, S. H. A., Morgan, B. J., & Parshall, M. B. (2016). Resilience, stress, stigma, and barriers to mental healthcare in U.S. Air Force nursing personnel. *Nursing Research*, 65(6), 481–486. <https://doi.org/10.1097/nnr.0000000000000182>
- Hou, T., Zhang, T., Cai, W., Song, X., Chen, A., Deng, G., & Ni, C. (2020). Social support and mental health among health care workers during Coronavirus Disease 2019 outbreak: A moderated mediation model. *PloS One*, 15(5), e0233831.
<https://doi.org/10.1371/journal.pone.0233831>
- Hourani, L., Bender, R. H., Weimer, B., Peeler, R., Bradshaw, M., Lane, M., & Larson, G. (2012, July 1). Longitudinal study of resilience and mental health in marines leaving military service. *Journal of Affective Disorders*, 139(2), 154–165.
<https://doi.org/https://doi.org/10.1016/j.jad.2012.01.008>
- Hsieh, H. F., Chang, S. C., & Wang, H. H. (2017). The relationships among personality, social support, and resilience of abused nurses at emergency rooms and psychiatric wards in Taiwan. *Women and Health*, 57(1), 40–51.
<https://doi.org/10.1080/03630242.2016.1150385>

- Hu, T., Zhang, D., & Wang, J. (2015, April 1). A meta-analysis of the trait resilience and mental health. *Personality and Individual Differences*, 76, 18–27.
<https://doi.org/https://doi.org/10.1016/j.paid.2014.11.039>
- Isikhan, V., Comez, T., & Zafer Danis, M. (2004, Sept 1). Job stress and coping strategies in health care professionals working with cancer patients. *European Journal of Oncology Nursing*, 8(3), 234–244. <https://doi.org/https://doi.org/10.1016/j.ejon.2003.11.004>
- Jackson, J., Vandall-Walker, V., Vanderspank-Wright, B., Wishart, P., & Moore, S. L. (2018). Burnout and resilience in critical care nurses: A grounded theory of managing exposure. *Intensive and Critical Care Nursing*, 48, 28–35.
<https://doi.org/10.1016/j.iccn.2018.07.002>
- Kalisch, R., Cramer, A. O. J., Binder, H., Fritz, J., Leertouwer, I., Lunansky, G., Meyer, B., Timmer, J., Veer, I. M., & van Harmelen, A. L. (2019). Deconstructing and reconstructing resilience: A dynamic network approach. *Perspectives on Psychological Science*, 14(5), 765–777. <https://doi.org/10.1177/1745691619855637>
- Karlsson, A. C., Gunningberg, L., Bäckström, J., & Pöder, U. (2019, Oct). Registered nurses' perspectives of work satisfaction, patient safety and intention to stay—A double-edged sword. *Journal of Nursing Management*, 27(7), 1359–1365.
<https://doi.org/10.1111/jonm.12816>
- Kim, S. R., Park, O. L., Kim, H. Y., & Kim, J. Y. (2019). Factors influencing well-being in clinical nurses: A path analysis using a multi-mediation model. *Journal of Clinical Nursing*, 28(23–24), 4549–4559. <https://doi.org/10.1111/jocn.15045>

- Maytum, J. C., Heiman, M. B., & Garwick, A. W. (2004). Compassion fatigue and burnout in nurses who work with children with chronic conditions and their families. *Journal of Pediatric Health Care, 18*(4), 171–179.
- McGarry, S., Girdler, S., McDonald, A., Valentine, J., Lee, S. L., Blair, E., Wood, F., & Elliott, C. (2013, Sep). Paediatric health-care professionals: Relationships between psychological distress, resilience and coping skills. *Journal of Paediatrics and Child Health, 49*(9), 725–732. <https://doi.org/10.1111/jpc.12260>
- McVicar, A. (2003). Workplace stress in nursing: A literature review. *Journal of Advanced Nursing, 44*(6), 633–642. <https://doi.org/https://doi.org/10.1046/j.0309-2402.2003.02853.x>
- Mealer, M., Conrad, D., Evans, J., Jooste, K., Solyntjes, J., Rothbaum, B., & Moss, M. (2014). Feasibility and acceptability of a resilience training program for intensive care unit nurses. *American Journal of Critical Care, 23*(6), e97–e105. <https://doi.org/10.4037/ajcc2014747>
- Mealer, M., Jones, J., & Moss, M. (2012a). A qualitative study of resilience and posttraumatic stress disorder in United States ICU nurses. *Intensive Care Medicine, 38*(9), 1445–1451. <https://doi.org/10.1007/s00134-012-2600-6>
- Mealer, M., Jones, J., Newman, J., McFann, K. K., Rothbaum, B., & Moss, M. (2012b). The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: Results of a national survey. *International Journal of Nursing Studies, 49*(3), 292–299. <https://doi.org/10.1016/j.ijnurstu.2011.09.015>

- Mealer, M., Schmiede, S. J., & Meek, P. (2016). The Connor-Davidson Resilience Scale in critical care nurses: A psychometric analysis. *Journal of Nursing Measurement*, 24(1), 28–39. <https://doi.org/10.1891/1061-3749.24.1.28>
- Miles, M. B., Huberman, A., & Saldaña, J. (2014). Designing matrix and network displays. In *Qualitative data analysis: A methods sourcebook* (pp. 108–119).
- Moshe, M. (2014). "I'm on a break...": The contribution of taking a break to emotional coping. *Revista Latinoamericana de Estudios sobre Cuerpos, Emociones y Sociedad*, 6(16), 66–73.
- Öksüz, E., Demiralp, M., Mersin, S., Tüzer, H., Aksu, M., & Sarıkoc, G. (2019). Resilience in nurses in terms of perceived social support, job satisfaction and certain variables. *Journal of Nursing Management*, 27(2), 423–432. <https://doi.org/10.1111/jonm.12703>
- R Core Team. (2020). R: A language and environment for statistical computing. In *R foundation for statistical computing*. <https://www.R-project.org>
- Rafaeli, E., & Gleason, M. E. J. (2009). Skilled support within intimate relationships. *Journal of Family Theory & Review*, 1(1), 20–37. <https://doi.org/10.1111/j.1756-2589.2009.00003.x>
- Rees, C., Wirihana, L., Eley, R., Ossieran-Moisson, R., & Hegney, D. (2018). The effects of occupational violence on the well-being and resilience of nurses. *The Journal of Nursing Administration*, 48(9), 452–458. <https://doi.org/10.1097/NNA.0000000000000648>
- Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58(3), 307–321. <https://doi.org/10.1002/jclp.10020>

- Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, 24(5), 412–420. <https://doi.org/10.4037/ajcc2015291>
- Saber, D. A. (2014, Nov-Dec). Frontline registered nurse job satisfaction and predictors over three decades: A meta-analysis from 1980 to 2009. *Nursing Outlook*, 62(6), 402–414. <https://doi.org/10.1016/j.outlook.2014.05.004>
- Sörensen, S., Duberstein, P., Gill, D., & Pinquart, M. (2006, Nov 1). Dementia care: Mental health effects, intervention strategies, and clinical implications. *The Lancet Neurology*, 5(11), 961–973. [https://doi.org/https://doi.org/10.1016/S1474-4422\(06\)70599-3](https://doi.org/https://doi.org/10.1016/S1474-4422(06)70599-3)
- Southwick, S. M., Sippel, L., Krystal, J., Charney, D., Mayes, L., & Pietrzak, R. (2016). Why are some individuals more resilient than others: The role of social support. *World Psychiatry*, 15(1), 77–79. <https://doi.org/10.1002/wps.20282>
- Spector, P. E., Zhou, Z. E., & Che, X. X. (2014, Jan 1). Nurse exposure to physical and nonphysical violence, bullying, and sexual harassment: A quantitative review. *International Journal of Nursing Studies*, 51(1), 72–84. <https://doi.org/https://doi.org/10.1016/j.ijnurstu.2013.01.010>
- Szanton, S. L., & Gill, J. M. (2010). Facilitating resilience using a society-to-cells framework: A theory of nursing essentials applied to research and practice. *Advances in Nursing Science*, 33(4), 329–343. <https://doi.org/10.1097/ANS.0b013e3181fb2ea2>
- Taylor, S. E. (2011). Social support: A review. In *The Oxford handbook of health psychology* (pp. 189–214). Oxford University Press.

- Tugade, M. M., & Fredrickson, B. L. (2004, Feb). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, 86(2), 320–333. <https://doi.org/10.1037/0022-3514.86.2.320>
- Tusaie, K., & Dyer, J. (2004, Jan-Feb). Resilience: A historical review of the construct. *Holistic Nursing Practice*, 18(1), 3–8; quiz 9–10.
- Ungar, M. (2008). Resilience across cultures. *British Journal of Social Work*, 38(2), 218–235. <https://doi.org/10.1093/bjsw/bcl343>
- Wang, L., Tao, H., Bowers, B. J., Brown, R., & Zhang, Y. (2018). Influence of social support and self-efficacy on resilience of early career registered nurses. *Western Journal of Nursing Research*, 40(5), 648–664. <https://doi.org/10.1177/0193945916685712>
- Wei, H., Roberts, P., Strickler, J., & Corbett, R. W. (2019). Nurse leaders' strategies to foster nurse resilience. *Journal of Nursing Management*, 27(4), 681–687. <https://doi.org/10.1111/jonm.12736>
- Wendler, M. C. (2001). Triangulation using a meta-matrix1. *Journal of Advanced Nursing*, 35(4), 521–525. <https://doi.org/10.1046/j.1365-2648.2001.01869.x>
- West, J. D., Watts, R. E., Trepal, H. C., Wester, K. L., & Lewis, T. F. (2001). Opening space for client reflection: A postmodern consideration. *The Family Journal*, 9(4), 431–437. <https://doi.org/10.1177/1066480701094011>
- Wethington, E., McLeod, J., & Kessler, R. C. (1987). The importance of life events for explaining sex differences in psychological distress. In R. C. Barnett, L. Biener, & G. K. Baruch (Eds.), *Gender and stress* (pp. 144–154). Free Press. <http://offcampus.lib.washington.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=psych&AN=1987-98337-006&site=ehost-live>

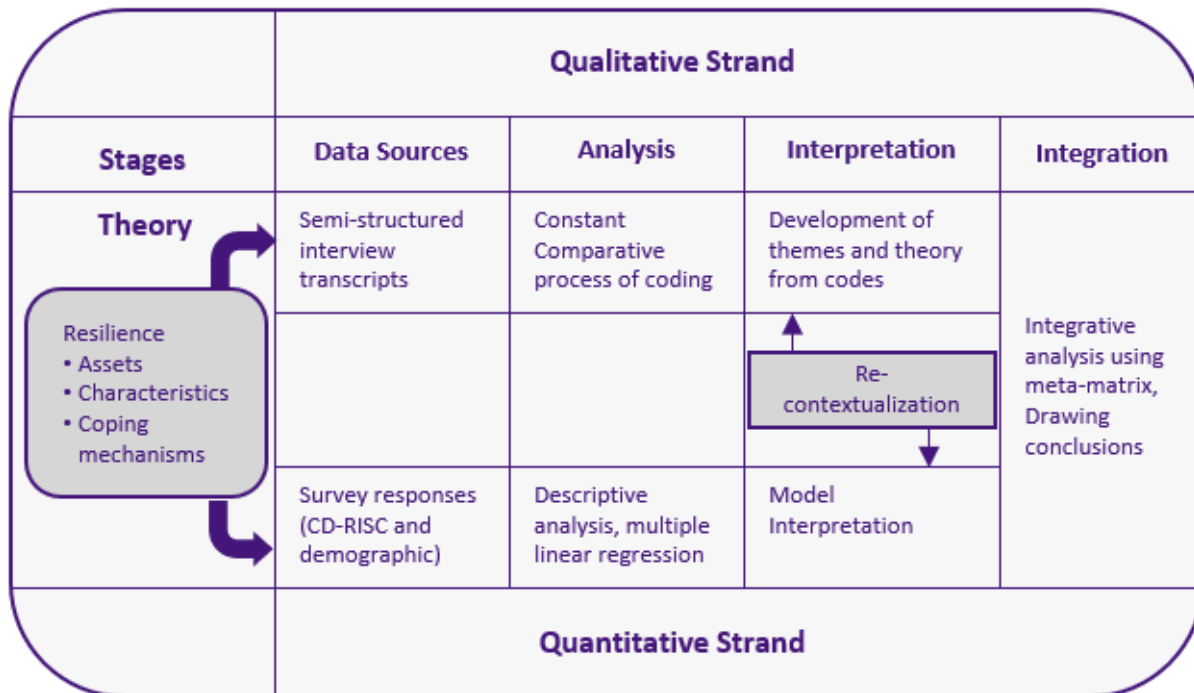
- White, B., Walsh, E., Ridling, D., & Willgerodt, M. (2021). *Predictors of resilience in pediatric nurses*. University of Washington.
- Wickham, H., Francois, R., Henry, L., & Muller, K. (2020). *dplyr: A grammar of data manipulation*. <https://CRAN.R-project.org/package=dplyr>
- Yu, F., Raphael, D., Mackay, L., Smith, M., & King, A. (2019). Personal and work-related factors associated with nurse resilience: A systematic review. *International Journal of Nursing Studies*, 93, 129–140. <https://doi.org/10.1016/j.ijnurstu.2019.02.014>
- Yu, M., & Lee, H. (2018). Impact of resilience and job involvement on turnover intention of new graduate nurses using structural equation modeling. *Japan Journal of Nursing Science*, 15(4), 351–362. <https://doi.org/10.1111/jjns.12210>
- Zander, M., Hutton, A., & King, L. (2013). Exploring resilience in paediatric oncology nursing staff. *Collegian (Royal College of Nursing, Australia)*, 20(1), 17–25. <https://doi.org/10.1016/j.colegn.2012.02.002>

Table 1*Joint Table of Context, Themes, and CD-RISC Scores*

Participant ID	Context from interview	Presence of themes	CD-RISC score
87	87's nursing unit had experienced a high volume of patient deaths in the period prior to taking the survey. Participant 87 mentioned sharing the burden of grief with coworkers outside of work. However, they also talked about coworkers ignoring call lights and feeling like a number to their manager and the organization.	Sharing the Burden Taking a Break Feeling Like a Number	91
34	34 discussed feeling supported by their manager. They described few coping mechanisms and also stated that they had trouble finding space to take a break away from the noise and stress of their work environment. 34 frequently described physicians preventing them from providing the care that was needed.	Support from Administration I Can't Be a Good Nurse Feeling Like a Number	89
11	11 shared their frustrations with their coworkers and manager and felt that they benefited from their coworkers' openness. However, they felt like they weren't valued when they were reprimanded for using sick time for self-care. 11 also discussed the stress of balancing moving patients through the department quickly, which was favored for financial reasons, and providing the care that was needed.	Sharing the Burden Support from Administration I Can't Be a Good Nurse Feeling Like a Number	75
18	18 described confidence in the support that they received from their coworkers and manager. 18 also discussed how debriefings at the end of shifts and breaks support their resilience.	Sharing the Burden Support from Administration Taking a Break	73
126	As a highly experienced ICU nurse, 126 described feeling like their physician colleagues did not value their nursing knowledge and experience. 126 stated that this was a "huge, huge" stressor. 126 described feeling like a number to both her physician colleagues and the organization. 126 also described feeling supported by her manager and a close group of friends and coworkers.	Sharing the Burden Support from Administration Feeling Like a Number	64
58	58 discussed sharing their frustrations with her coworkers and manager and taking breaks to be resilient. However, they stated that their manager didn't know how to support or advocate for them. 58 also described working for a "demanding" physician that treated her as a subordinate. 58 stated this was particularly detrimental to her resilience because she described herself as a very social and outgoing person.	Sharing the Burden Support from Administration Taking a Break I Can't Be a Good Nurse Feeling Like a Number	52

Figure 1

Study Analysis Flow



Note. Adapted from Castro et al., 2010, p. 345.

