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Exploring Resiliency and Family Functioning for Families of Premature Infants

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EXPLORING RESILIENCY AND FAMILY FUNCTIONING FOR FAMILIES OF PREMATURE INFANTS

by

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ABSTRACT

EXPLORING RESILIENCY AND FAMILY FUNCTIONING FOR
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by

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The impact of a premature birth on a family is a crisis requiring a process of adjustment and adaptation. The Resiliency Model of Family Stress, Adjustment and Adaptation (RMFAA) describe this process for families and was the conceptual framework for the current study. A modified model of the RMFAA was used to explore family resiliency for Non-Hispanic Black (NHB) and Non-Hispanic White (NHW) families of premature infants through the identification of protective and recovery factors. The aims of the current study explored the association between protective and recovery factors and family functioning.

Biological mothers of premature infants (< 37 weeks gestational age) and one other family member, who identified as either NHB or NHW were recruited in five separate Level III or IV neonatal intensive care units. Fifty-five NHW ($N = 110$) and 24 NHB ($N = 48$) families completed five scales that assessed their use of protective and recovery factors and their perception of family functioning. Mean scores for family functioning indicated that most family members viewed themselves as functioning effectively at that point in time.

Specific demographic variables (age, education and income) were not significantly correlated with any of the protective and recovery variables from the scales and subscales. The subscale for the Family Inventory of Resources for Management (FIRM), Financial Well-Being, was moderately correlated with income for NHW.

. Six subscales with the strongest correlations to family functioning from the four instruments as well as the covariates of income, education, and race were entered in a hierarchical regression analysis to predict family functioning. The prediction model was statistically significant F (9, 145) = 26.26, p = .00, and accounted for approximately 60% of the variance of family functioning. The subscales Strengths I (β = -.44, t (5.24), p = .00), a measure of family esteem, respect, communication, mutual assistance, problem-solving and autonomy, and Commitment (β = -.32, t (5.24), p = .00), which measured dependability and the ability to work together were the strongest predictors of family functioning. In the final model, race was not a statistically significant predictor.

The assessment of protective and recovery factors appear relevant to the support and development of resiliency in families of premature infants. The optimal development of the premature infant is dependent on effective family functioning. Nursing assessment of resiliency factors to influence nursing interventions support family development and may affect family functioning.

DEDICATION

To my husband, Richard, for your unwavering support throughout my doctoral journey. Your love, patience, understanding and faith in my abilities gave me the strength to achieve this goal.

To my daughters, Elizabeth and Lauren, for your love, understanding and continued support. Your motivational cards, texts, GIFs, and phone calls provided encouragement, motivation and much needed laughter.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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Chapter 1

Introduction

Statement of the Problem

The initial cost of hospitalization for a premature infant is more than nine times as high as it is for an uncomplicated term infant. In the United States, this translates to an amount that may exceed $100,000 dollars per infant (Behrman & Butler, 2007; Bird, 2014; Soilly, Lejeune, Quantin, Bejean, & Gouyon, 2014). Factor in the lost wages for parents who care for the child, the long term medical costs for co-morbidities, and the costs to the community to support this child developmentally and educationally, and the estimate is in the billions (Behrman & Butler, 2007; March of Dimes, 2014; Soilly, Lejeune, Quantin, Bejean, & Gouyon, 2014). Nevertheless, the impact of a premature birth on the family is substantially more than financial.

The birth of a premature infant catapults parents into a stress experience and a period of crisis that continues throughout the hospitalization and the transition home (Adama, Bayes, & Sundin, 2016; Boykova, 2016; Enlow, et al., 2017; Maroney, 2010). Families are challenged to become resilient for their vulnerable infant, sometimes requiring resources beyond their capabilities. They must learn to communicate, problem-solve and cope in an unfamiliar environment, and seek support from family, friends and health care professionals.

Both the traumatic experience of a preterm birth and the outcomes for the infant can alter the perceptions and the behavior of parents. Premature infants are not a homogenous group. The gestational age and the birth weight create the potential for a proclivity of medical complications, including respiratory and feeding problems, intraventricular hemorrhage and neurobehavioral disabilities (Eichenwald & Stark, 2008; Stephens & Vohr, 2009). In fact, prematurity has been identified as the major cause of pediatric morbidity and disability (Russell et al., 2007).

Furthermore, these chronic problems may also have secondary effects on parental relationships with the child and ultimately, family functioning.

Increasingly, the results of longitudinal research indicate that premature infants are at significant risk for later developmental problems and altered relationship patterns within the family, as consequences of their early birth and the impact of hospitalization (Browne, 2003; Shah, Clements, & Poehlman, 2011; Talmi & Harmon, 2003; Weiss & Chen, 2002). Moreover, they may experience subtle yet serious neurodevelopmental and socioemotional deficits, including cognitive delays, speech and language disorders, persistent neuromotor and perceptual problems, and behavioral adjustment (Anderson & Doyle, 2003; Aylward, 2005; Johnson, 2008). As these children grow and develop, these complications may have an impact on successful school experiences (Aylward, 2005; Bhutta, et al., 2002; Buck, et al., 2000; Sullivan, Miller, & Msall, 2012).

Effect of Racial Disparities

Although the prevalence of preterm births (PTB) has been declining across race and ethnic groups since 2007, the number of Non-Hispanic Black (NHB) preterm infant births is higher (13.3%) than for Non-Hispanic White (NHW) births (9.0%) (Center for Disease Control and Prevention, 2015; March of Dimes, 2016). In an effort to understand this difference, researchers have investigated PTB and low birth weight (LBW) in various race and ethnic groups. David and Collins (1997) used vital records from the state of Illinois from 1980 through 1995 to compare birth weights among infants of U.S.-born blacks, African-born blacks and U.S.-born whites, reporting lower birth weights for U.S.-born blacks. Similarly, Howard, Marshall, Kaufman and Savitz (2006) reviewed five years of New York City vital records data to categorize the infant births of eight different groups of black women. Using Non-Hispanic

American black women as a reference, they noted a decrease in PTB for those groups with non-U.S. family ancestry and/or foreign-born maternal nativity. Thus, foreign-born black women appeared to have a "healthy immigrant effect" preventing PTB and LBW, and yet, subsequent generations were noted to have infants with birth weights similar to U.S.-born blacks (Collins, Wu, & David, 2002; David & Collins, 2007). More research is necessary to not only discern the reasons for these differences, but also, to include the perspective of NHB women about preterm birth (Alio, et al., 2010; Culhane & Goldenberg, 2011; Giurgescu, Banks, Dancy, & Norr, 2013).