Chapter IV

Theoretical Perspectives on Nursing Resilience

Introduction

Job stress and resilience—the capacity to resist, recover, or grow from adversity—are of significant interest to both nurses and their employers. In the most recent American Nurses Association (ANA) health and safety survey, 74% of nurses listed stress as a top concern (American Nurses Association, 2011). Top sources of stress reported by nurses included high workloads, higher volume and complexity of patients, conflicts with other nurses and physicians, a lack of leadership support, and the emotional burdens of providing care (Berry et al., 2013; Kotzer et al., 2006; McVicar, 2003). Increased stress puts nurses at risk for burnout, decreased job satisfaction, and turnover (Adwan, 2014; Yin & Yang, 2002). Consequently, resilience has become a prominent target of research and interventions to determine how to best support resilience to the increasing demands of the healthcare workplace.

Unfortunately, evidence related to nurse resilience is limited by a lack of consistent study methods and population. In addition, these studies reflect the varied outcomes associated with the contextual nature of resilience. For example, resilience outcomes have included stress coping, presence of mental illness symptoms, employee engagement, and job satisfaction. These varied outcomes make it difficult to compare interventions and synthesize an understanding of the nature of nursing resilience. Further, many nurses provide compassionate care despite their exposure to the grief and distress they experience. Understanding the nature of resilience to these unique stressors among nurses may reveal opportunities to support nurses. Therefore, this paper aims to synthesize prominent theories of research and recent findings and to propose a heuristic framework of nurse resilience.

What is Resilience?

Review of Resilience Theories

Scholars have conceptualized resilience as a process, network of protective factors, and an outcome following adversity. Most scholars agree that resilience is dynamic and changes based on the individual's context; thus, resilience is modifiable (Stainton et al., 2019). Therefore, individuals may enact and display resilience differently at different developmental and life stages (Tusaie & Dyer, 2004). Although resilience lacks a universal definition, most definitions converge around the following three factors: (a) the presence of adversity, (b) protective factors that mitigate risk, and (c) a better-than-expected outcome given the context (Fletcher & Sarkar, 2013).

Resilience as a Process. Richardson et al. (1990) defined resilience as a process of "coping with disruptive, stressful, or challenging life events in a way that provides the individual with additional protective and coping skills than prior to the disruption that results from the event" (p. 34). The Richardson resiliency model includes the following five concepts or stages: biopsychospiritual homeostasis, protective factors, stressors, disruption, and reintegration (Richardson, 2002). The model centers around the concept of biopsychospiritual homeostasis, which describes the set of biological, psychological, and spiritual circumstances to which an individual is accustomed. Richardson (2002) posited that protective factors that aid in the resistance of stressors maintain homeostasis. When stressors overwhelm an individual's protective factors, the individual is pushed out of homeostasis and into a state of disruption. The discomfort caused by disruption motivates an individual to perform reintegration, wherein an individual either takes action to return to homeostasis or becomes accustomed to a new homeostasis. Through a process of disruption and reintegration, an individual's characteristics

and behaviors change through the acquisition of new coping skills, increasing their resilience for future challenges. Lakioti & Stalikas (2020) conducted a grounded theory study exploring resilience developed through psychotherapy. The framework that emerged classified the results of reintegration into the following six categories: authentic self-esteem (knowing and love self), psychological empowerment (a perceived sense of power, control, and responsibility for coping), reconstructed meaning (greater acceptance of events and life in general), change in emotional experiencing (changes in the type and intensity of feelings), acting differently, and relating differently (being more open and sincere) (Lakioti & Stalikas, 2020).

Resilience as a Network. The dynamic-network approach to resilience is an expansion of the network theory of mental disorders (Borsboom, 2017) Kalisch et al. (2019) developed. In the network theory of mental disorders, psychiatric symptoms that may be activated by stress, such as worrying, diminished executive control as a result of elevated stress hormones, and decreased social functioning, are depicted as nodes in a network that can create a feedback loop with each other, leading them to become self-sustaining, resulting in a new mental illness (Borsboom, 2017; Cramer et al., 2016). The network approach to resilience describes the network of protective factors that interface with mental disorder symptom networks to aid in the maintenance or recovery of mental health following adversity.

Kalisch et al. (2019) conceptualized protective factors as additional nodes in a psychiatric symptom network that reduce the degree of symptom activation in the network or prevent symptoms from feeding into other symptoms, thereby reducing the progression to mental illness. The network is considered dynamic because protective factors may fluctuate over time as the individual's environmental characteristics and resources change and their behaviors alter as a result of gaining new skills. Kalisch et al. (2019) also posited that resilience factors can

synergize with other resilience factors (i.e., reframing diminishes the symptom of worrying and synergizes with social support by creating a positive appraisal of others and their intentions) and define a resilient outcome as the absence of mental illness. Despite this pathology-based definition of a resilient outcome, the network approach to resilience factors provides a plausible theory to explain how protective factors interact with each other and stressors.

Resilience as an Outcome. The society-to-cells framework takes an ecological view of resilience by considering how interactions between an individual and societal, communal, familial, psychological, physiological, and cellular characteristics and resources transact to create periods of resilience or risk (Szanton & Gill, 2010). Szanton & Gill (2010) discussed resilience outcomes in terms of well-being. When enacted, resilience can result in one of three potential outcomes following adversity: resistance, recovery, and rebound (Kalisch et al., 2015; Nicholson, 2014; Richardson, 2002; Szanton & Gill, 2010; Tusaie & Dyer, 2004). Resistance occurs when an individual experiences a challenge or stressor and maintains prior levels of wellbeing. Recovery implies a loss of wellbeing that is subsequently resolved with a return to the prior level of wellbeing. Lastly, rebound describes an initial loss followed by growth that exceeds the level of wellbeing prior to the loss.

Outcomes Associated with Resilience in Nurses

Outcomes that represent resilience in a given situation will vary based on the individual's life stage, nature of the adversity they face, and their social context. Masten et al. (2003) measured resilience by asking, "how well has this person met, and how well does this person now meet, the expectations implicitly set by society for an individual of their age and sex group?" (p. 3). Following this definition, nurses may define a resilient outcome as continuing to come to work and providing the best possible care despite whatever challenge they previously

faced. However, other scholars have defined resilience more narrowly as the absence of psychological symptoms (Kalisch et al., 2019) or the maintenance, recovery, or growth of well-being as a result of adversity (Szanton & Gill, 2010).

Resilience and Psychological Symptoms

Resilience has been consistently found to be negatively associated with symptoms of anxiety, depression, and traumatic stress disorder in nurses (Cho & Kang, 2017; Mealer et al., 2017; Mealer, Jones, Newman, et al., 2012). In one study, nurses with high scores for resilience were 18–50% less likely to report symptoms of PTSD (Mealer et al., 2017). Bonanno et al. (2004) studied the trajectory of psychological wellness following exposure to potentially traumatic events and found that most individuals do not experience psychopathology following potentially traumatic events. However, out of 744 ICU nurses, 18% had symptoms of anxiety, 11% had symptoms of depression, and 21% potentially had PTSD (Mealer, Jones, Newman, et al., 2012). These findings suggest there is something unique about nurses' stressors and their resilience that creates greater susceptibility to the development of psychopathology.

Resilience and Burnout

Burnout is a condition characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment (Maslach, 2003). Demerouti et al. (2001) theorized that burnout may result when job demands (i.e., a position's requirements) consistently exceed nurses' job resources (i.e., aspects of the job that help fulfill its demands; (Bakker & Demerouti, 2007). Resilience represents an individual's capacity to adapt to and cope with situations where job demands exceed job resources without experiencing burnout. Although the causal relationship between resilience and burnout is unknown, researchers have found a moderately strong negative association between burnout subscales measuring emotional exhaustion and

depersonalization and resilience in nurses ($r = 0.2 - 0.4$; (Guo et al., 2018; Kutluturkan et al., 2016; Rushton et al., 2015). In addition, resilience has been found to mitigate some of the adverse effects of burnout on nurses (García-Izquierdo et al., 2018; Zou et al., 2016). Resilience has been found to partially mediate the effects of emotional exhaustion and depersonalization on psychological distress (Zou et al., 2016) and perceived health (García-Izquierdo et al., 2018).

Resilience and Job Satisfaction

Resilience may also play a role in nurses' satisfaction in their jobs and whether they choose to stay in them. Resilience has been found to have direct positive effects on job satisfaction in nurses (Brown et al., 2018; Kim et al., 2019; Matos et al., 2010). The positive association between resilience and job satisfaction may be due to protective resilience factors in the work environment, such as a sense of control and the support of nursing leaders, that are also associated with job satisfaction (Baek et al., 2019; Gillespie et al., 2007; Hunt, 2014; Saber, 2014). For example, nurses who feel a sense of control in their work may feel greater confidence in meeting the challenges they face, which minimizes their stressor's effects and produces a more positive affect toward their job. Similarly, nursing leaders' support may represent an important source of social support, a protective factor that contributes to resilience and positive feelings toward a job.

Scholars often study job satisfaction for the implications it has for turnover intention. Low job satisfaction is associated with higher intent to leave (Judge, 2017; Nei et al., 2015; Sveinsdóttir & Blöndal, 2014; Yin & Yang, 2002). Although scholars have yet to describe a direct relationship between resilience and intent to leave, findings from a study of 521 Midwestern hospital nurses demonstrated that job satisfaction increased by 0.73 for every 1-point increase in resilience score ($p < 0.001$; Brown et al., 2018). Based on these findings,

exploring associations between turnover, intent to leave, and resilience to understand in what context leaving a job represents the enactment of resilience is a potential area for future research.

A Framework for Studying Nursing Resilience

Synthesizing and building on existing theories of resilience and research, a heuristic framework of nurse resilience was developed that conceptualizes resilience as a network of environmental and individual factors (see Figure 1). Many scholars now recognize the actions and outcomes that constitute resilience are a product of the individual and resources in their environment (Ungar, 2008). Research into environmental factors that influence nurses' resilience is limited, but the factors identified in the literature thus far can be categorized as characteristics and resources. Characteristics describe features of the environment that increase or decrease adversity whether the individual engages them or not. Resources are the people, places, or things available in the individual's environment for the individual to utilize to aid in their practice of resilience.

The individual factors identified as influencing resilience can be broadly categorized as characteristics and behaviors. Individual characteristics refer to an individual's features that are largely static and can increase or decrease individual resilience without the individual taking action. Behaviors represent the actions an individual takes in their practice of resilience. The following sections present evidence regarding environmental characteristics and resources and individual characteristics and behaviors that have been found to be associated with resilience to highlight what has informed the model proposed and areas for further exploration.

Environmental Characteristics

Environmental characteristics are features that increase or decrease adversity. Environmental characteristics found in the literature that support resilience include flexibility in

scheduling and Magnet accreditation (detailed in later section). To assess an individual's capacity to be resilient, one must consider environmental factors supporting nurse resilience and the frequency, duration, and magnitude of the stressors applied to the individual. Recent research suggests organizational culture may contribute to or hinder nursing resilience (Glass, 2009; Lin et al., 2019).

Organizational Culture and Structure. Organizational culture and the associated structures affect nurse resilience by creating or removing barriers to provide high-quality nursing care, nurture interdisciplinary relationships, and engage in active problem-solving. Limitations in staffing and, consequently, nurses' time are well-known barriers to high-quality care. In a review of evidence regarding the relationship between nurse staffing, the quality of practice environment, and patient and nurse outcomes, Halm (2019) found that better staffing was associated with better patient (i.e., fewer failures to rescue, lower mortality) and nurse (i.e., higher quality of care ratings, less job dissatisfaction) outcomes. Although barriers, such as staffing, are outside nurses' control, their effects trickle down to nursing staff in the form of their environment. Because of the intimate nature of nursing care, organizations that empower nurses to problem-solve with administrators can enable rapid and effective quality improvement that also promotes nursing resilience.

In addition to organizational structures that impact nurses' perceptions of quality of care, interdisciplinary relationships among healthcare staff are an important influence on resilience. Findings from a study of nurses who suffered occupational violence demonstrated that coworker support had a more substantial influence on resilience than family support or religious beliefs (Hsieh et al., 2016). Similarly, nurses and nurse-midwives described a feeling of psychological emptiness that resulted from repetitive experiences of their work being devalued (Glass, 2009).

Elements of organizational culture traditionally associated with Magnet-accreditation may also contribute to nursing resilience. Based on the Magnet-accreditation requirements, organizations with Magnet-accreditation are more likely to invest in training, professional development, and shared decision-making structures that may mitigate the barriers to resilience reported in the literature (ANCC, 2020). Moreover, Magnet-accredited organizations must demonstrate adequate staffing and resources, leadership access, and productive interprofessional and RN/RN relationships, which serve to decrease job stress and increase access and efficacy of social support from coworkers. Brown et al. (2018) found that Magnet-accreditation was associated with significantly increased job satisfaction in nurses ($\beta = 5.1$, $p = 0.03$).

Environmental Resources

Environmental resources are the people, places, or things available for an individual to utilize to aid in their practice of resilience. The literature suggests supportive relationships with coworkers and managers may be an important resource for nursing resilience.