Hogue and Silver (2011) described a composite of complex, confounding factors (stress, social issues, impoverished neighborhoods, economic environment, access to quality medical care, genetics) that potentially influence PTB disparities. An association between decreased socioeconomic resources and these confounding factors has also been reported in the research literature (Betancourt et al., 2005; Williams & Jackson, 2005; Drotar et al., 2006; Walker & Chestnut, 2010). These factors were described as having an impact on healthcare services, as well as the recipients of those services, many who were NHB. Compared to other racial groups, a large proportion of NHB women are more often living in impoverished neighborhoods and more likely to experience racial discrimination, which may be associated to negative birth outcomes (Alio et al., 2010; Dole et al., 2004; Giscombe & Lobel, 2005; Giurgescu, McFarlin, Lomax, Craddock, & Albrecht, 2011; Reagan & Salsberry, 2005). These adverse experiences were noted by Lu and Halfon (2003), who proposed an alternate approach (Life Course) for investigating racial/ethnic disparities on birth outcomes. Their Life Course Perspective conceptualizes birth outcomes with respect to the mother's entire life, and not only during the time of pregnancy. Thus, disparities in birth outcomes are considered a combination of intergenerational factors, differential exposures during pregnancy, as well as social and

environmental experiences throughout one's life. Additionally, this perspective addresses the cumulative effects of the environment on the health of the mother and the significance of critical periods for intervention (Lu & Halfon, 2003).

The 2002 Institute of Medicine report, *Unequal Treatment: What Health Care System Administrators Need to Know about Racial and Ethnic Disparities in Healthcare* presented research evidence indicating that racial and ethnic minorities receive a lower quality of health care compared to the Non-Hispanic White (NHW) race in the United States. Further, the report concluded that the sources of these disparities were complex, and a result of historical and current inequities. A strong recommendation was made for a comprehensive, multi-level strategy addressing not only healthcare systems, but also, the associated regulatory and legal contexts in which they operate, so that a concerted effort is made to improve quality and equity for all people. Additional information on healthcare disparities exposes the gaps in research and clinical practice among races and ethnic groups (Betancourt, Green Carrillo, & Park, 2005; Braveman et al., 2015; Egede, 2006; Giscombe & Lobel, 2005; Mustillo et al., 2004; Plowden & Thompson, 2002; Williams & Jackson, 2005).

Resiliency

Interestingly, the research with parents of premature infants that addresses racial and ethnic disparities is limited. Nursing, medical and social psychology research studies have focused on identifying stress, anxiety and depression in parents of premature infants within the NICU environment (Busse, Stromgren, Thorngate, & Thomas, 2013; Howland, Pickler, McCain, Glaser, & Lewis, 2011; Hynan, Mounts, & Vanderbilt, 2013; Shaw, et al., 2006). Subsequently, there has been speculation about the factors that would help parents cope with their stress, e.g. resources and social support. These are components described in the family resiliency literature

as resiliency (protective and recovery) factors. For example, parents who have effective social networks are reported to be better adjusted and interact more effectively with their children (Forcada-Guex, Pierrehumbert, Borghini, Moessinger, & Muller-Nix, 2006; Freund, Boone, Barlow, & Lim, 2005; Griffin & Pickler, 2011; Lopez, Anderson, & Feutchinger, 2012; Weiss & Chen, 2002). A few studies reported an association between support (from nurses, physicians, spouse, other parents/grandparents) and lower distress levels, increased discharged efficacy, and positive adjustment (Pinelli, 2000; Doering, Moser, & Dracup, 2000). Nevertheless, social support is only one protective factor, and the impact on family functioning and adaptation has not been thoroughly examined.

Researchers studying pregnant women across race and ethnic groups, including NHB, have not only identified risk factors, (lack of social and financial support, interpersonal conflict, unsafe neighborhoods, racism, pregnancy and mother-related worries, unhealthy behaviors), but also, protective factors (self-care, support from family and/or church) that they believe impact the outcome of a preterm birth (Dole et al., 2004; Giurgescu, Banks, Dancy & Norr, 2013; Misra, Strobino, & Trabert, 2010). Similarly, these factors appear to be equally relevant for mothers of preterm infants who may have comorbidities requiring long-term medical and developmental care at home; a home with other family members who will also be impacted by the birth of a premature infant. The same protective factors that women find helpful during their pregnancy may also support family functioning and adaptation after the birth of the baby, and these may be different with respect to racial groups. Further research is needed to explore the individual protective and recovery factors that families may use to strengthen their abilities to care for their infant and family.

Resiliency research rooted in psychology and social work focuses on the development of

family strengths through the identification and use of protective and recovery factors, and shows promise for addressing the gap related to family functioning and long term adaptation (Ahlert & Greeff, 2012; Benzies & Mychasiuk, 2009; Brown, 2008; Caley, 2011; Jonker & Greeff, 2009). Indeed, protective (family celebrations, routine and rituals, time together) and recovery (family member accord, social/spiritual support, family resources) factors are believed to cut across racial and ethnic groups and thus, apply to NHB and NHW families (Hollingsworth, 2013). Understanding family strengths and capabilities through the identification of resiliency factors could predict at–risk families before discharge and conceivably affect family functioning.

Family Functioning

The need to optimize family functioning in families with premature infants is of paramount importance, especially in families disproportionately at risk for health disparities. The chronic health problems resulting from prematurity and the potential impact on the social and intellectual development of the child place a strain on family functioning that will require more than additional health-related services. Coping skills, social support, family beliefs, adaptability, cohesion, communication, and problem solving, have all been identified in both the family functioning and family resiliency literature as factors influencing family functioning (Black & Lobo, 2008; Walsh, 2012; McCubbin, McCubbin, Thompson, Han, & Allen, 1997; Epstein, Baldwin, & Bishop, 1983).

Values that govern family interactions are rooted in cultural norms that influence the family's definition of effective family functioning (McGoldrick & Carter, 2003). Dimensions or characteristics of family functioning such as, relationships, power dynamics, roles and processes are equally appropriate to the study of diverse families (Patterson & Sexton, 2013).

Notwithstanding, family structure or composition varies widely and can influence who

carries out roles and activities of effective family functioning. Thus, measurement should not be limited to interactions of co-residing blood or legal relatives, but assess the interactions of all who are identified as family members (McGoldrick & Hardy, 2008).