Supportive Relationships. Supportive relationships with coworkers and supervisors provide opportunities for sharing frustration and stressors, humor, processing grief, collective problem-solving, and social interaction, which nurses describe as ways they practice resilience (Ablett & Jones, 2007; Ang et al., 2019; White et al., 2021). Informal discussion with peers is a preferred method of practicing resilience in other disciplines (Jeannette & Scoboria, 2008; Young et al., 2014). Research with firefighters suggests they practice resilience by debriefing formally or informally with their peers following an event (Young et al., 2014), with a strong preference for informal discussion (Jeannette & Scoboria, 2008). In addition, researchers found higher reported levels of self-efficacy in early-career RNs who felt they received strong social support from friends and coworkers (Wang et al., 2018). These findings indicate that nurses may

view themselves as more capable of responding to adversity when they have access to supportive relationships with coworkers and friends as a resource for resilience.

A supportive supervisor can be another valuable resource to support nurse resilience. Nurses describe supervisors as supporting their resilience through their accessibility, advocacy for frontline nurses, and empathy for nurses' experiences (White et al., 2021). Higher social support from supervisors was associated with lower psychological distress ($r = -0.24, p < 0.01$) and posttraumatic stress symptoms ($r = -0.19, p < 0.01$) over a 10-year period among police officers, highlighting the impact supervisors can have on fostering resilience among nurses (de Terte et al., 2014). Nursing leaders are also aware of the role they can play as a resource based on Wei et al. (2019)'s study, which reported that nurse leaders support nurse resilience by conveying altruism, recognizing nurses' strengths, promoting positivity, and facilitating social connections between staff.

Individual Characteristics

Individual characteristics likely represent the most stable factors within the network of resilience factors. Individual characteristics associated with resilience include nursing experience, age, positive emotions, personality traits, and self-efficacy.

Nursing Experience and Age. Demographic characteristics, such as nursing experience and age, have often been studied in nursing to identify nurses most at risk for low resilience. However, a recent literature review found that scholars disagree on the significance of age and experience in predicting nursing resilience (Yu et al., 2019). Theoretically, age and nursing experience provide more opportunities for resilience growth, which leads to the development of new protective factors. Nurses with more experience may also find their resilience supported by

confidence in their potential to overcome adversity, based on previous accomplishments, and familiarity with resources in their environment.

Older age may also contribute to resilience. A recent study of the resilience of nurses caring for respiratory patients during the COVID-19 pandemic reported that nurses in the 18–35-year age category had significantly lower resilience than their older peers (Roberts et al., 2021), confirming findings from previous research (Ang et al., 2018; Kutluturkan et al., 2016; Öksüz et al., 2019; Zheng et al., 2017). However, similar to nursing experience, other studies have failed to demonstrate an association between age and resilience (Gillespie et al., 2007; Rushton et al., 2015). Rather than age having a direct effect on one's capacity for resilience, it may be that age is a covariant with experience. Nurses in older age categories may have resources, experiences, and/or exposures that resulted in the acquisition of new protective factors that younger nurses have not yet experienced. The proposed model classifies age and nursing experience as individual characteristics because they are a feature of individuals that may support resilience.

Positive Emotions and Personality Traits. Other individual characteristics that are positively associated with nurses' resilience are those that indicate a positive outlook and less worrying—hope, optimism, self-efficacy, control, and personality type. People experiencing positive emotions were found to exhibit thinking that was more flexible, creative, open to new information, and efficient (Estrada et al., 1997; Isen & Daubman, 1984; Isen et al., 1987; Isen et al., 1991). A broadened thought pattern allows individuals to potentially overcome adversity more easily by seeing solutions they might not otherwise see. Findings from a study of resilience in Australian OR nurses indicated that hope, self-efficacy, control, coping, and competence are integral to resilience, which explained 60.7% of the variation in a tested resilience model ($p < 0.0001$; (Gillespie et al., 2007).

Personality traits that influence resilience include neuroticism, extraversion, and conscientiousness. Neuroticism was negatively associated with resilience and peer support among nurses who had experienced physical or verbal abuse (Hsieh et al., 2017). Negative affect, social isolation, and neuroticism may make it more difficult for nurses to recover from adversity and less likely to utilize social support in their enactment of resilience. Alternatively, extraversion—a trait typified by a positive affective style and high levels of social interaction—was positively associated with resilience, family support, and peer support (Hsieh et al., 2017). Lastly, findings from a study in young adults demonstrated a positive association between resilience and the conscientiousness personality trait, which was fully mediated by a task-oriented coping style, indicating that the problem-solving skills typical of persons who measure high on conscientiousness produce greater resilience (Campbell-Sills et al., 2006).

Self-efficacy. Self-efficacy is the confidence one has in their ability to influence events in their lives (Bandura et al., 1999) and contributes to nursing resilience by enabling nurses to view their adversity and work demands more optimistically, leading to positive emotions and a higher likelihood of choosing problem-solving or active coping strategies, both of which are associated with resilience (Guo et al., 2017). Scholars have found moderate to strong associations between self-efficacy and resilience in nurses (Ding et al., 2015; Guo et al., 2017; Ren et al., 2018; Zhou et al., 2017). Nurses often describe providing the best possible care for patients despite adversity as an outcome that exemplifies nurse resilience (Ablett & Jones, 2007; Ang et al., 2019). Nurses with higher self-efficacy may perceive themselves as having the ability to meet these care demands, resulting in higher resilience.

Individual Behaviors

Individual behaviors are the actions an individual takes in their practice of resilience. The literature suggests that coping style, taking breaks, humor, mindfulness, and self-care activities may contribute to nursing resilience.

Coping Style. Results from several studies show an association between a particular coping style and resilience (Ang et al., 2019; Ding et al., 2015; Gillespie et al., 2007; Guo et al., 2017; Russo et al., 2018; Zhou et al., 2017). Coping styles characterized by appraising adversity as a challenge, taking constructive actions, creating opportunities for growth, and active problem-solving have been found to be positively associated with resilience in several studies of nurses (Ding et al., 2015; Gillespie et al., 2007; Guo et al., 2017; Zhou et al., 2017). Researchers' use of different questionnaires and coping-strategy groupings across studies complicates synthesizing the results regarding coping styles. However, these findings suggest that behaviors associated with a positive or problem-focused coping style may contribute to greater resilience.

Taking Breaks. Taking breaks, whether they take the form of momentarily stepping away from a situation or taking care of a different patient, is an essential way nurses practice resilience (White et al., 2021). These findings align with those of Jackson et al. (2018), who described one facet of critical care nurses' resilience as "distancing," defined as physical removal from the workplace adversity. Breaks represent an opportunity to pause the emotional impacts of activity and expectations and reflect on the rules and behaviors used to emotionally navigate the world (Moshe, 2014). Breaks may represent a behavior performed to relieve a stressor and plan how the nurse can better resist, recover, and grow from the particular challenge, thus supporting resilience.

Humor. Nurses and those in high-stress occupations often describe the use of humor as a way to practice resilience (Ablett & Jones, 2007; Gillman et al., 2015; Russo et al., 2018; Young et al., 2014). Findings from a study of nurses caring for terminally ill patients suggested nurses may use humor to defend against the uncomfortable aspects of mortality to process emotions and maintain a positive attitude (Ablett & Jones, 2007; Gillman et al., 2015). Similarly, humor can help people deal with trauma and alleviate stress (Young et al., 2014), or be used to cope socially (Bennett et al., 2003). Therefore, humor as a behavior may support resilience by assisting nurses to process traumatic experiences and alleviate stress, aiding in recovery from adversity, and contribute to positivity, promoting future resilience.

Mindfulness. Mindfulness-based interventions are increasingly being used with healthcare professionals to support resilience (Colgan et al., 2019; Foureur et al., 2013; Grabbe et al., 2020). Mindfulness-based interventions produce significant improvements postintervention in well-being (Grabbe et al., 2020). Mindfulness may support resilience as a behavior that focuses attention away from present or recent challenges, providing a break from stress and worrying. Nurses have pointed to limitations in the efficacy of mindfulness in some situations, describing it as difficult to prioritize and practice when it is needed most (Foureur et al., 2013). For this reason, mindfulness may be most useful in supporting resilience after a traumatic event or in response to a chronic stressor.

Self-care. The practice of self-care in the form of exercise, fostering good sleep habits, and getting good nutrition is often recommended to nurses by nursing leaders to support their resilience (Wei et al., 2019). In a longitudinal cohort study of police officers, researchers found that increased reports of adaptive health practices (i.e., eating well, maintaining physical exercise, rest and relaxation, and not smoking) was significantly associated with fewer symptoms

of posttraumatic stress and lower psychological distress, suggesting greater resilience to stressors (de Terte et al., 2014). Nurses often describe the importance of self-care in the form of emotional management, talking, exercise, personal rituals, and getting good sleep as an integral part of being resilient (Mealer, Jones, & Moss, 2012; Zander et al., 2013). Self-care behaviors may support resilience by contributing to physiological wellness that improves the individual's ability to respond and recover from adversity.

Heuristic Framework of Nurse Resilience

The heuristic framework of nurse resilience (Figure 1) proposed is a result of a synthesis of current research and provides a foundation with which to conceptualize nursing resilience. The framework comprises environmental and individual factors, represented by the bubbles centered on and above the person, which interact with one another to influence overall resilience. Resilience networks are dynamic and complex. Although an individual's characteristics are largely static over time, an individual's behavior and their environmental characteristics and resources may change frequently, both independently and in response to the presence or absence of other factors.

Interactions Across Environmental and Individual Levels. Interactions between environmental and individual factors may increase or decrease the factors' effectiveness at supporting resilience or may even create additional stress, as depicted by the bidirectional arrows. For example, the support provided to an individual who exhibits extraversion (an individual characteristic) with access to supportive relationships (an environmental resource) will be greater than the sum of each of the factors on their own due to their synergy. However, the same individual with extraversion but without supportive relationships may experience added stress that a more introverted individual does not.

Interactions Within Environmental and Individual Levels. Environmental- and individual- level factors interact. The bidirectional arrows above and below the environmental and individual factor bubbles depict these interactions. Organizational culture and structures may directly influence environmental resources' effectiveness or availability. A nurse manager may exhibit genuine altruism for their staff nurses and desire to be supportive but find themselves limited by the organizational culture and processes that direct their time to tasks less supportive of nurse resilience. Similarly, individual characteristics and behaviors may influence each other. For example, an individual's personality type and self-efficacy may influence their chosen coping methods. Individuals with higher self-efficacy and a problem-focused personality type may be more likely to engage in problem-solving.

A Person-centered Framework. The heuristic framework of nurse resilience is centered on a figure of a person to indicate that the model is person-centered. The protective factors present and accessible to the individual rely on the individual's perception of their environment and themselves. Therefore, an individual cannot utilize environmental resources for resilience if they are unaware of the resources' existence. Similarly, an individual may be capable of taking action to resolve adversity and begin recovery, but they will not attempt to do so if they do not know they are capable of it. Although it is likely heavily influenced by social and peer expectations, the individual ultimately determines the outcome that occurs as a result of resilience. Therefore, because resilience is person-centered, interventions that target the environment or an individual's behaviors will only be effective to the degree that the individual deems the environmental resources as accessible or behaviors as feasible, and helpful to attain a self-determined resilience outcome.

Implications and Conclusion

The heuristic framework of nurse resilience lays a foundation for advancing research in nurse resilience. Building on existing research, the framework relies on the belief that individual characteristics and behaviors interact with environmental characteristics and resources, to form a network of resilience factors. However, most studies of nursing resilience are cross-sectional, prohibiting any causal attributions or observation of interactions between resilience factors over time. Additionally, while there has been considerable research into individual characteristics and behaviors, the proposed framework emphasizes the equal need to explore environmental characteristics and resources that hinder or contribute to nurses' resilience. These gaps in the understanding of nursing resilience will require innovative, longitudinal methods that follow nurses over time, measuring the effect of resilience factors and stressors on overall nursing resilience. The presented model focuses on factors related to nurses and their work environment. Despite the exclusion of factors outside the work environment, this framework provides a starting point to understanding nurse resilience and the protective factors within the environment and individual.

References

- Ablett, J. R., & Jones, R. S. P. (2007). Resilience and well-being in palliative care staff: A qualitative study of hospice nurses' experience of work. *Psycho-Oncology*, 16(8), 733–740. <https://doi.org/https://doi.org/10.1002/pon.1130>
- Adwan, J. Z. (2014, Jul-Aug). Pediatric nurses' grief experience, burnout and job satisfaction. *Journal of Pediatric Nursing*, 29(4), 329-336. <https://doi.org/10.1016/j.pedn.2014.01.011>
- American Nurses Association. (2011). ANA health and safety survey. <https://www.nursingworld.org/practice-policy/work-environment/health-safety/health-safety-survey/>
- ANCC. (2020). Magnet model—Creating a magnet culture. *ANA Enterprise*. <https://www.nursingworld.org/organizational-programs/magnet/magnet-model/>
- Ang, S. Y., Hemsworth, D., Uthaman, T., Ayre, T. C., Mordiffi, S. Z., Ang, E., & Lopez, V. (2018). Understanding the influence of resilience on psychological outcomes—Comparing results from acute care nurses in Canada and Singapore. *Applied Nursing Research*, 43, 105–113. <https://doi.org/10.1016/j.apnr.2018.07.007>
- Ang, S. Y., Uthaman, T., Ayre, T. C., Lim, S. H., & Lopez, V. (2019, Mar). Differing pathways to resiliency: A grounded theory study of enactment of resilience among acute care nurses. *Nursing & Health Sciences*, 21(1), 132–138. <https://doi.org/10.1111/nhs.12573>
- Baek, H., Han, K., & Ryu, E. (2019, Nov). Authentic leadership, job satisfaction and organizational commitment: The moderating effect of nurse tenure. *Journal of Nursing Management*, 27(8), 1655–1663. <https://doi.org/10.1111/jonm.12853>

- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328.
<https://doi.org/10.1108/02683940710733115>
- Bandura, A., Freeman, W., & Lightsey, R. (1999). *Self-efficacy: The exercise of control*. Springer.
- Bennett, M. P., Zeller, J. M., Rosenberg, L., & McCann, J. (2003). The effect of mirthful laughter on stress and natural killer cell activity. *Alternative Therapies in Health and Medicine*, 9(2), 38–45.
- Berry, J. G., Hall, M., Hall, D. E., Kuo, D. Z., Cohen, E., Agrawal, R., Mandl, K. D., Clifton, H., & Neff, J. (2013). Inpatient growth and resource use in 28 children's hospitals: A longitudinal, multi-institutional study. *JAMA Pediatrics*, 167(2), 170–177.
<https://doi.org/10.1001/jamapediatrics.2013.432>
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1), 20–28.
<https://doi.org/10.1037/0003-066X.59.1.20>
- Borsboom, D. (2017, Feb). A network theory of mental disorders. *World Psychiatry*, 16(1), 5–13. <https://doi.org/10.1002/wps.20375>
- Brown, R., Wey, H., & Foland, K. (2018). The relationship among change fatigue, resilience, and job satisfaction of hospital staff nurses. *Journal of Nursing Scholarship: An Official Publication of Sigma Theta Tau International Honor Society of Nursing*, 50(3), 306–313.
<https://doi.org/10.1111/jnu.12373>

- Campbell-Sills, L., Cohan, S. L., & Stein, M. B. (2006, April 1). Relationship of resilience to personality, coping, and psychiatric symptoms in young adults. *Behaviour Research and Therapy*, 44(4), 585–599. <https://doi.org/https://doi.org/10.1016/j.brat.2005.05.001>
- Cho, G. J., & Kang, J. (2017). Type D personality and post-traumatic stress disorder symptoms among intensive care unit nurses: The mediating effect of resilience. *PloS One*, 12(4), e0175067–e0175067. <https://doi.org/10.1371/journal.pone.0175067>
- Colgan, D. D., Christopher, M., Bowen, S., Brems, C., Hunsinger, M., Tucker, B., & Dapolonia, E. (2019, Jul 1). Mindfulness-based wellness and resilience intervention among interdisciplinary primary care teams: A mixed-methods feasibility and acceptability trial. *Primary Health Care Research & Development*, 20, e91. <https://doi.org/10.1017/s1463423619000173>
- Cramer, A. O. J., van Borkulo, C. D., Giltay, E. J., van der Maas, H. L. J., Kendler, K. S., Scheffer, M., & Borsboom, D. (2016, Dec 8). Major depression as a complex dynamic system [Report]. *PloS One*, 11, e0167490. https://link.gale.com/apps/doc/A473276113/AONE?u=wash_main&sid=AONE&xid=2b583972
- de Terte, I., Stephens, C., & Huddleston, L. (2014). The development of a three part model of psychological resilience. *Stress and Health*, 30(5), 416–424. <https://doi.org/10.1002/smi.2625>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499.