Defining Families

The structure and function of the family sustained many changes during the 20th century, influencing the 21st century and sometimes described as a radical revolution (Krause & Meyer, 2002; Cherlin, 2012). Historically, the traditional family within a marriage contract was guided by the influence of the religious community and the social norms. In fact, a secular marriage was synonymous with a religious marriage (Thornton & Young-DeMarco, 2001). Following the impact of the Industrial Revolution, the social organization of the family shifted towards the workplace with less emphasis on traditional family duties and customs. The nuclear family with two generations in a household (mother, father and children) emerged from the extended family of three or more generations (Bengston, 2001; Cherlin, 2012).

Thornton and Young-DeMarco (2001) examined the results from five large-scale data sets (Monitoring the Future, the General Social Survey, the Intergenerational Panel Study of Parents and Children, the National Survey of Families and Households, and the International Social Science Project: American component) to describe trends in family issues. The combined data, collected from the 1960s to the late 1990s, provided insight into the progression of family attitudes and values. Although the authors acknowledged the challenges of using data from samples that reflect differences among various ages and cohorts, they identified an overall value and desire for marriage and children in the analysis of the data. However, marriage for this period now represented equality in opportunities and decision-making between men and women, rather than the traditional role of the male as the breadwinner of the family. At the same time,

the data also revealed a sense of freedom and tolerance for other lifestyles, including divorce, single parenting and unmarried cohabitation.

The number of marriages has decreased over the last several decades due to the changes in households and living arrangements. Vespa, Lewis and Kreider (2012) used data from the Annual Social and Economic Supplement (ASEC) to the 2012 American Community Survey (ASC) and the Current Population Survey (CPS) to describe changes in American families and their living arrangements over the last 50 years. The sample included civilians who were non-institutionalized and living in the United States. For the purposes of this survey, a family household consisted of two or more members related by birth, marriage or adoption and one of them designated the householder. The data indicated a decrease in married households and families, whereas nonfamily households increased. This increase was attributed to the number of one-person households. At the same time, there has been a continued increase in the number of unmarried partners cohabitating. Cohabitation was included as a category in the CPS in 1995, and the data obtained since that time revealed a rapid growth in the number of unmarried households, particularly among young adults. When children were living in the household, approximately 50% of the cohabitating adults were living with children who were not biologically related to them.

Indeed, cohabitation has become a normative family structure for all socioeconomic groups, and couples do not believe that having a child is sufficient impetus for marriage. Additionally, fewer race differences are reported among those couples who have cohabitated (Bumpass & Lu, 2000; Gibson-Davis, Edin, & McLanahan, 2005; Teachman, Tedrow, & Crowder, 2000; Vespa et al., 2012).

Bumpass and Lu (2000) also examined trends in cohabitation and the implications for

children living in this environment. Using data from the National Survey of Families and Households (1987-88) and the National Survey of Family Growth Cycle 5 (1995), they described a 10% increase in the number of children born to cohabitating parents from 1984 to 1994, and a decline in the marriage rates between these parents. They proposed this type of household contributed to the instability of the family structure, as well as creating stress for the child from the effects of multiple transitions.

Although marriage remained the most common family structure in 2012, only 64% of the 74 million children in the ASCE data lived with two married parents. Twenty-four percent of the children lived in single-parent families with mother as the head of household, which accounted for the next most frequent family structure. The remaining 12% of the children were divided evenly among two unmarried parents, single-parent father households and those not living with biological parents, which included same sex couples (Vespa et al., 2012).

This ongoing change in family structures has influenced the legal system, as well. Family law has become less judgmental about non-traditional caregiving relationships, and willing to consider alternate family structures and lifestyles in the best interest of the child (Holtzman, 2011; Krause & Meyer, 2002). One of these transitions is the role of grandparents and kin. Bengston (2001) suggested that multigenerational bonds have increased due to the longevity of family members, and these members are a potential resource for younger generations to provide support, care and socialization.

In an article for CYFERnet (Children, Youth & Families Education Research Network) that was based on a lecture delivered by Hamilton I. McCubbin at the 1997 American Association of Family and Consumer Sciences conference, McCubbin, McCubbin, Thompson, Han, & Allen (1997) described the family of the 21st century as one of family transformation and stress. In

addition to diverse family structures (single-parent households, blended families, interracial marriages, co-habitation and stepfamily systems), there is the emergence of intergenerational family responsibilities, the care of the chronically ill or disabled family member, and other existing pressures, which create societal expectations for the family to be competent and resilient in the face of these challenges.

Thus, the 21st century family is complex, assuming diverse structural organization, as well as a blending of roles and functions. For neonatal nurses, awareness of family structure and function influences both their assessment and subsequent interventions with the family. In their daily interactions, identification and development of resiliency factors for individual families has the potential to support effective family functioning.

Purpose of the Study

The purpose of this current study was to examine the relationship between resiliency factors and family functioning for NHB and NHW families of premature infants hospitalized in a neonatal intensive care unit.

Conceptual Framework

Family resiliency builds on family stress and coping theory and focuses on the functioning and behavior of family relationships, recognizing parental strengths, family dynamics, interrelationships and the social environment of the family (Patterson, 2002). This perspective is a strengths-based approach that views family stresses and challenges as opportunities for healing and growth during life transitions, stress or adversity (McCubbin & McCubbin, 1988; Walsh, 2012). For the purpose of this current study, family resiliency was defined as a measure of the protective and recovery factors, which support the family's ability to endure in the presence of a stressor or crisis.

The theoretical basis for the current study is the Resiliency Model of Family Stress, Adjustment and Adaptation (RMFAA) (H. I. McCubbin & M. A. McCubbin, in Danielson, Hamel-Bissell, & Winstead-Fry, 1993). This model, derived from family stress theory, was developed based on the work of Reuben Hill's ABCX model, the Double ABCX model by McCubbin and Patterson and the Typology Model of Family Adjustment and Adaptation (McCubbin, Thompson, & McCubbin, 1996). The RMFAA is described as an expansion of the other models; including not only the concepts of stress, family appraisal, resources, coping patterns and problem-solving abilities, but also, the additional emphasis on family adaptation. Some of these concepts are referred to as risk and protective factors, but collectively, the concepts function in a sequence of interacting components. These components influence how the family adjusts to normative and non-normative crises, and result in an outcome between bonadjustment vs. maladjustment, and bonadaptation vs. maladaptation. It is a guide to assessing critical elements of family functioning. The RMFAA model consists of two phases: the adjustment phase and the adaptation phase as diagrammed in Figure 1.

During the adjustment phase:

- The stressor interacts with the family's vulnerability, which is affected by the pileup of family stresses, transitions and strains occurring in the same period as the stressor. Family vulnerability interacts with the family's established pattern of functioning (typology), and together they interact with the family's resistance resources and protective factors.
- Subsequent interactions occur with the family's appraisal of the stressor, and the appraisal then interacts with the family's problem-solving and coping strategies.

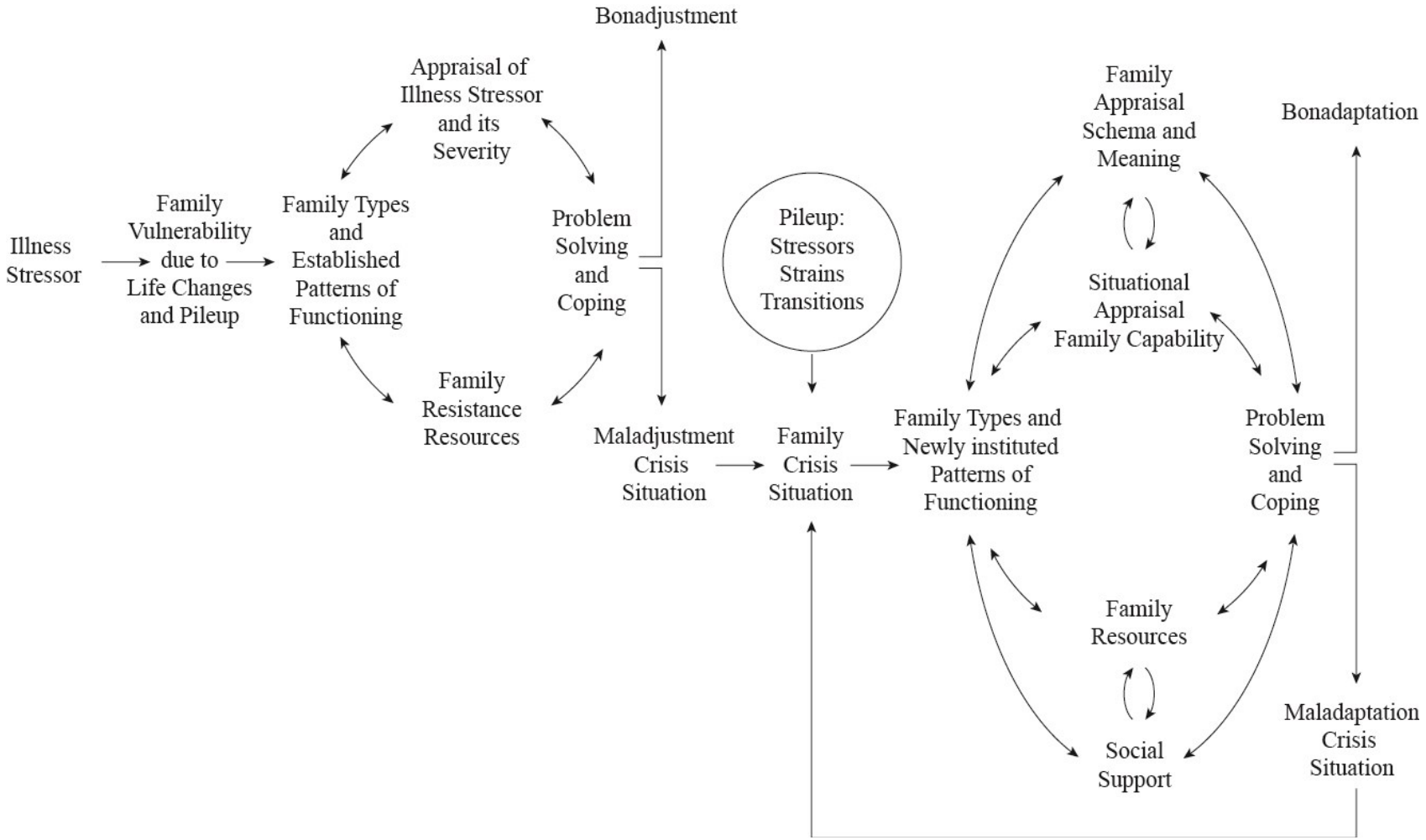

Figure 1 *The Resiliency Model of Family Stress, Adjustment and Adaptation*

Adapted from McCubbin, M.A. & McCubbin, H.I. (1993). *Families coping with illness: The resiliency model of family stress, adjustment and adaptation.* In Danielson, C.B., Hamel-Bissel, B., and Winstead-Fry (Eds), Families, Health, & Illness (p. 27). St. Louis, Missouri: Mosby.

- In situations that involve a disruption in established patterns, the family will be prone to maladjustment and a resulting state of crisis. Family crisis typically demands a change in family functioning in an effort to restore stability, order and coherence and marks the beginning of the adaptation phase.

During the adaptation phase:

- The level of adaptation is determined by several interacting components: the pile-up of demands on the family that is created by the stressor, family life-cycle changes and any unresolved strains that may affect the family's resiliency.
- These components interact with the family's resources (strengths and capabilities) which are supported by the family's appraisal as well as the family and friends in the community. A situational or family appraisal is formed by the family from their perceptions of the relationship between their resources and the demands of the situation.
- Subsequently, the resource and appraisal components interact with the family's problem-solving and coping abilities (recovery factors) to facilitate adaptation.

Although specific protective and recovery factors are not delineated in the diagram of the model (Figure 1), these have been described in more detail in the literature (Benzies & Mychasiuk, 2009; Black & Lobo, 2008; McCubbin, McCubbin, Thompson, Han & Allen, 1997). Family protective factors identified as having value throughout the stages of the family life cycle were family celebrations, family hardiness, family time and routines, and family tradition (McCubbin, Thompson, Pirner & McCubbin, 1988). These protective factors act as a buffer from a stressor; operating over time and directly and indirectly influencing family processes and reactions (Hawley & DeHaan, 1996). Further research with families revealed the importance of recovery factors used by families to adapt to crises, e.g. family social support and optimism,

family advocacy, values, beliefs and expectations. Recovery factors help a family to restore effective family functioning after a crisis period. Continued analysis of both protective and recovery factors led to the consideration that both types of factors work synergistically and interchangeably in an effort to respond successfully to crises (McCubbin, Thompson, & McCubbin, 1996). Identifying the protective and recovery factors that influence resilience may provide a framework for a more comprehensive nursing assessment to help parents of premature infants strengthen family capabilities and resources that will enable them to deal with challenges of caring for a premature infant. Thus, protective and recovery factors could be used as a guide to evaluating critical elements of family functioning and adaptation (H. I. McCubbin & M. A. McCubbin, in Danielson, Hamel-Bissell, & Winstead-Fry, 1993).