- Ding, Y., Yang, Y., Yang, X., Zhang, T., Qiu, X., He, X., Wang, W., Wang, L., & Sui, H. (2015). The mediating role of coping style in the relationship between psychological capital and burnout among Chinese nurses. *PloS One*, *10*(4), e0122128. <https://doi.org/10.1371/journal.pone.0122128>
- Estrada, C. A., Isen, A. M., & Young, M. J. (1997). Positive affect facilitates integration of information and decreases anchoring in reasoning among physicians. *Organizational Behavior and Human Decision Processes*, *72*(1), 117–135. <https://doi.org/10.1006/obhd.1997.2734>
- Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist*, *18*(1), 12–23. <https://doi.org/10.1027/1016-9040/a000124>
- Foureur, M., Besley, K., Burton, G., Yu, N., & Crisp, J. (2013). Enhancing the resilience of nurses and midwives: Pilot of a mindfulness-based program for increased health, sense of coherence and decreased depression, anxiety and stress. *Contemporary Nurse*, *45*(1), 114–125. <https://doi.org/10.5172/conu.2013.45.1.114>
- García-Izquierdo, M., Meseguer de Pedro, M., Ríos-Risquez, M. I., & Sánchez, M. I. S. (2018). Resilience as a moderator of psychological health in situations of chronic stress (burnout) in a sample of hospital nurses. *Journal of Nursing Scholarship: An Official Publication of Sigma Theta Tau International Honor Society of Nursing*, *50*(2), 228–236. <https://doi.org/10.1111/jnu.12367>
- Gillespie, B. M., Chaboyer, W., Wallis, M., & Grimbeek, P. (2007). Resilience in the operating room: Developing and testing of a resilience model. *Journal of Advanced Nursing*, *59*(4), 427–438. <https://doi.org/10.1111/j.1365-2648.2007.04340.x>

- Gillman, L., Adams, J., Kovac, R., Kilcullen, A., House, A., & Doyle, C. (2015). Strategies to promote coping and resilience in oncology and palliative care nurses caring for adult patients with malignancy: A comprehensive systematic review. *JBIR Database of Systematic Reviews and Implementation Reports*, 13(5), 131–204.
<https://doi.org/10.11124/jbisrir-2015-1898>
- Glass, N. (2009, May-Jun). An investigation of nurses' and midwives' academic/clinical workplaces: A healing model to improve and sustain hope, optimism, and resilience in professional practice. *Holistic Nursing Practice*, 23(3), 158–170.
<https://doi.org/10.1097/HNP.0b013e3181a056c4>
- Grabbe, L., Higgins, M. K., Baird, M., Craven, P. A., & San Fratello, S. (2020, May-Jun). The Community Resiliency Model® to promote nurse well-being. *Nursing Outlook*, 68(3), 324–336. <https://doi.org/10.1016/j.outlook.2019.11.002>
- Guo, Y. F., Cross, W., Plummer, V., Lam, L., Luo, Y. H., & Zhang, J. P. (2017). Exploring resilience in Chinese nurses: A cross-sectional study. *Journal of Nursing Management*, 25(3), 223–230. <https://doi.org/10.1111/jonm.12457>
- Guo, Y. F., Luo, Y. H., Lam, L., Cross, W., Plummer, V., & Zhang, J. P. (2018). Burnout and its association with resilience in nurses: A cross-sectional study. *Journal of Clinical Nursing*, 27(1–2), 441–449. <https://doi.org/10.1111/jocn.13952>
- Halm, M. (2019, March 1). The influence of appropriate staffing and healthy work environments on patient and nurse outcomes. *American Journal of Critical Care*, 28(2), 152–156.
<https://doi.org/https://doi.org/10.4037/ajcc2019938>

- Hsieh, H. F., Hung, Y. T., Wang, H. H., Ma, S. C., & Chang, S. C. (2016). Factors of resilience in emergency department nurses who have experienced workplace violence in Taiwan. *Journal of Nursing Scholarship: An Official Publication of Sigma Theta Tau International Honor Society of Nursing*, 48(1), 23–30. <https://doi.org/10.1111/jnu.12177>
- Hsieh, H. F., Chang, S. C., & Wang, H. H. (2017). The relationships among personality, social support, and resilience of abused nurses at emergency rooms and psychiatric wards in Taiwan. *Women and Health*, 57(1), 40–51. <https://doi.org/10.1080/03630242.2016.1150385>
- Hunt, D. (2014, July). Does value congruence between nurses and supervisors effect job satisfaction and turnover? *Journal of Nursing Management*, 22(5), 572–582. <https://doi.org/10.1111/jonm.12055>
- Isen, A. M., & Daubman, K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology*, 47(6), 1206–1217. <https://doi.org/10.1037/0022-3514.47.6.1206>
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987, June). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, 52(6), 1122–1131. <https://doi.org/10.1037//0022-3514.52.6.1122>
- Isen, A. M., Rosenzweig, A. S., & Young, M. J. (1991, Jul-Sep). The influence of positive affect on clinical problem solving. *Medical Decision Making*, 11(3), 221–227. <https://doi.org/10.1177/0272989x9101100313>

- Jackson, J., Vandall-Walker, V., Vanderspank-Wright, B., Wishart, P., & Moore, S. L. (2018). Burnout and resilience in critical care nurses: A grounded theory of managing exposure. *Intensive and Critical Care Nursing*, 48, 28–35.
<https://doi.org/10.1016/j.iccn.2018.07.002>
- Jeannette, J., & Scoboria, A. (2008). Firefighter preferences regarding post-incident intervention [Article]. *Work and Stress*, 22(4), 314–326. <https://doi.org/10.1080/02678370802564231>
- Judge, T. A. (2017). Job attitudes, job satisfaction, and job affect: A century of continuity and of change. *Journal of Applied Psychology*, 102(3), 356–374.
- Kalisch, R., Cramer, A. O. J., Binder, H., Fritz, J., Leertouwer, I., Lunansky, G., Meyer, B., Timmer, J., Veer, I. M., & van Harmelen, A. L. (2019). Deconstructing and reconstructing resilience: A dynamic network approach. *Perspectives on Psychological Science*, 14(5), 765–777. <https://doi.org/10.1177/1745691619855637>
- Kalisch, R., Müller, M. B., & Tüscher, O. (2015). A conceptual framework for the neurobiological study of resilience. *Behavioral and Brain Sciences*, 38.
<https://doi.org/10.1017/S0140525X1400082X>
- Kim, S. R., Park, O. L., Kim, H. Y., & Kim, J. Y. (2019). Factors influencing well-being in clinical nurses: A path analysis using a multi-mediation model. *Journal of Clinical Nursing*, 28(23–24), 4549–4559. <https://doi.org/10.1111/jocn.15045>
- Kotzer, A. M., Koepping, D. M., & LeDuc, K. (2006, Jul-Aug). Perceived nursing work environment of acute care pediatric nurses. *Pediatric Nursing*, 32(4), 327–332.
- Kutluturkan, S., Sozeri, E., Uysal, N., & Bay, F. (2016). Resilience and burnout status among nurses working in oncology. *Annals of General Psychiatry*, 15, 33.

- Lakioti, A., & Stalikas, A. (2020). Resilient reintegration as a result of psychotherapy: a grounded theory analysis of clients' experiences. *Counselling Psychology Quarterly*, 33(3), 393-414. <https://doi.org/10.1080/09515070.2018.1553774>
- Lin, C. C., Liang, H. F., Han, C. Y., Chen, L. C., & Hsieh, C. L. (2019). Professional resilience among nurses working in an overcrowded emergency department in Taiwan. *International Emergency Nursing*, 42, 44–50. <https://doi.org/10.1016/j.ienj.2018.05.005>
- Maslach, C. (2003). Job burnout: New directions in research and intervention. *Current Directions in Psychological Science*, 12(5), 189–192. <https://doi.org/10.1111/1467-8721.01258>
- Masten, A. S., Powell, J. L., & Luthar, S. (2003). A resilience framework for research, policy, and practice. *Resilience and Vulnerability: Adaptation in the Context of Childhood Adversities*, 1(25), 153.
- Matos, P. S., Neushotz, L. A., Griffin, M. T. Q., & Fitzpatrick, J. J. (2010). An exploratory study of resilience and job satisfaction among psychiatric nurses working in inpatient units. *International Journal of Mental Health Nursing*, 19(5), 307–312. <https://doi.org/10.1111/j.1447-0349.2010.00690.x>
- McVicar, A. (2003). Workplace stress in nursing: A literature review. *Journal of Advanced Nursing*, 44(6), 633–642. <https://doi.org/https://doi.org/10.1046/j.0309-2402.2003.02853.x>
- Mealer, M., Jones, J., & Meek, P. (2017). Factors affecting resilience and development of posttraumatic stress disorder in critical care nurses. *American Journal of Critical Care: An Official Publication, American Association of Critical Care Nurses*, 26(3), 184–192. <https://doi.org/10.4037/ajcc2017798>

- Mealer, M., Jones, J., & Moss, M. (2012a). A qualitative study of resilience and posttraumatic stress disorder in United States ICU nurses. *Intensive Care Medicine*, 38(9), 1445–1451. <https://doi.org/10.1007/s00134-012-2600-6>
- Mealer, M., Jones, J., Newman, J., McFann, K. K., Rothbaum, B., & Moss, M. (2012b). The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: Results of a national survey. *International Journal of Nursing Studies*, 49(3), 292–299. <https://doi.org/10.1016/j.ijnurstu.2011.09.015>
- Moshe, M. (2014). "I'm on a break...": The contribution of taking a break to emotional coping. *Revista Latinoamericana de Estudios sobre Cuerpos, Emociones y Sociedad*, 6(16), 66–73.
- Nei, D., Snyder, L. A., & Litwiller, B. J. (2015). Promoting retention of nurses: A meta-analytic examination of causes of nurse turnover. *Health Care Management Review*, 40(3), 237–253.
- Nicholson, J. (2014). Supporting mothers living with mental illnesses in recovery. In *Motherhood, mental illness and recovery* (pp. 3–17). Springer, Cham. https://doi.org/10.1007/978-3-319-01318-3_1
- Öksüz, E., Demiralp, M., Mersin, S., Tüzer, H., Aksu, M., & Sarıkoc, G. (2019). Resilience in nurses in terms of perceived social support, job satisfaction and certain variables. *Journal of Nursing Management*, 27(2), 423–432. <https://doi.org/10.1111/jonm.12703>
- Ren, Y., Zhou, Y., Wang, S., Luo, T., Huang, M., & Zeng, Y. (2018, Jan 10). Exploratory study on resilience and its influencing factors among hospital nurses in Guangzhou, China. *International Journal of Nursing Sciences*, 5(1), 57–62. <https://doi.org/https://doi.org/10.1016/j.ijnss.2017.11.001>