Despite the application of this model in the pediatric literature, its use has been limited with parents of premature infants. Using the McCubbins' Resiliency model, Pinelli (2000) initially studied the adjustment phase for parents of premature infants ($N = 124$ pairs) to explore the relationship of family stress, coping and resources with respect to family adjustment. Pinelli found the relationship between anxiety and family resources was more strongly related to positive family adjustment than the relationship between stress and coping. Subsequent research by Doucette & Pinelli (2004) followed these same families over a two-year period and reported that ongoing child health problems were associated with significantly worse family adjustment scores for both mothers and fathers. Neither race nor ethnicity was analyzed as a demographic characteristic, although the second study described the sample as primarily Caucasian.

Thus, it has been documented that the birth of a premature infant precipitates a crisis within the family system that necessitates changes in family functioning to face the challenges and hardships. However, there is a lack of research focusing on the relevance of resiliency

(protective and recovery) factors for families of premature infants, which could potentially influence and moderate family functioning and adaptation. For the purpose of this current study, the model as depicted in Figure 1 was modified to focus on the family appraisal, resources, social support and coping variables (from which the protective and recovery factors originate) within the adaptation phase (Figure 2).

Subsequent to the adjustment phase in the Resiliency Model, parents are faced with the challenges of adapting to an altered family life caring for an infant who may have several co-morbidities and developmental consequences because of the premature birth. The modified model for the current study (Figure 2) addresses the impact of both protective factors embodied in family processes, and recovery factors that develop and evolve in response to the family life event. Individually and in combination, these factors may influence the relationship with family functioning. Notably, this model specifically highlights race and ethnicity as there is a paucity of literature for NHB parents of premature infants. Additionally, associations between individual demographic factors (age, education, income, and employment) and protective and recovery factors were also examined.

Aims

Using an adapted version of the RMFAA, the current study investigated protective and recovery factors for NHB and NHW families of premature infants and examined differences between these factors and family functioning. Associations with demographic variables (age, family structure, education, income, employment) were also examined. The aims of the study were:

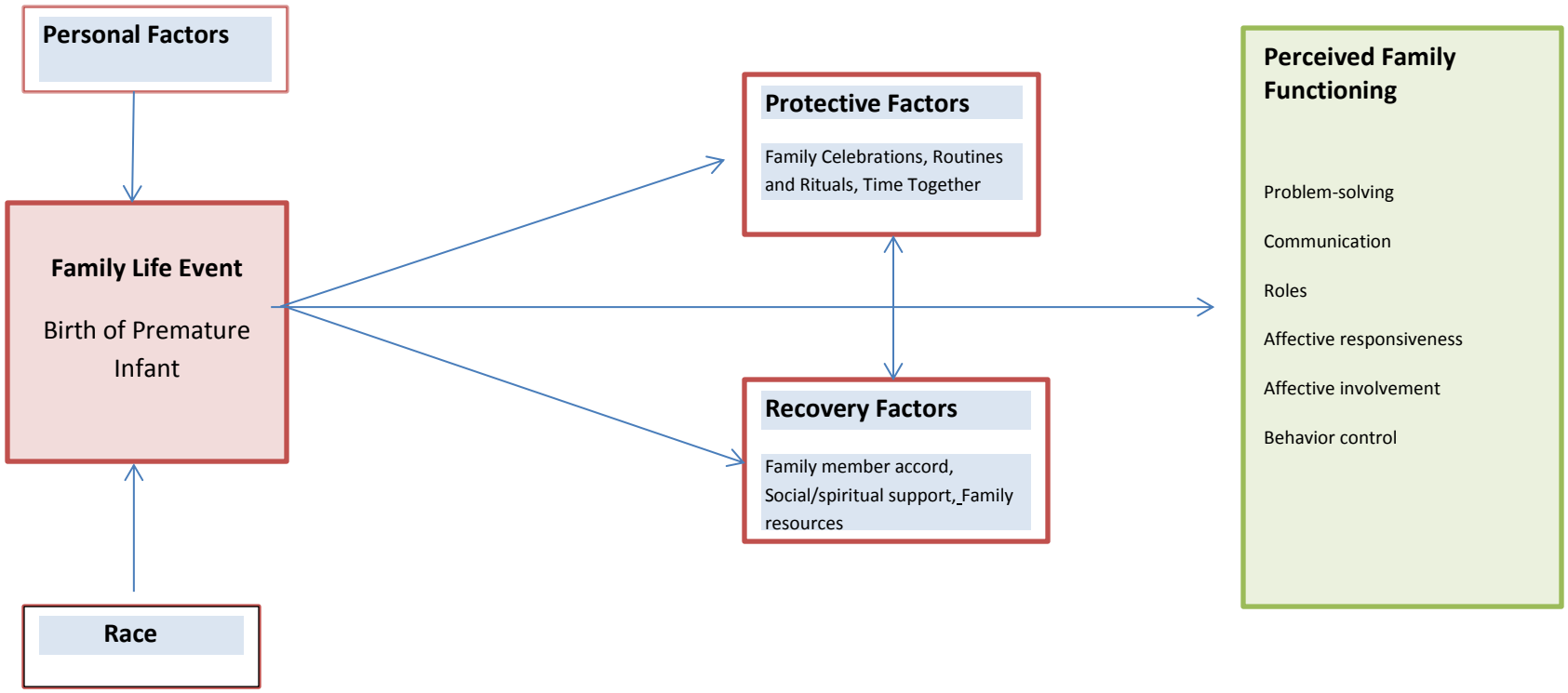

Figure 2 *The Relationship Among Personal, Protective and Recovery Factors and Family Functioning*

- To determine any association between individual demographic factors (age, family structure, education, income, employment) and protective and recovery factors for families of premature infants.
- To examine the differences in protective and recovery factors between NHB and NHW families of premature infants
- To determine whether any protective and/or recovery factors are predictors of family functioning for NHB and NHW families

Conceptual Definitions of Variables

The concepts in the current study are represented in the model in Figure 2. Each concept was defined to provide clarity on what was being examined and to make research findings meaningful with respect to the framework guiding the study (Table 1).