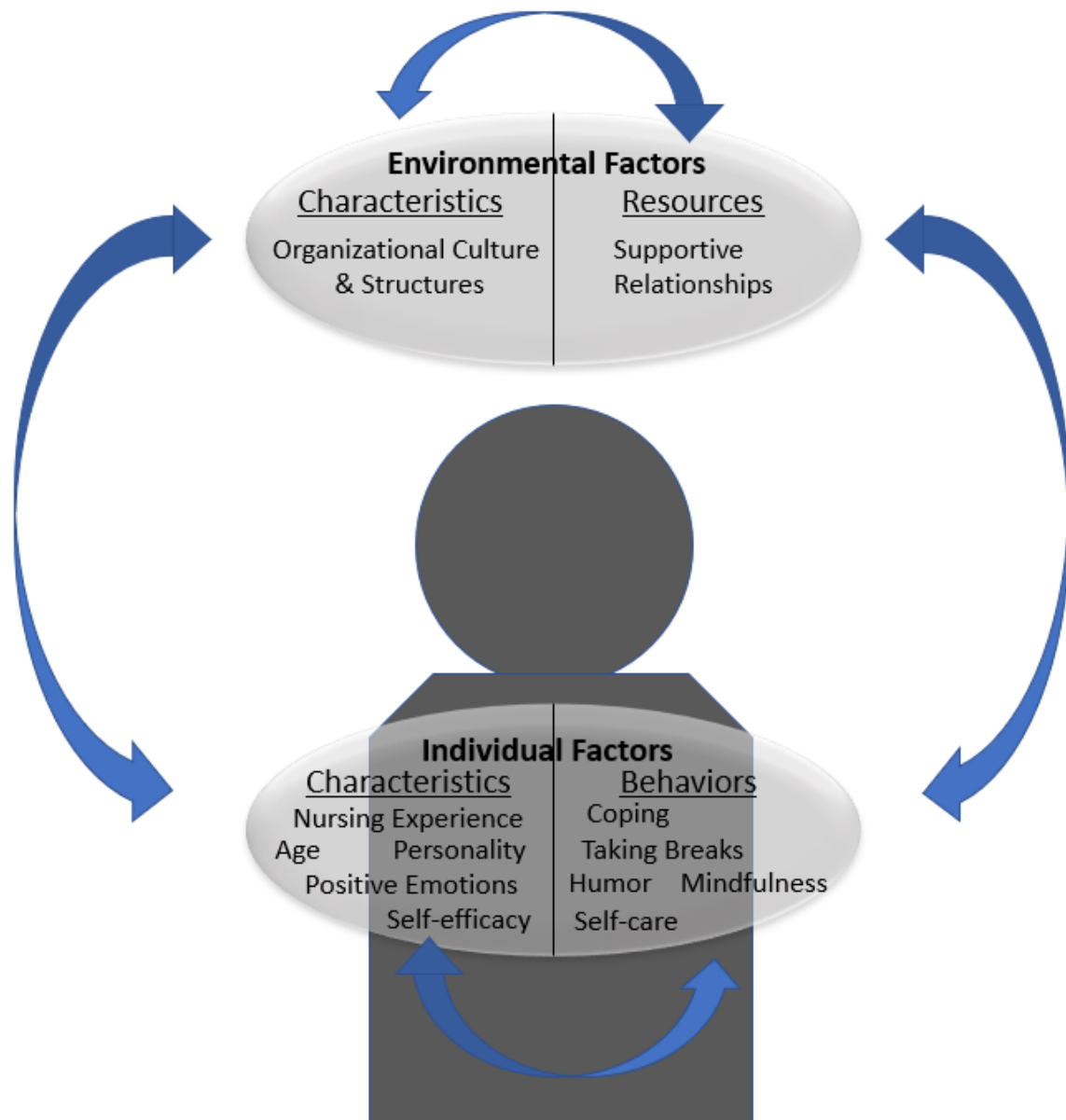
- Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology, 58*(3), 307–321. <https://doi.org/10.1002/jclp.10020>
- Richardson, G. E., Neiger, B. L., Jensen, S., & Kumpfer, K. L. (1990). The resiliency model. *Health Education, 21*(6), 33–39. <https://doi.org/10.1080/00970050.1990.10614589>
- Roberts, N. J., McAloney-Kocaman, K., Lippiett, K., Ray, E., Welch, L., & Kelly, C. (2021, Jan). Levels of resilience, anxiety and depression in nurses working in respiratory clinical areas during the COVID pandemic. *Respiratory Medicine, 176*, 106219. <https://doi.org/10.1016/j.rmed.2020.106219>
- Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care: An Official Publication, American Association of Critical Care Nurses, 24*(5), 412–420. <https://doi.org/10.4037/ajcc2015291>
- Russo, C., Calo, O., Harrison, G., Mahoney, K., & Zavotsky, K. E. (2018). Resilience and coping after hospital mergers. *Clinical Nurse Specialist, 32*(2), 97–102. <https://doi.org/10.1097/nur.0000000000000358>
- Saber, D. A. (2014, Nov-Dec). Frontline registered nurse job satisfaction and predictors over three decades: A meta-analysis from 1980 to 2009. *Nursing Outlook, 62*(6), 402–414. <https://doi.org/10.1016/j.outlook.2014.05.004>
- Stainton, A., Chisholm, K., Kaiser, N., Rosen, M., Upthegrove, R., Ruhrmann, S., & Wood, S. J. (2019, Aug). Resilience as a multimodal dynamic process. *Early Interv Psychiatry, 13*(4), 725–732. <https://doi.org/10.1111/eip.12726>

- Sveinsdóttir, H., & Blöndal, K. (2014, Jul). Surgical nurses' intention to leave a workplace in Iceland: A questionnaire study. *Journal of Nursing Management*, 22(5), 543–552.
<https://doi.org/10.1111/jonm.12013>
- Szanton, S. L., & Gill, J. M. (2010). Facilitating resilience using a society-to-cells framework: A theory of nursing essentials applied to research and practice. *Advances in Nursing Science*, 33(4), 329–343. <https://doi.org/10.1097/ANS.0b013e3181fb2ea2>
- Tusaie, K., & Dyer, J. (2004, Jan-Feb). Resilience: A historical review of the construct. *Holistic Nursing Practice*, 18(1), 3–8.
- Ungar, M. (2008). Resilience across cultures. *British Journal of Social Work*, 38(2), 218–235.
<https://doi.org/10.1093/bjsw/bcl343>
- Wang, L., Tao, H., Bowers, B. J., Brown, R., & Zhang, Y. (2018). Influence of social support and self-efficacy on resilience of early career registered nurses. *Western Journal of Nursing Research*, 40(5), 648–664. <https://doi.org/10.1177/0193945916685712>
- Wei, H., Roberts, P., Strickler, J., & Corbett, R. W. (2019). Nurse leaders' strategies to foster nurse resilience. *Journal of Nursing Management*, 27(4), 681–687.
<https://doi.org/10.1111/jonm.12736>
- White, B., Walsh, E., Ridling, D., & Willgerodt, M. (2021). *The resilience of pediatric nurses in context*. University of Washington.
- Yin, J. C. T., & Yang, K. P. A. (2002, Aug 1). Nursing turnover in Taiwan: A meta-analysis of related factors. *International Journal of Nursing Studies*, 39(6), 573–581.
[https://doi.org/https://doi.org/10.1016/S0020-7489\(01\)00018-9](https://doi.org/https://doi.org/10.1016/S0020-7489(01)00018-9)

- Young, P. M., Partington, S., Wetherell, M. A., St Clair Gibson, A., & Partington, E. (2014). Stressors and coping strategies of UK firefighters during on-duty incidents. *Stress and Health*, 30(5), 366–376. <https://doi.org/10.1002/smi.2616>
- Yu, F., Raphael, D., Mackay, L., Smith, M., & King, A. (2019). Personal and work-related factors associated with nurse resilience: A systematic review. *International Journal of Nursing Studies*, 93, 129–140. <https://doi.org/10.1016/j.ijnurstu.2019.02.014>
- Zander, M., Hutton, A., & King, L. (2013). Exploring resilience in paediatric oncology nursing staff. *Collegian (Royal College of Nursing, Australia)*, 20(1), 17–25. <https://doi.org/10.1016/j.colegn.2012.02.002>
- Zheng, Z., Gangaram, P., Xie, H., Chua, S., Ong, S. B. C., & Koh, S. E. (2017). Job satisfaction and resilience in psychiatric nurses: A study at the Institute of Mental Health, Singapore. *International Journal of Mental Health Nursing*, 26(6), 612–619. <https://doi.org/10.1111/inm.12286>
- Zhou, H., Peng, J., Wang, D., Kou, L., Chen, F., Ye, M., Deng, Y., Yan, J., & Liao, S. (2017). Mediating effect of coping styles on the association between psychological capital and psychological distress among Chinese nurses: A cross-sectional study. *Journal of Psychiatric and Mental Health Nursing*, 24(2–3), 114–122. <https://doi.org/10.1111/jpm.12350>
- Zou, G., Shen, X., Tian, X., Liu, C., Li, G., Kong, L., & Li, P. (2016). Correlates of psychological distress, burnout, and resilience among Chinese female nurses [Report]. *Industrial Health*, 54, 389. https://link.gale.com/apps/doc/A472268644/AONE?u=wash_main&sid=AONE&xid=93185b4b

Figure 1

Heuristic Framework of Nurse Resilience



Appendix A

Demographic Questionnaire

- 1) What is your age range?
 - a. 20-29 years
 - b. 30-39 years
 - c. 40-49 years
 - d. 50-59 years
 - e. 60-69 years
 - f. 70 years or older
- 2) How many years have you been a nurse?
 - a. Less than 1 year
 - b. 1-2 years
 - c. 3-5 years
 - d. 6-10 years
 - e. 11-20 years
 - f. 21-30 years
 - g. More than 30 years
- 3) How long have you worked at [the facility]?
 - a. Less than 1 year
 - b. 1-2 years
 - c. 3-5 years
 - d. 6-10 years
 - e. 11-20 years
 - f. 21-30 years
 - g. More than 30 years
- 4) Which unit is your primary unit?
 - a. Acute care float pool
 - b. Ambulatory
 - c. Cancer care
 - d. CICU
 - e. Emergency department
 - f. Medical
 - g. NICU
 - h. Operating room
 - i. PACU
 - j. PBMU
 - k. PICU
 - l. Rehabilitation
 - m. Surgical
 - n. Urgent care
 - o. Other

- 5) What shift do you usually work?
- a. 8 hour days
 - b. 8 hour evenings
 - c. 8 hour nights
 - d. 12 hour days
 - e. 12 hour nights
 - f. Day/night rotation
- 6) What is your FTE
- a. 0.1 (per diem)
 - b. 0.4 (32 hours/pay period)
 - c. 0.6 (48 hours/pay period)
 - d. 0.75 (60 hours/pay period)
 - e. 0.9 (72 hours/pay period)
 - f. 1.0 (80 hours/pay period)
- 7) Do you have national certification in your specialty?
- a. Yes
 - b. No
- 8) Are you currently involved in any of the following work-related activities? (Please select all that apply.)
- a. Coordinating Council
 - b. New RN Support Group
 - c. Nurse Camp
 - d. Nurse Mentor Program (as a mentee)
 - e. Nurse Mentor Program (as a mentor)
 - f. Nurse Residency Program
 - g. Nursing Ethics
 - h. Operations Council
 - i. Precepting nursing students
 - j. Professional Development Council
 - k. Quality Research Council
 - l. Research, EBP, or QI project(s)
 - m. Unit-Based Staffing Committee
 - n. Other (please list below)
- 9) If you selected "Other" for the previous question, please list activities here

Appendix B

Code Used in Analysis

```
library(lubridate)
library(dplyr)
library(forcats)
library(visdat)
library(assertive)
library(MASS)
library(psych)
library(ggplot2)
library(ggfortify)
library(broom)
library(plyr)
res<-res %>%
  mutate(age_fct=as.factor(age))
descrip(res)
glimpse(res)
#cleaning up dataframe
res$redcap_survey_identifier <- NULL
res$read_infosheet <- NULL
res$consent <- NULL
res$nurse_resilience_study_information_sheet_complete <- NULL
res$demographic_information_complete <- NULL
res$nurse_resilience_study_information_sheet_timestamp <- NULL
res$demographic_information_timestamp <- NULL
res$connordavidson_resilience_scale_25_timestamp <- NULL
res$connordavidson_resilience_scale_25_complete <- NULL
#checking age variable for out of range
breaksage<- c(min(res$age),0,7,max(res$age))
ggplot(res, aes(age))+
  geom_histogram(breaks=breaksage)
remove(breaksage)
which(is.na(res$age))
#checking years as a nurse for out of range
breaksyn<- c(min(res$years_nurse),0,8,max(res$years_nurse))
ggplot(res, aes(years_nurse))+
  geom_histogram(breaks=breaksyn)
remove(breaksyn)
which(is.na(res$years_nurse))
#Checking years in system for out of range
breaksys<- c(min(res$years_in_system),0,8,max(res$years_in_system))
ggplot(res, aes(years_in_system))+
  geom_histogram(breaks=breaksys)
remove(breaksys)
```

```

which(is.na(res$years_in_system))
#Checking unit for out of range and NA
breaksu<- c(min(res$unit),0,16,max(res$unit))
ggplot(res, aes(unit))+
  geom_histogram(breaks=breaksu)
remove(breaksu)
which(is.na(res$unit))
#checking shift for out of range and NA
breakssh<- c(min(res$shift),0,7,max(res$shift))
ggplot(res, aes(shift))+
  geom_histogram(breaks=breakssh)
remove(breakssh)
which(is.na(res$shift))
#checking FTE for out of range and NA
breaksft<- c(min(res$fte),0,7,max(res$fte))
ggplot(res, aes(fte))+
  geom_histogram(breaks=breaksft)
remove(breaksft)
which(is.na(res$fte))
#checking certified for out of range and NA
breakscrt<- c(min(res$certified),-1,2,max(res$certified))
ggplot(res, aes(certified))+
  geom_histogram(breaks=breakscrt)
remove(breakscrt)
which(is.na(res$certified))
#checking activities1 for out of range and NA
breaksact<- c(min(res$activities__1),0,2,max(res$activities__1))
ggplot(res, aes(activities__1))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__1))
#checking activities2 for out of range and NA
breaksact<- c(min(res$activities__2),0,2,max(res$activities__2))
ggplot(res, aes(activities__2))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__2))
#checking activities3 for out of range and NA
breaksact<- c(min(res$activities__3),0,2,max(res$activities__3))
ggplot(res, aes(activities__3))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__3))
#checking activities4 for out of range and NA
breaksact<- c(min(res$activities__4),0,2,max(res$activities__4))
ggplot(res, aes(activities__4))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__4))
#checking activities5 for out of range and NA

```

```

breaksact<- c(min(res$activities__5),0,2,max(res$activities__5))
ggplot(res, aes(activities__5))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__5))
#checking activities6 for out of range and NA
breaksact<- c(min(res$activities__6),0,2,max(res$activities__6))
ggplot(res, aes(activities__6))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__6))
#checking activities7 four out of range and NA
breaksact<- c(min(res$activities__7),0,2,max(res$activities__7))
ggplot(res, aes(activities__7))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__7))
#checking activities8 for out of range and NA
breaksact<- c(min(res$activities__8),0,2,max(res$activities__8))
ggplot(res, aes(activities__8))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__8))
#checking activities9 for out of range and NA
breaksact<- c(min(res$activities__9),0,2,max(res$activities__9))
ggplot(res, aes(activities__9))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__9))
#checking activities10 for out of range and NA
breaksact<- c(min(res$activities__10),0,2,max(res$activities__10))
ggplot(res, aes(activities__10))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__10))
#checking activities 11 for out of range and NA
breaksact<- c(min(res$activities__11),0,2,max(res$activities__11))
ggplot(res, aes(activities__11))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__11))
#checking activities 12 for out of range and NA
breaksact<- c(min(res$activities__12),0,2,max(res$activities__12))
ggplot(res, aes(activities__12))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__12))
#checking activities 13 for out of range and NA
breaksact<- c(min(res$activities__13),0,2,max(res$activities__13))
ggplot(res, aes(activities__13))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities__13))
#checking activities 14 for out of range and NA
breaksact<- c(min(res$activities__14),0,2,max(res$activities__14))