The concepts from the RMFAA are derived from family stress and coping theory. They focus on the functioning of family relationships that recognize family strengths, family dynamics, interrelationships and the social environment of the family (Patterson, 2002). This perspective is referred to as a strengths based approach that views family stresses and challenges as opportunities for healing and growth (McCubbin & McCubbin, 1988; McCubbin et al., 1996; Walsh, 2003). In the current study, the definition of family reflects the changing nature and structure of families over the last half century. Researchers report an increase in a variety of family forms, i.e. married, single parent, cohabitating, same sex, which has created alternate pathways to parenthood. The nuclear family (two parents and child or children) is no longer the expected standard for family structure. Single parent and cohabitation between two adults has become more commonplace, along with married couples (Carr & Springer, 2010; Smock & Greenland, 2010).

The families under study, NHB and NHW are a mosaic of their cultural identities, and American influences that are retained vary greatly even within each of the individual ethnic groups.

Table 1

Conceptual Definitions

Family	Two or more persons who are linked together by intimate association, resources and values, and consider themselves to be a family (Bomar, 2004)
Family Resilience	"…characteristics, dimensions, and properties of families which help families to be resistant to disruption in the face of change and adaptive in the face of crisis situations" (McCubbin & McCubbin, 1988, p.247)
Family Functioning	Six dimensions of the McMaster Model of Family Functioning: problem solving, communication, roles, affective responsiveness, affective involvement and behavior control (Miller, Ryan, Keitner, Bishop, & Epstein, 2000).
Protective factor	A resiliency factor that shapes the family's ability to endure when faced with risk or crisis; specific attributes include: family celebrations, family hardiness, family time and routines, family traditions and social support (McCubbin & McCubbin, 1993, 1997)
Recovery factor	A resiliency factor that promotes the ability to adapt or rebound in crisis and work synergistically with protective factors; specific attributes include: family support and esteem building, family member accord, a positive outlook, and spirituality (McCubbin & McCubbin, 1993, 1997)
Non-Hispanic Black	Refers to a person having origins in any of the Black racial groups in Africa. It includes people who indicated their race(s) as "Black, African American or Negro" (Office of Management & Budget, 1995). For the purposes of this current study, foreign-born blacks will be excluded.
Non-Hispanic White	Refers to a person having origins in any of the original peoples of Europe, the Middle East or North Africa. It includes people who indicated their race(s) as "White" or reported entries such as Irish, German, Italian Lebanese, Arab, Moroccan, or Caucasian (Office of Management & Budget, 1995).

Assumptions

1. Becoming the parent of a premature infant is a non-normative crisis. Both the traumatic experience of a preterm birth and the outcomes for the infant can alter the perceptions and behavior of parents.
2. NHB and NHW are two distinct classifications indicating differences in race.
3. Participants in the study answered to the best of their ability.

Significance

Although it has been reported in the literature that many parents experience psychological distress, it is the response to stress that appears to be influenced by other factors. Family beliefs, adaptability, cohesion, social support, communication, and problem solving have been identified in the family resiliency and nursing literature as key family resilience (protective and recovery) factors that build on the strengths of a family (Black & Lobo, 2008; McCubbin, McCubbin, Thompson, Han, & Allen, 1997; Walsh, 2012). Inherent in the family-centered nursing practice of NICU nurses is the assessment of many of these factors to facilitate family functioning and adjustment (Griffin, 2006; Johnson, 2008; McGrath & Hardy, 2008). Nevertheless, more empirical data on resiliency factors is needed so that NICU nurses can specifically utilize this information to individualize the nursing care needed by families. Despite the development of hospital programs to learn how to care for their infants, many families do not believe that health care professionals are adequately preparing them for the future of caring for a preterm infant with the potential of long-term physical and developmental sequalae (Berns, Boyle, Popper, Gooding, & Preemie Health Coalition, 2007). Understanding family strengths and capabilities through the identification of protective and recovery factors could predict at risk families before discharge. Building on resources and facilitating family functioning is an important role of

nursing practice. As advocates, nurses are ideally positioned to develop and implement strategies that will promote positive family functioning, potentially impacting parent-child interactions and relationships.

Summary

Family resiliency builds on family stress and coping theory and focuses on the functioning and behavior of family relationships, recognizing parental strengths, family dynamics, interrelationships and the social environment of the family. This perspective is a strengths-based approach that views family stresses and challenges as opportunities for healing and growth. A modified model of the Resiliency Model of Family Stress, Adjustment and Adaptation was used to explore family resiliency for NHB and NHW families of premature infants through the identification of protective and recovery factors, and by examining their association with family functioning. The current study was conducted as a predictive correlational study. Chapter 2 is a review of the literature specific to the variables under investigation, and Chapter 3 provides a detailed account of the research design, methods and management of the data. Chapter 4 describes the findings of the study and Chapter 5 discusses the findings with respect to the literature and includes implications for research, practice and policy.

Chapter 2

Review of Literature

This chapter is a coordinated review of significant literature that is guided by the aims of the study. The search strategy is described and the results of the search are discussed according to the major variables of the model. The current state of the science is explored and the gaps in the science are addressed.

Search Strategy

Nursing, medical, psychological and sociological literature was examined. The keywords chosen included parent (mother, father, grandparent, family and kin), premature/preterm infant, White/EuroAmerican, Black/African American, family functioning (problem-solving, communication, roles, affective responsiveness, affective involvement and behavior control), family resiliency, protective factors (family celebrations, hardiness, routines and traditions), and recovery factors (social support, spiritual support, family member accord and family resources). Computer library databases CINHAL, PsychInfo, Ovid–Medline, Web of Science and Scopus were reviewed for research studies published between 2005 and 2017. Websites searched included Peristats, State Health Facts and the Office of Management and Budget (OMB). The search strategy used the keywords individually and in combination and yielded 1,860 articles. Titles and abstracts not relevant to the concepts under study, as well as case studies and duplicates were excluded. The titles of 1804 studies resulting from the combination of keywords were screened with respect to the aims of the proposed study of which 64 met the inclusion criteria for this review as illustrated in Figure 3. Inclusion criteria for selection of studies were: a) published in the English language, b) quantitative and qualitative original

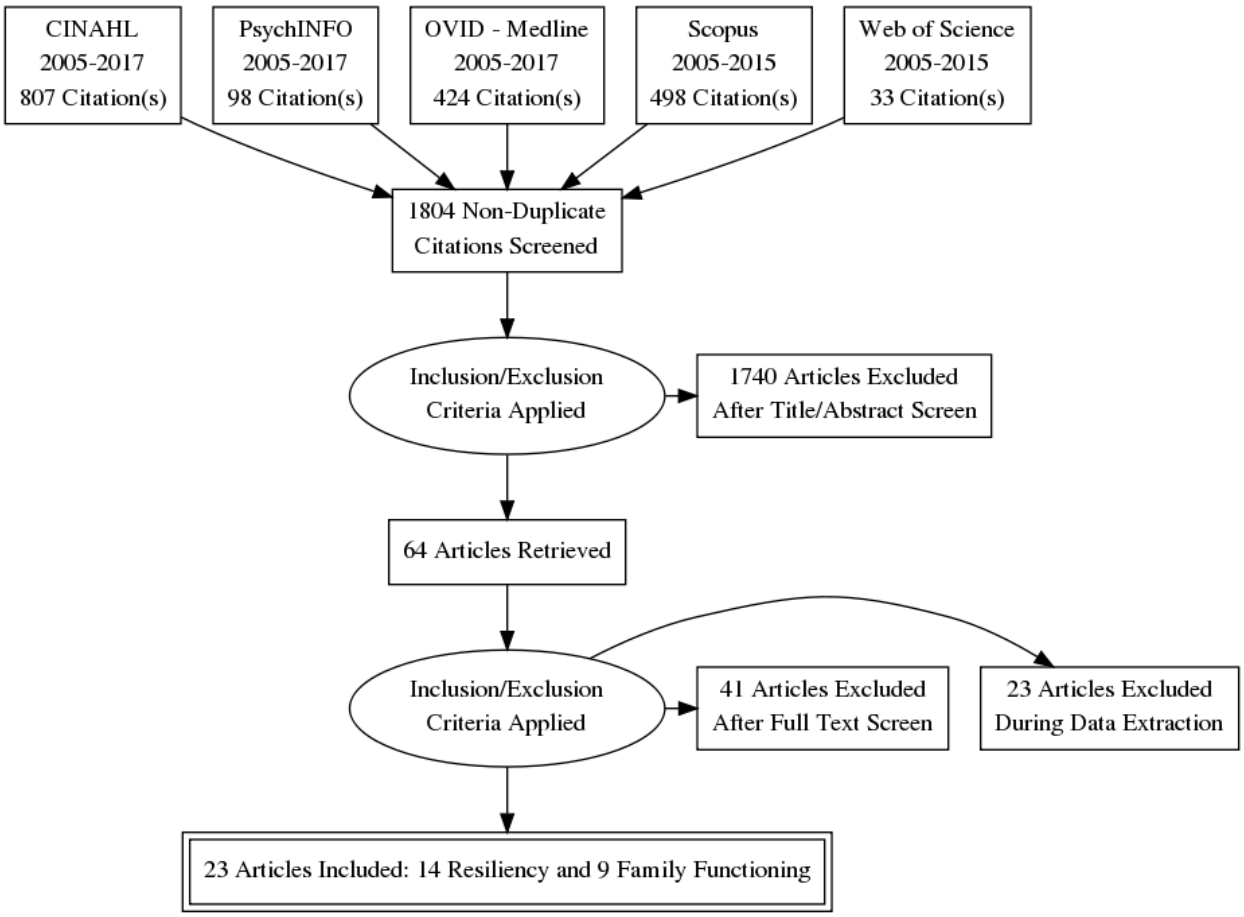

Figure 3 *PRISMA Flow Diagram for Selection of Articles*

research reports, c) research published between 2005 and 2017 except for pertinent older literature, d) studies with parents/families of premature infants, e) studies examining resiliency and resiliency factors with parents/families of premature infants and other parents/families with chronically ill children, and f) studies examining family functioning, and specifically as an outcome for parents/families of premature infants and other parents/families of chronically ill children. Exclusion criteria included: a) studies with a primary focus on the investigation of levels of parental stress, anxiety and coping in caring for premature infants or children with a chronic disorder/illness, b) studies that examined NICU programs for parents, c) studies with a focus on the behavioral outcomes of the child rather than family functioning, d) studies that

examined the resiliency model with health care professionals or with adults with a chronic illness, and e) studies not published in English.

After analyzing the full text of the article and applying the exclusion criteria, 23 articles were selected for this review of family resiliency and family functioning. Notably, 13 of the 23 articles were from countries outside of the United States, but published in American journals.

The following sections are divided into two subheadings: family resiliency and family functioning. A review of the selected articles for each subheading includes analysis and synthesis of the current state of the science and to provide context for the current study. Evidence tables are provided in each section and are referenced in the following narrative.

Family Resilience

Fourteen articles were specific to the study of resiliency and resiliency factors and met the inclusion criteria (Table 2). Of note, nine of the articles were from countries outside of the United States, specifically, Canada, Australia, Thailand, Belgium and South Africa. For the purpose of this review, family resiliency studies were organized with reference to the framework guiding the research. This orientation was used to provide a perspective for understanding the progress of the study of family resiliency for families caring for a family member/child with a chronic disorder/illness.

In studying resilience in families with a member in chronic pain, West, Buettner, Stewart, Foster and Usher (2012) were guided by Walsh's family resilience framework; focusing on key processes (belief systems, organizational patterns and communication processes) in viewing the family as a functional unit (Walsh, 2012). Using a sequential mixed method design, West and colleagues (Table 2) initially administered several questionnaires to 67 family members (31 families) with and without pain. Although the majority of the participants included

Table 2

Studies of Family Resiliency

Author	Aim/Conceptual Framework	Design	Sample/Ethnicity	Instruments	Findings
Pinelli (2000)	To determine the relationship between family coping and resources and family adjustment and parental stress in the acute phase of the NICU experiences *Resiliency Model of Family Stress, Adjustment and Adaptation (RMFAA)*	Correlational	24 other/father pairs	Family Crisis Oriented Personal Evaluation Scales (FCOPES) State Anxiety Scale Family Inventory of Resources for Management (FIRM) McMaster FAD: General Functioning Subscale (FAD-GF)	Family resources a significant predictor for positive family adjustment for mothers. For fathers, adequate family resources and mothers' coping significantly positively related to family adjustment.
Doucette & Pinelli (2004)	To examine the relationship of family coping, resources and strains on family adjustment over time following the NICU experience(RMFAA)	Correlational Longitudinal	71 mother/father pairs	FIRM FCOPES Family Inventory of Life Events (FILE) FAD-GF	Significant gender differences: family adjustment, coping, resources, and strains
Svavarsdottir, et al. (2005)	To determine the predictors of adaptation in Icelandic and American families with young children diagnosed with chronic asthma (RMFAA)	Cross-sectional	76 US families (75 mothers, 62 fathers) 103 Icelandic families (103 mothers, 74 fathers)	FILE Family Hardiness Index (FHI) Care of my child with Asthma Questionnaire Orientation to Life Questionnaire Family Adaptation Scale	For parents of both countries, a sense of coherence and family hardiness predicted family adaptation, and a sense of coherence moderated the effect of family demands on adaptation.