```

```

ggplot(res, aes(activities___14))+
  geom_histogram(breaks=breaksact)
which(is.na(res$activities___14))
remove(breaksact)
#checking cd_1 for out of range and NA
breakscd<- c(min(res$cdisc_1),0,5,max(res$cdisc_1))
ggplot(res, aes(cdisc_1))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_1))
#checking cd_2 for out of range and NA
breakscd<- c(min(res$cdisc_2),0,5,max(res$cdisc_2))
ggplot(res, aes(cdisc_2))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_2))
#checking cd_3 for out of range and NA
breakscd<- c(min(res$cdisc_3),0,5,max(res$cdisc_3))
ggplot(res, aes(cdisc_3))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_3))
#checking cd_4 for out of range and NA
breakscd<- c(min(res$cdisc_4),0,5,max(res$cdisc_4))
ggplot(res, aes(cdisc_4))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_4))
#checking cd_5 for out of range and NA
breakscd<- c(min(res$cdisc_5),0,5,max(res$cdisc_5))
ggplot(res, aes(cdisc_5))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_5))
#checking cd_6 for out of range and NA
breakscd<- c(min(res$cdisc_6),0,5,max(res$cdisc_6))
ggplot(res, aes(cdisc_6))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_6))
#checking cd_7 for out of range and NA
breakscd<- c(min(res$cdisc_7),0,5,max(res$cdisc_7))
ggplot(res, aes(cdisc_7))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_7))
#checking cd_8 for out of range and NA
breakscd<- c(min(res$cdisc_8),0,5,max(res$cdisc_8))
ggplot(res, aes(cdisc_8))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_8))
#checking cd_9 for out of range and NA
breakscd<- c(min(res$cdisc_9),0,5,max(res$cdisc_9))

```

```

ggplot(res, aes(cdrisc_9))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_9))
#checking cd_10 for out of range and NA
breakscd<- c(min(res$cdrisc_10),0,5,max(res$cdrisc_10))
ggplot(res, aes(cdrisc_10))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_10))
#checking cd_11 for out of range and NA
breakscd<- c(min(res$cdrisc_11),0,5,max(res$cdrisc_11))
ggplot(res, aes(cdrisc_11))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_11))
#checking cd_12 for out of range and NA
breakscd<- c(min(res$cdrisc_12),0,5,max(res$cdrisc_12))
ggplot(res, aes(cdrisc_12))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_12))
#checking cd_13 for out of range and NA
breakscd<- c(min(res$cdrisc_13),0,5,max(res$cdrisc_13))
ggplot(res, aes(cdrisc_13))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_13))
#checking cd_14 for out of range and NA
breakscd<- c(min(res$cdrisc_14),0,5,max(res$cdrisc_14))
ggplot(res, aes(cdrisc_14))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_14))
#checking cd_15 for out of range and NA
breakscd<- c(min(res$cdrisc_15),0,5,max(res$cdrisc_15))
ggplot(res, aes(cdrisc_15))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_15))
#checking cd_16 for out of range and NA
breakscd<- c(min(res$cdrisc_16),0,5,max(res$cdrisc_16))
ggplot(res, aes(cdrisc_16))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_16))
#checking cd_17 for out of range and NA
breakscd<- c(min(res$cdrisc_17),0,5,max(res$cdrisc_17))
ggplot(res, aes(cdrisc_17))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdrisc_17))
#checking cd_18 for out of range and NA
breakscd<- c(min(res$cdrisc_18),0,5,max(res$cdrisc_18))
ggplot(res, aes(cdrisc_18))+

```



```

  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_18))
#checking cd_19 for out of range and NA
breakscd<- c(min(res$cdisc_19),0,5,max(res$cdisc_19))
ggplot(res, aes(cdisc_19))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_19))
#checking cd_20 for out of range and NA
breakscd<- c(min(res$cdisc_20),0,5,max(res$cdisc_20))
ggplot(res, aes(cdisc_20))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_20))
#checking cd_21 for out of range and NA
breakscd<- c(min(res$cdisc_21),0,5,max(res$cdisc_21))
ggplot(res, aes(cdisc_21))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_21))
#checking cd_22 for out of range and NA
breakscd<- c(min(res$cdisc_22),0,5,max(res$cdisc_22))
ggplot(res, aes(cdisc_22))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_22))
#checking cd_23 for out of range and NA
breakscd<- c(min(res$cdisc_23),0,5,max(res$cdisc_23))
ggplot(res, aes(cdisc_23))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_23))
#checking cd_24 for out of range and NA
breakscd<- c(min(res$cdisc_24),0,5,max(res$cdisc_24))
ggplot(res, aes(cdisc_24))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_24))
#checking cd_25 for out of range and NA
breakscd<- c(min(res$cdisc_25),0,5,max(res$cdisc_25))
ggplot(res, aes(cdisc_25))+
  geom_histogram(breaks=breakscd)
which(is.na(res$cdisc_25))
#creating cdisc_total column
res$cdisc_total<- (res$cdisc_1+res$cdisc_2+res$cdisc_3
  +res$cdisc_4+res$cdisc_5+res$cdisc_6+
  res$cdisc_7+res$cdisc_8+res$cdisc_9
  +res$cdisc_10+res$cdisc_11+res$cdisc_12
  +res$cdisc_13+res$cdisc_14+res$cdisc_15
  +res$cdisc_16+res$cdisc_17+res$cdisc_18
  +res$cdisc_19+res$cdisc_20+res$cdisc_21
  +res$cdisc_22+res$cdisc_23+res$cdisc_24

```

```

+res$cdisc_25)
#creating column to combine activities
res$activities_comm<-0
res$activities_comm[res$activities__1==1] <- 1
res$activities_comm[res$activities__7==1] <- 1
res$activities_comm[res$activities__8==1] <- 1
res$activities_comm[res$activities__10==1] <- 1
res$activities_comm[res$activities__11==1] <- 1
res$activities_comm[res$activities__13==1] <- 1
#creating column for presence of NAs in CDRisc
res$cdna <- is.na(res$cdisc_total)
#creating column for presence of NAs in FTE
res$ftena<- is.na(res$fte)
#testing missingness of CDRISC answers
#testing missingness with age
resna<-table(res$cdna,res$age)
print(resna)
chisq.test(resna)
#testing missingness with years_nurse
resna<-table(res$cdna,res$years_nurse)
print(resna)
chisq.test(resna)
#testing missingness with years_in_system
resna<-table(res$cdna,res$years_in_system)
print(resna)
chisq.test(resna)
#testing missingness with unit
resna<-table(res$cdna,res$unit)
print(resna)
chisq.test(resna)
#testing missingness with shift
resna<-table(res$cdna,res$shift)
print(resna)
chisq.test(resna)
#testing missingness with fte
resna<-table(res$cdna,res$fte)
print(resna)
chisq.test(resna)
#testing missingness with certified
resna<-table(res$cdna,res$certified)
print(resna)
chisq.test(resna)
#testing missingness with activities_comm
resna<-table(res$cdna,res$activities_comm)
print(resna)
chisq.test(resna)

```

```

#checking for associations between missing and observed data
explanatory = c("fte", "years_nurse", "activities_comm")
dependent = c("cdrisc_total")
res %>%
  missing_pairs(dependent, explanatory, position = "fill")
res %>%
  missing_compare(dependent, explanatory)
res %>%
  missing_plot()
#creating new factor variable of FTE
res$fte_fct <- factor(res$fte, order=TRUE,
  levels=c("1", "2", "3", "4", "5", "6"))
#creating new factor variable of FTE
res$years_nurse_fct <- factor(res$years_nurse, order=TRUE,
  levels=c("1", "2", "3", "4", "5", "6", "7"))
#editing activities_comm field
res2 <- res
res2$activities_comm[c(8,18,19,40,52,65,67,68,84,93,95,102,107,110,111,116)] <-
c(1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1)
res_inclusive <- res2
res_exclusive <- res
#editing age factor field, fte factor field, years as nurse factor, and creating committee factor
field
levels(res_inclusive$age_fct) = c("20 to 29", "30 to 39", "40 to 49", "50 to 59", "60 to 69")
revalue(res_inclusive$age_fct, c("1" = "20 to 29", "2" = "30 to 39", "3" = "40 to 49",
  "4" = "50 to 59", "5" = "60 to 69"))
levels(res_exclusive$age_fct) = c("20 to 29", "30 to 39", "40 to 49", "50 to 59", "60 to 69")
revalue(res_exclusive$age_fct, c("1" = "20 to 29", "2" = "30 to 39", "3" = "40 to 49",
  "4" = "50 to 59", "5" = "60 to 69"))
#combining categories in fte_fct and years_as_nurse_fct
sub_res_inclusive_nona$fte_fct_sml <- recode(sub_res_inclusive_nona$fte_fct, "
c('1','2','3','4')='Part-time';
  c('5','6')='Full-time'")
sub_res_exclusive_nona$fte_fct_sml <- recode(sub_res_exclusive_nona$fte_fct, "
c('1','2','3','4')='Part-time';
  c('5','6')='Full-time'")
sub_res_inclusive_nona$fte_fct_sml <- factor(sub_res_inclusive_nona$fte_fct_sml,
levels=c("Part-time", "Full-time"))
summary(sub_res_inclusive_nona$fte_fct_sml)
summary(sub_res_inclusive_nona$fte_fct)
sub_res_inclusive_nona$years_nurse_fct_sml <- recode(sub_res_inclusive_nona$years_nurse, "
c('1','2')='Less than 2 years';
c('3','4')='3-10 years'; c('5','6','7')='> 10 years'")
sub_res_inclusive_nona$years_nurse_fct_sml <-
factor(sub_res_inclusive_nona$years_nurse_fct_sml, levels=c("Less than 2 years", "3-10
years", "> 10 years"))

```

```

summary(sub_res_inclusive_nona$years_nurse_fct)
summary(sub_res_inclusive_nona$years_nurse_fct_sml)
#committee factor
sub_res_inclusive_nona$activities_comm_fct<-factor(sub_res_inclusive_nona$activities_comm,
levels=c("0","1"))
sub_res_inclusive_nona$activities_comm_fct<-
recode(sub_res_inclusive_nona$activities_comm_fct,
       " c('0')='No Committee Involvement';
       c('1')='Committee Involvement'")
revalue(sub_res_inclusive_nona$activities_comm_fct, c("0"="No Committee Involvement",
"1"="Committee Involvement"))
#subsetting original data frames
sub_res_inclusive<-res_inclusive %>%
  select(code, cdrisc_total, age, age_fct, years_nurse, years_nurse_fct, fte, fte_fct,
activities_comm, years_in_system, unit, fte, certified)
sub_res_exclusive<-res_exclusive %>%
  select(code, cdrisc_total, age, age_fct, years_nurse, years_nurse_fct, fte, fte_fct,
activities_comm, years_in_system, unit, fte, certified)
#list-wise case deletion of subjects with missing fte or cd-risc totals
summary(sub_res_inclusive$age_fct)
sub_res_inclusive_nona<- sub_res_inclusive %>%
  filter(!is.na(fte),!is.na(cdrisc_total))
sub_res_exclusive_nona<- sub_res_exclusive %>%
  filter(!is.na(fte),!is.na(cdrisc_total))
summary(sub_res_inclusive_nona$fte_fct_sml)
#Analyzing age of subjects
describe(res$age)
summary(res$age)
hist(res$age,main="Age distribution",ylab="Frequency",xlab="age category")
ggplot(res, aes(x=age))+
  geom_histogram(breaks=seq(1,6, by=1),
                 col="black",
                 fill="blue",
                 alpha=.5)+
  labs(title="Histogram for Age",x="Age",y="Count")
#Analyzing years as a nurse
describe(res$years_nurse)
summary(res$years_nurse)
summary(sub_res_inclusive_nona$years_nurse_fct)
ggplot(res, aes(x=years_nurse))+
  geom_histogram(breaks=seq(0,7, by=1),
                 col="black",
                 fill="blue",
                 alpha=.5)+
  labs(title="Histogram for Years of Experience",x="Years of Experience",y="Count")
#Analyzing years as in the system

```

```

describe(res$years_in_system)
summary(res$years_in_system)
ggplot(res, aes(x=years_in_system))+
  geom_histogram(breaks=seq(0,7, by=1),
    col="black",
    fill="blue",
    alpha=.5)+
  labs(title="Histogram for Years in System",x="Years in System",y="Count")

```

#Analyzing units

```

ggplot(data=res, aes(x=res$unit))+
  geom_histogram(breaks=seq(0,16, by=1),
    col="black",
    fill="blue",
    alpha=.5)+
  labs(title="Histogram for Unit",x="Unit",y="Count")

```

```
table(res$unit)
```

#Analyzing Shift

```

describe(res$shift)
ggplot(res, aes(x=shift))+
  geom_histogram(breaks=seq(0,6, by=1),
    col="black",
    fill="blue",
    alpha=.5)+
  labs(title="Histogram of Shift type",x="shift category",y="count")

```

#Analyzing FTE

```

describe(res$fte)
summary(sub_res_inclusive_nona$fte_fct)
ggplot(res, aes(x=fte))+
  geom_histogram(breaks=seq(0,6, by=1),
    col="black",
    fill="blue",
    alpha=.5)+
  labs(title="Histogram of FTE",x="FTE category",y="count")

```

#Analyzing certification

```

describe(res$certified)
count(res$certified)
sum(res$certified)
ggplot(res, aes(x=certified))+
  geom_histogram(breaks=seq(0,1, by=.5),
    col="black",
    fill="blue",
    alpha=.5)+
  labs(title="Histogram of certification",x="certification",y="count")

```

#Analyzing activities

```

sum(res$activities___1)
sum(res$activities___2)

```

```

sum(res$activities___3)
sum(res$activities___4)
sum(res$activities___5)
sum(res$activities___6)
sum(res$activities___7)
sum(res$activities___8)
sum(res$activities___9)
sum(res$activities___10)
sum(res$activities___11)
sum(res$activities___12)
sum(res$activities___13)
sum(res$activities___14)
#analyzing cd_risc_total
describe(sub_res_inclusive_nona$cdrisc_total)
summary(sub_res_inclusive_nona$cdrisc_total)
#mean cdrisc_total by variable
cdrisc_meansfte <- sub_res_inclusive_nona %>%
  group_by(fte) %>%
  summarize(meancdrisc_fte=mean(cdrisc_total))
cdrisc_meanscomm <- sub_res_inclusive_nona %>%
  group_by(activities_comm) %>%
  summarize(meancdrisc_comm=mean(cdrisc_total))
cdrisc_meansyn <- sub_res_inclusive_nona %>%
  group_by(years_nurse) %>%
  summarize(meancdrisc_yn=mean(cdrisc_total))
#box plots of cdrisc_total by explanatory variables
ggplot(sub_res_inclusive_nona, aes(x=fte_fct, y=cdrisc_total))+
  geom_boxplot()+
  labs(title="Plot of CD-RISC-25 score by FTE", x = "FTE", y="CD-RISC-25 score")
ggplot(sub_res_inclusive_nona, aes(x=years_nurse_fct, y=cdrisc_total))+
  geom_boxplot()+
  labs(title="Plot of CD-RISC-25 score by Years of Nursing Experience", x = "Years of
Experience", y="CD-RISC-25 score")
ggplot(sub_res_inclusive_nona, aes(x=activities_comm_fct, y=cdrisc_total))+
  geom_boxplot()+
  labs(title="Plot of CD-RISC-25 score by Committee Involvement", x = "Committee
involvement", y="CD-RISC-25 score")
#scatterplots of cdrisc_total by explanatory variables
ggplot(sub_res_inclusive_nona, aes(x=fte_fct, y=cdrisc_total, color=activities_comm_fct))+
  geom_point()+
  labs(title="Plot of CD-RISC-25 score by FTE", x="FTE", y="CD-RISC-25 score")
ggplot(sub_res_inclusive_nona, aes(x=years_nurse_fct, y=cdrisc_total,
color=activities_comm_fct))+
  geom_point()+
  labs(title="Plot of CD-RISC-25 score by Years of Nursing Experience", x="Years of Nursing
Experience", y="CD-RISC-25 score")

```

#linear regression with non-factor variables

```
mdl<-lm(cdrisc_total~fte+years_nurse+activities_comm, data=sub_res_inclusive_nona)
mdl %>%
  tidy()
mdl %>%
  glance()
mdl %>%
  augment() %>%
  select(fte, cooks_dist=.cooks_d) %>%
  arrange(desc(cooks_dist)) %>%
  head()
autoplot(mdl, which=1:6,
  ncol=2, label.size=3)
```

#linear regression with factor variables

```
mdl_fct<-lm(cdrisc_total~fte_fct_sml+years_nurse_fct_sml+activities_comm,
data=sub_res_inclusive_nona)
mdl_fct %>%
  tidy()
mdl_fct %>%
  glance()
mdl_fct %>%
  augment() %>%
  select(fte, cooks_dist=.cooks_d) %>%
  arrange(desc(cooks_dist)) %>%
  head()
autoplot(mdl_fct, which=1:6,
  ncol=2, label.size=3)
```

#visualizing linear model

```
ggplot(sub_res_inclusive_nona, aes(fte, sqrt(cdrisc_total), color= activities_comm))+
  geom_point()+
  geom_smooth(method="lm", se=FALSE)
ggplot(sub_res_inclusive_nona, aes(years_nurse, cdrisc_total, color=fte))+
  geom_point()+
  geom_smooth(method="lm", se=FALSE)
summary(mdl)
summary(mdl_fct)
mdl_fct %>%
  tidy()
mdl_fct %>%
  glance()
```

Appendix C

Semi-Structured Interview Protocol and Questions

Pre-Interview Procedures

- Review information statement
- Answer questions
- Ask permission to audio record the interview
- Inform that interviewer will take notes

Introduction

This interview is a follow-up to the survey you completed about resilience. In this interview, we hope to learn about ways to support or enhance resilience among SCH nurses. These questions will focus on what helps and what gets in the way of resilience.

For the purpose of this study, resilience is defined as the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress.

Interview Questions

1. Please tell me about the types of stresses that you face at work.
2. What are some ways that you cope with stress at work?
3. What matters most to you about your work?
4. Please you tell me about people or activities that provide support for you related to your work. (Please do not use people's names, but rather their position or role.)
5. What does "resilience" mean to you?
6. Are there things that you would like to see done differently to reduce stress and increase resilience among nurses?

Chapter V

Conclusion

The prior three papers explored pediatric nurse resilience and the contextual factors surrounding it. The first two studies report on the findings, which then provided the basis for the presented heuristic framework of pediatric nurse resilience. Study 1 aimed to explore environmental and individual factors and their association with resilience among pediatric nurses, and Study 2 explored contextual factors surrounding pediatric nurses with varying levels of resilience, including their social support, work environment, personal characteristics, and coping mechanisms. Together, these papers present a broad view of pediatric nurse resilience.

The first paper explored associations between years of nursing experience, work-related committee involvement, employment status, and resilience using quantitative analysis of survey responses. Findings from the first papers suggest pediatric nurses have resilience levels similar to nurses in other specialties but lower than those in the non-nursing general population (Connor & Davidson, 2003; Gillespie et al., 2007; Rushton et al., 2015). Mean resilience differed slightly across categories of nursing experience, work-related committee involvement, and employment status but these differences did not reach the level of significance. Contrary to the literature, which describes experience of adversity as supportive of resilience, the analysis demonstrated that the variance in resilience scores increased in nurses in categories with higher years of nursing experience, suggesting that nursing experience may help or hinder nursing resilience.

The second paper explored the contextual factors surrounding pediatric nurses with varying levels of resilience, including their social support, work environment, and coping mechanisms by merging quantitative findings with themes generated from a qualitative analysis of participant interview transcripts. Nurses described their resilience as being supported by social

support from coworkers and taking breaks. They also valued an accessible administration that advocated for them. To the extent the administration was aware of nurses' work, they could empathize, work together toward solutions, and advocate for nurses. This finding highlights a potential incongruity between the priorities executives set for nursing managers and nurses' expressed needs for greater presence and empathy at the bedside. Although resilience research typically focuses on strengths and supportive factors, nurses described barriers that prevent them from providing their best care and feeling disrespected or underappreciated as factors that hinder their resilience. A joint table that combined themes and CD-RISC scores revealed that themes helping and hindering resilience were present across the range of scores in the sample. A closer analysis of participants with lower resilience than their peers suggested their lower resilience may be a consequence of repetitive or highly impactful stressors, which they are unable to recover from, or a mismatch between the resources they need and the adversity they face.

The third paper reviewed prominent theories of resilience, findings from the two studies conducted, and recent findings within and outside the nursing discipline to develop a heuristic framework of nurse resilience. The framework presents resilience as a person-centered network of protective factors both in the environment and individual. These protective factors may interact with each other to synergize and produce more resilience. Alternately, the presence or absence of a factor may decrease the influence that another factor provides for resilience. The heuristic framework is person-centered to indicate that the factors available to an individual and subsequent outcome that constitutes resilience is ultimately determined by the individual's perception. Behaviors that influence resilience may not be taken and resources may not be utilized unless the individual is aware of them. An individual's personal expectations and their perception of the expectations of those around them will also determine the outcome that

constitutes resilience in a challenging situation. Furthermore, understanding resilience requires exploring stressors and protective factors within, and outside, the work environment.

These papers highlight the complexity of resilience and the need to approach resilience research from multiple angles. The finding that resilience in pediatric nurses may decrease as years of nursing experience increase suggests that some phenomenon during one's nursing career diminishes resilience. The change in resilience could be due to changes in the nurse or their environment, or a cumulative effect of adversity. Explorations of individual and environmental protective factors and challenges faced over time are needed to better understand the processes that may be contributing to the decreases in resilience noted in the current study.

The lack of a clear pattern in resilience scores and lack of significance found in the quantitative analysis suggest that resilience is highly complex. In this complex network of protective factors that constitute resilience, the presence or absence of a given factor may instigate a reprioritization of factors that would be best applicable to a given adversity, which could explain why different individuals could approach a similar challenge so differently. An example of this lies in the lack of association found between work-related committee involvement and resilience. It may be that the presence or absence of supportive leadership, or a culture that permits nurses the agency to enact change, modifies the influence of work-related committee involvement on resilience. Alternately, work-related committee involvement may contribute more frustration and stress to nursing work than opportunities for problem-solving and social support.

Based on the dynamic and complex nature of resilience noted in the current studies, future nurse resilience research might focus on the following areas. The contribution of any one single protective factor, such as organizational structure or supportive relationships, is likely to

be small when measured quantitatively. Therefore, discerning differences based on the presence of protective factors will likely require large-scale studies. Furthermore, scholars who conduct future quantitative studies should also use longitudinal, qualitative, and/or mixed methods to build our understanding of any interactions between protective factors and their applications to specific types of adversity. Lastly, efforts to understand and articulate the specific contribution of organizational structures, policies, and culture to pediatric nurse resilience would benefit from collaborative partnerships between nursing employers to facilitate comparisons across different organizations.

Together, these papers present a starting point for the exploration of pediatric nurse resilience and its associated factors. These papers demonstrate the importance of exploring pediatric nurse resilience holistically to better understand how a nurse navigates and recovers from adversity and how a nurse uses the spectrum of protective factors within and outside the work environment. Organizations would benefit from this knowledge by informing policies and practices that support and retain nurses throughout their careers.

References

- Ablett, J. R., & Jones, R. S. P. (2007). Resilience and well-being in palliative care staff: a qualitative study of hospice nurses' experience of work. *Psycho-Oncology*, 16(8), 733-740.
<https://doi.org/https://doi.org/10.1002/pon.1130>
- American Nurses Association. (2011). *ANA Health and Safety Survey*.
<https://www.nursingworld.org/practice-policy/work-environment/health-safety/health-safety-survey/>
- ANCC. (2020). *Magnet model - Creating a magnet culture*. ANA Enterprise.
<https://www.nursingworld.org/organizational-programs/magnet/magnet-model/>
- Ang, S. Y., Hemsworth, D., Uthaman, T., Ayre, T. C., Mordiffi, S. Z., Ang, E., & Lopez, V. (2018). Understanding the influence of resilience on psychological outcomes - Comparing results from acute care nurses in Canada and Singapore. *Applied Nursing Research*, 43, 105-113.
<https://doi.org/10.1016/j.apnr.2018.07.007>
- Ang, S. Y., Uthaman, T., Ayre, T. C., Lim, S. H., & Lopez, V. (2019, Mar). Differing pathways to resiliency: A grounded theory study of enactment of resilience among acute care nurses. *Nursing & Health Sciences*, 21(1), 132-138. <https://doi.org/10.1111/nhs.12573>
- Baek, H., Han, K., & Ryu, E. (2019, Nov). Authentic leadership, job satisfaction and organizational commitment: The moderating effect of nurse tenure. *Journal of Nursing Management*, 27(8), 1655-1663. <https://doi.org/10.1111/jonm.12853>
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology*, 22(3), 309-328. <https://doi.org/10.1108/02683940710733115>
- Bandura, A., Freeman, W., & Lightsey, R. (1999). *Self-efficacy: The exercise of control*. Springer.
- Bennett, M. P., Zeller, J. M., Rosenberg, L., & McCann, J. (2003). The effect of mirthful laughter on stress and natural killer cell activity. *Alternative Therapies in Health and Medicine*, 9(2), 38-45.
- Berry, J. G., Hall, M., Hall, D. E., Kuo, D. Z., Cohen, E., Agrawal, R., Mandl, K. D., Clifton, H., & Neff, J. (2013). Inpatient Growth and Resource Use in 28 Children's Hospitals: A Longitudinal, Multi-institutional Study. *JAMA Pediatrics*, 167(2), 170-177.
<https://doi.org/10.1001/jamapediatrics.2013.432>
- Bonanno, G. A. (2004). Loss, Trauma, and Human Resilience: Have We Underestimated the Human Capacity to Thrive After Extremely Aversive Events? *American Psychologist*, 59(1), 20-28.
<https://doi.org/10.1037/0003-066X.59.1.20>

- Borsboom, D. (2017, Feb). A network theory of mental disorders. *World Psychiatry*, 16(1), 5-13.
<https://doi.org/10.1002/wps.20375>
- Brown, R., Wey, H., & Foland, K. (2018). The Relationship Among Change Fatigue, Resilience, and Job Satisfaction of Hospital Staff Nurses. *Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing*, 50(3), 306-313.
<https://doi.org/10.1111/jnu.12373>
- Campbell-Sills, L., Cohan, S. L., & Stein, M. B. (2006, 2006/04/01/). Relationship of resilience to personality, coping, and psychiatric symptoms in young adults. *Behaviour Research and Therapy*, 44(4), 585-599. <https://doi.org/https://doi.org/10.1016/j.brat.2005.05.001>
- Cho, G.-J., & Kang, J. (2017). Type D personality and post-traumatic stress disorder symptoms among intensive care unit nurses: The mediating effect of resilience. *PloS One*, 12(4), e0175067-e0175067. <https://doi.org/10.1371/journal.pone.0175067>
- Colgan, D. D., Christopher, M., Bowen, S., Brems, C., Hunsinger, M., Tucker, B., & Dapolonia, E. (2019, Jul 1). Mindfulness-based Wellness and Resilience intervention among interdisciplinary primary care teams: a mixed-methods feasibility and acceptability trial. *Primary Health Care Research & Development*, 20, e91. <https://doi.org/10.1017/s1463423619000173>
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience scale (CD-RISC) [Article]. *Depression and Anxiety*, 18(2), 76-82.
<https://doi.org/10.1002/da.10113>
- Cramer, A. O. J., van Borkulo, C. D., Giltay, E. J., van der Maas, H. L. J., Kendler, K. S., Scheffer, M., & Borsboom, D. (2016, 2016/12/08/ //). Major Depression as a Complex Dynamic System [Report]. *PloS One*, 11, e0167490.
https://link.gale.com/apps/doc/A473276113/AONE?u=wash_main&sid=AONE&xid=2b583972
- de Terte, I., Stephens, C., & Huddleston, L. (2014). The Development of a Three Part Model of Psychological Resilience. *Stress and Health*, 30(5), 416-424. <https://doi.org/10.1002/smi.2625>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499.
- Ding, Y., Yang, Y., Yang, X., Zhang, T., Qiu, X., He, X., Wang, W., Wang, L., & Sui, H. (2015). The Mediating Role of Coping Style in the Relationship between Psychological Capital and Burnout among Chinese Nurses. *PloS One*, 10(4), e0122128. <https://doi.org/10.1371/journal.pone.0122128>

- Estrada, C. A., Isen, A. M., & Young, M. J. (1997). Positive Affect Facilitates Integration of Information and Decreases Anchoring in Reasoning among Physicians. *Organizational Behavior and Human Decision Processes*, 72(1), 117-135. <https://doi.org/10.1006/obhd.1997.2734>
- Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist*, 18(1), 12-23. <https://doi.org/10.1027/1016-9040/a000124>
- Foureur, M., Besley, K., Burton, G., Yu, N., & Crisp, J. (2013). Enhancing the resilience of nurses and midwives: pilot of a mindfulness-based program for increased health, sense of coherence and decreased depression, anxiety and stress. *Contemporary Nurse*, 45(1), 114-125. <https://doi.org/10.5172/conu.2013.45.1.114>
- García-Izquierdo, M., Meseguer de Pedro, M., Ríos-Risquez, M. I., & Sánchez, M. I. S. (2018). Resilience as a Moderator of Psychological Health in Situations of Chronic Stress (Burnout) in a Sample of Hospital Nurses. *Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing*, 50(2), 228-236. <https://doi.org/10.1111/jnu.12367>
- Gillespie, B. M., Chaboyer, W., Wallis, M., & Grimbeek, P. (2007). Resilience in the operating room: developing and testing of a resilience model. *Journal of Advanced Nursing*, 59(4), 427-438. <https://doi.org/10.1111/j.1365-2648.2007.04340.x>
- Gillman, L., Adams, J., Kovac, R., Kilcullen, A., House, A., & Doyle, C. (2015). Strategies to promote coping and resilience in oncology and palliative care nurses caring for adult patients with malignancy: a comprehensive systematic review. *JBI database of systematic reviews and implementation reports*, 13(5), 131-204. <https://doi.org/10.11124/jbisrir-2015-1898>
- Glass, N. (2009, May-Jun). An investigation of nurses' and midwives' academic/clinical workplaces: a healing model to improve and sustain hope, optimism, and resilience in professional practice. *Holistic Nursing Practice*, 23(3), 158-170. <https://doi.org/10.1097/HNP.0b013e3181a056c4>
- Grabbe, L., Higgins, M. K., Baird, M., Craven, P. A., & San Fratello, S. (2020, May-Jun). The Community Resiliency Model® to promote nurse well-being. *Nursing Outlook*, 68(3), 324-336. <https://doi.org/10.1016/j.outlook.2019.11.002>
- Guo, Y.-F., Cross, W., Plummer, V., Lam, L., Luo, Y.-H., & Zhang, J.-P. (2017). Exploring resilience in Chinese nurses: a cross-sectional study. *Journal of Nursing Management*, 25(3), 223-230. <https://doi.org/10.1111/jonm.12457>
- Guo, Y.-F., Luo, Y.-H., Lam, L., Cross, W., Plummer, V., & Zhang, J.-P. (2018). Burnout and its association with resilience in nurses: A cross-sectional study. *Journal of Clinical Nursing*, 27(1-2), 441-449. <https://doi.org/10.1111/jocn.13952>

- Guskin, E. (2021). KFF and Washington Post Frontline Health Care Workers Survey [White Paper]. Retrieved 4/24/2021, from <https://www.washingtonpost.com/context/washington-post-kff-frontline-health-care-workers-survey-feb-11-march-7-2021/ba15a233-9495-47a9-9cdd-e7fa1578b1ca/>
- Hsieh, H.-F., Chang, S.-C., & Wang, H.-H. (2017). The relationships among personality, social support, and resilience of abused nurses at emergency rooms and psychiatric wards in Taiwan. *Women and Health*, 57(1), 40-51. <https://doi.org/10.1080/03630242.2016.1150385>
- Hunt, D. (2014, Jul). Does value congruence between nurses and supervisors effect job satisfaction and turnover? *Journal of Nursing Management*, 22(5), 572-582. <https://doi.org/10.1111/jonm.12055>
- Isen, A. M., & Daubman, K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology*, 47(6), 1206-1217. <https://doi.org/10.1037/0022-3514.47.6.1206>
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987, Jun). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, 52(6), 1122-1131. <https://doi.org/10.1037//0022-3514.52.6.1122>
- Isen, A. M., Rosenzweig, A. S., & Young, M. J. (1991, Jul-Sep). The influence of positive affect on clinical problem solving. *Medical Decision Making*, 11(3), 221-227. <https://doi.org/10.1177/0272989x9101100313>
- Jackson, J., Vandall-Walker, V., Vanderspank-Wright, B., Wishart, P., & Moore, S. L. (2018). Burnout and resilience in critical care nurses: A grounded theory of Managing Exposure. *Intensive and Critical Care Nursing*, 48, 28-35. <https://doi.org/10.1016/j.iccn.2018.07.002>
- Jeannette, J., & Scoboria, A. (2008). Firefighter preferences regarding post-incident intervention [Article]. *Work and Stress*, 22(4), 314-326. <https://doi.org/10.1080/02678370802564231>
- Judge, T. A. (2017). Job Attitudes, Job Satisfaction, and Job Affect: A Century of Continuity and of Change. *Journal of applied psychology*, 102(3), 356-374.
- Kalisch, R., Cramer, A. O. J., Binder, H., Fritz, J., Leertouwer, I., Lunansky, G., Meyer, B., Timmer, J., Veer, I. M., & van Harmelen, A.-L. (2019). Deconstructing and reconstructing resilience: A dynamic network approach. *Perspectives on Psychological Science*, 14(5), 765-777. <https://doi.org/10.1177/1745691619855637>
- Kalisch, R., Müller, M. B., & Tüscher, O. (2015). A conceptual framework for the neurobiological study of resilience. *Behavioral and Brain Sciences*, 38. <https://doi.org/10.1017/S0140525X1400082X>

- Kim, S. R., Park, O. L., Kim, H. Y., & Kim, J. Y. (2019). Factors influencing well-being in clinical nurses: A path analysis using a multi-mediation model. *Journal of Clinical Nursing*, 28(23-24), 4549-4559. <https://doi.org/10.1111/jocn.15045>
- Kotzer, A. M., Koepping, D. M., & LeDuc, K. (2006, Jul-Aug). Perceived nursing work environment of acute care pediatric nurses. *Pediatric Nursing*, 32(4), 327-332.
- Kutluturkan, S., Sozeri, E., Uysal, N., & Bay, F. (2016). Resilience and burnout status among nurses working in oncology. *Annals of general psychiatry*, 15, 33.
- Lakioti, A., & Stalikas, A. (2020). Resilient reintegration as a result of psychotherapy: a grounded theory analysis of clients' experiences. *Counselling Psychology Quarterly*, 33(3), 393-414. <https://doi.org/10.1080/09515070.2018.1553774>
- Lin, C.-C., Liang, H.-F., Han, C.-Y., Chen, L.-C., & Hsieh, C.-L. (2019). Professional resilience among nurses working in an overcrowded emergency department in Taiwan. *International Emergency Nursing*, 42, 44-50. <https://doi.org/10.1016/j.ienj.2018.05.005>
- Maslach, C. (2003). Job Burnout: New Directions in Research and Intervention. *Current Directions in Psychological Science*, 12(5), 189-192. <https://doi.org/10.1111/1467-8721.01258>
- Masten, A. S., Powell, J. L., & Luthar, S. (2003). A resilience framework for research, policy, and practice. *Resilience and vulnerability: Adaptation in the context of childhood adversities*, 1(25), 153.
- Matos, P. S., Neushotz, L. A., Griffin, M. T. Q., & Fitzpatrick, J. J. (2010). An exploratory study of resilience and job satisfaction among psychiatric nurses working in inpatient units. *International Journal of Mental Health Nursing*, 19(5), 307-312. <https://doi.org/10.1111/j.1447-0349.2010.00690.x>
- McVicar, A. (2003). Workplace stress in nursing: a literature review. *Journal of Advanced Nursing*, 44(6), 633-642. <https://doi.org/https://doi.org/10.1046/j.0309-2402.2003.02853.x>
- Mealer, M., Jones, J., & Meek, P. (2017). Factors Affecting Resilience and Development of Posttraumatic Stress Disorder in Critical Care Nurses. *American journal of critical care : an official publication, American Association of Critical-Care Nurses*, 26(3), 184-192. <https://doi.org/10.4037/ajcc2017798>
- Mealer, M., Jones, J., & Moss, M. (2012, Sep). A qualitative study of resilience and posttraumatic stress disorder in United States ICU nurses. *Intensive Care Medicine*, 38(9), 1445-1451. <https://doi.org/10.1007/s00134-012-2600-6>

- Mealer, M., Jones, J., Newman, J., McFann, K. K., Rothbaum, B., & Moss, M. (2012). The presence of resilience is associated with a healthier psychological profile in intensive care unit (ICU) nurses: results of a national survey. *International Journal of Nursing Studies*, 49(3), 292-299.
<https://doi.org/10.1016/j.ijnurstu.2011.09.015>
- Moshe, M. (2014). "I'm on a break..." The contribution of taking a break to emotional coping. *Revista Latinoamericana de Estudios sobre Cuerpos, Emociones y Sociedad*, 6(16), 66-73.
- Nei, D., Snyder, L. A., & Litwiller, B. J. (2015). Promoting retention of nurses: a meta-analytic examination of causes of nurse turnover. *Health Care Management Review*, 40(3), 237-253.
- Nicholson, J. (2014). Supporting mothers living with mental illnesses in recovery. In *Motherhood, mental illness and recovery* (pp. 3-17). Springer, Cham. https://doi.org/10.1007/978-3-319-01318-3_1
- Öksüz, E., Demiralp, M., Mersin, S., Tüzer, H., Aksu, M., & Sarıkoc, G. (2019). Resilience in nurses in terms of perceived social support, job satisfaction and certain variables. *Journal of Nursing Management*, 27(2), 423-432. <https://doi.org/10.1111/jonm.12703>
- Ren, Y., Zhou, Y., Wang, S., Luo, T., Huang, M., & Zeng, Y. (2018, 2018/01/10/). Exploratory study on resilience and its influencing factors among hospital nurses in Guangzhou, China. *International journal of nursing sciences*, 5(1), 57-62.
<https://doi.org/https://doi.org/10.1016/j.ijnss.2017.11.001>
- Richardson, G. E. (2002). The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, 58(3), 307-321. <https://doi.org/10.1002/jclp.10020>
- Richardson, G. E., Neiger, B. L., Jensen, S., & Kumpfer, K. L. (1990). The resiliency model. *Health Education*, 21(6), 33-39. <https://doi.org/10.1080/00970050.1990.10614589>
- Roberts, N. J., McAloney-Kocaman, K., Lippiett, K., Ray, E., Welch, L., & Kelly, C. (2021, Jan). Levels of resilience, anxiety and depression in nurses working in respiratory clinical areas during the COVID pandemic. *Respiratory Medicine*, 176, 106219.
<https://doi.org/10.1016/j.rmed.2020.106219>
- Rushton, C. H., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and Resilience Among Nurses Practicing in High-Intensity Settings. *American journal of critical care : an official publication, American Association of Critical-Care Nurses*, 24(5), 412-420.
<https://doi.org/10.4037/ajcc2015291>
- Russo, C., Calo, O., Harrison, G., Mahoney, K., & Zavotsky, K. E. (2018). Resilience and Coping After Hospital Mergers. *Clinical Nurse Specialist*, 32(2), 97-102.
<https://doi.org/10.1097/nur.0000000000000358>

- Saber, D. A. (2014, Nov-Dec). Frontline registered nurse job satisfaction and predictors over three decades: a meta-analysis from 1980 to 2009. *Nursing Outlook*, 62(6), 402-414.
<https://doi.org/10.1016/j.outlook.2014.05.004>
- Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014). Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *European Journal of Psychotraumatology*, 5.
<http://offcampus.lib.washington.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=psyh&AN=2015-02818-001&site=ehost-live>
Steven.southwick@va.gov
- Stainton, A., Chisholm, K., Kaiser, N., Rosen, M., Upthegrove, R., Ruhrmann, S., & Wood, S. J. (2019, Aug). Resilience as a multimodal dynamic process. *Early Interv Psychiatry*, 13(4), 725-732.
<https://doi.org/10.1111/eip.12726>
- Sveinsdóttir, H., & Blöndal, K. (2014, Jul). Surgical nurses' intention to leave a workplace in Iceland: a questionnaire study. *Journal of Nursing Management*, 22(5), 543-552.
<https://doi.org/10.1111/ionm.12013>
- Szanton, S. L., & Gill, J. M. (2010). Facilitating resilience using a society-to-cells framework: a theory of nursing essentials applied to research and practice. *Advances in Nursing Science*, 33(4), 329-343.
<https://doi.org/10.1097/ANS.0b013e3181fb2ea2>
- Tusaie, K., & Dyer, J. (2004, Jan-Feb). Resilience: A historical review of the construct. *Holistic Nursing Practice*, 18(1), 3-8; quiz 9-10.
- Ungar, M. (2008). Resilience across cultures. *British Journal of Social Work*, 38(2), 218-235.
<https://doi.org/10.1093/bjsw/bcl343>
- Wang, L., Tao, H., Bowers, B. J., Brown, R., & Zhang, Y. (2018). Influence of Social Support and Self-Efficacy on Resilience of Early Career Registered Nurses. *Western Journal of Nursing Research*, 40(5), 648-664. <https://doi.org/10.1177/0193945916685712>
- Wei, H., Roberts, P., Strickler, J., & Corbett, R. W. (2019). Nurse leaders' strategies to foster nurse resilience. *Journal of Nursing Management*, 27(4), 681-687.
<https://doi.org/10.1111/ionm.12736>
- White, B., Walsh, E., Ridling, D., & Willgerodt, M. (2021). *The Resilience of Pediatric Nurses in Context*. University of Washington.

- Yin, J.-C. T., & Yang, K.-P. A. (2002, 2002/08/01/). Nursing turnover in Taiwan: a meta-analysis of related factors. *International Journal of Nursing Studies*, 39(6), 573-581.
[https://doi.org/https://doi.org/10.1016/S0020-7489\(01\)00018-9](https://doi.org/https://doi.org/10.1016/S0020-7489(01)00018-9)
- Young, P. M., Partington, S., Wetherell, M. A., St Clair Gibson, A., & Partington, E. (2014). Stressors and Coping Strategies of UK Firefighters during On-duty Incidents. *Stress and Health*, 30(5), 366-376.
<https://doi.org/10.1002/smi.2616>
- Yu, F., Raphael, D., Mackay, L., Smith, M., & King, A. (2019). Personal and work-related factors associated with nurse resilience: A systematic review. *International Journal of Nursing Studies*, 93, 129-140. <https://doi.org/10.1016/j.ijnurstu.2019.02.014>
- Zander, M., Hutton, A., & King, L. (2013). Exploring resilience in paediatric oncology nursing staff. *Collegian (Royal College of Nursing, Australia)*, 20(1), 17-25.
<https://doi.org/10.1016/j.colegn.2012.02.002>
- Zheng, Z., Gangaram, P., Xie, H., Chua, S., Ong, S. B. C., & Koh, S. E. (2017). Job satisfaction and resilience in psychiatric nurses: A study at the Institute of Mental Health, Singapore. *International Journal of Mental Health Nursing*, 26(6), 612-619. <https://doi.org/10.1111/inm.12286>
- Zhou, H., Peng, J., Wang, D., Kou, L., Chen, F., Ye, M., Deng, Y., Yan, J., & Liao, S. (2017). Mediating effect of coping styles on the association between psychological capital and psychological distress among Chinese nurses: a cross-sectional study. *Journal of Psychiatric and Mental Health Nursing*, 24(2-3), 114-122. <https://doi.org/10.1111/jpm.12350>
- Zou, G., Shen, X., Tian, X., Liu, C., Li, G., Kong, L., & Li, P. (2016, 2016/10//
 //). Correlates of psychological distress, burnout, and resilience among Chinese female nurses [Report]. *Industrial Health*, 54, 389+.
https://link.gale.com/apps/doc/A472268644/AONE?u=wash_main&sid=AONE&xid=93185b4b