Author	Aim/Conceptual Framework	Design	Sample/Ethnicity	Instruments	Findings
Greeff, Vansteenwegen & Ide (2006)	To identify resiliency factors in families with a mentally ill family member (*RMFAA)*	Cross-sectional Descriptive	30 families One parent and one adolescent per family	FCOPES Social Security Index (SSI) FHI Relative and Friend Support Index (RFS) Family Sense of Coherence Scale (FSC)	Significant correlations between family hardiness a sense of coherence for parents and adolescents. Significant correlation for adolescents between social support and sense of coherence.
Lietz (2006)	To explore families' experiences with risk, strengths and family functioning (*no theory reported)*	Descriptive Correlational	182 individuals from a family 86% White 10% Hispanic 4% African American	FILE (modified) Family Strengths Scale FAD-GFC	High functioning families tend to score higher on the strengths scale. Families with a higher score on the risk scale, controlling for strengths had a significantly lower level of family functioning.
Greef & Holtzkamp (2007)	To identify and explore characteristics and resources in families that adapt well after a stressful experience *(RMFAA)*	Cross-sectional Mixed methods	68 two parent (White) families: 35 had an adolescent who participated	SSI, RFS, FHI FCOPES Family Problem Solving Communication Index (FPSC) Family Attachment and Changeability I	Significant correlations between family adaptation and 12 resiliency factors for parents. Predictors of adaptation were family hardiness and affirming communication.
Van Riper (2007)	To describe maternal perceptions of parental and family adaptation in families raising a child with Down Syndrome (*RMFAA)*	Descriptive Correlational	76 mothers 95% White and two parent families	FILE, FIRM, FPSC, FCOPES, Family Adaptation	Family demands, family resources and family problem-solving significantly positively associated with family adaptation

Author	Aim/Conceptual Framework	Design	Sample/Ethnicity	Instruments	Findings
Greeff & Ellis (2009)	To identify factors associated with resiliency in poor single-parent families (*RMFAA)*	Cross-sectional	51 single (Colored) parents 21 adolescents	FHI, DDI, FCOPES, RFS, FSC	Significant correlations between family sense of coherence and social support for family and friends, family hardiness, positive reformulation of problems and spiritual and religious support
Lee, et al. (2009)	To examine the influence of family resources and coping behaviors on the well-being of parents providing care to a school-age child with asthma *(RMFAA)*	Descriptive Cross-sectional	71 parents (68 female, 3 male) 33 African American 38 White	FIRM Coping Health Inventory for Parents (CHIP) General Well-Being Schedule (GWB)	For both groups, family resources significantly positively related to general well-being. Family resources were a predictor of well-being.
Musil, et al. (2009)	To examine life stresses and strains affecting grandmothers	Descriptive Correlational	486 grandmothers ~183 primary caregiver ~136 multigenerational ~167 non caregiver 66% White 34% African American	FILE-modified Self-Control Schedule Duke Social Support Index Center for Epidemiological Studies-Depression Scale	Social support from family and friends moderated the effects of strain Instrumental support with caregiving tasks moderated the effect of family life stresses
Chen & Clark (2010)	To examine relationships among family support, family hardiness, child dependence, parental perceptions of their child's health status and employment and effects of variables on parental health in Taiwanese families of children with Duchenne Muscular Dystrophy *(RMFAA)*	Correlational	126 parents 46 couples (*n*=92*)* 26 single mothers 8 single fathers	FHI Family APGAR DUKE Functional Health Status Parental perception of child health status	Family hardiness, family support, perceived child health, parental employment and education significantly positively associated with parental health

Author	Aim/Conceptual Framework	Design	Sample/Ethnicity	Instruments	Findings
Ahlert & Greeff (2012	To identify resiliency qualities and processes associated with family adaptation in families with deaf and hard of hearing children (*RMFAA)*	Mixed methods Cross-sectional	54 families (51 mothers, 3 fathers) Black/African – 21 White – 7 Colored (biracial) – 26	SSI, FHI, RFS FCOPES, FPCS, Short Form of the Questionnaire on Resources and Stress (QRS-F) Family Attachment and Changeability Index 8	For total sample, family routines and activities, family hardiness, community resources and communication patterns all significantly positively correlated. Differences in predictor variables for Black and Colored participants.
West, et al. (2012)	To measure and explore the nature of family resilience in the context of families with a member in chronic pain *(Walsh's Family Resiliency Framework)*	Explanatory sequential mixed methods	67 families: one member with chronic pain and one without pain	Medical Outcomes Study Short Form 36 Medical Outcomes Study Social Support Survey (MOS) Family Impact of Pain Scale (FIPS) Connor-Davidson Resilience Scale	Resilience negatively correlated with the family impact of pain scores and positively correlated with mental health indicators for all participants. Families scored high for social support.
Nabors, et al. (2013)	To assess the relationship among factors of resiliency and the influence on caregiver's anxiety during child's hospitalization for chronic illness *(Walsh's Family Resiliency Framework)*	Mixed methods	95 primary caregivers: 63 mothers, 20 fathers, 12 guardians 84% White 7% Hispanic 2% Asian 3% Biracial	FHI State Trait Anxiety Inventory FAD-GF	Number of medical problems for the child significantly positively correlated with family functioning and caregiver state anxiety. Family functioning mediated the relationship between family hardiness and caregiver anxiety.

the person with chronic pain and his or her partner, a few families included an older adolescent with and without pain. The impact of chronic pain was measured on all participants in the family with respect to family resiliency, as well as level of social support and perceived health status. Resilience scores (Connor-Davidson Resilience Scale) were highest for family members without pain. However, for all participants, resilience was negatively correlated with the Family Impact of Pain Scale, which indicated that the higher the impact of pain for the individual, the greater the perceived effect on resilience for all. Additionally, a positive correlation was reported between mental health indicators and resilience, indicating increased resilience with greater mental health. Social support, another characteristic of Walsh's model, was not significantly correlated with resilience. Although all families scored high on social support, the members with chronic pain perceived themselves as receiving more support. The methods for the qualitative portion of the study consisted of individual interviews from 10 families who volunteered. Results were reported using the direct quotes identifying the factors that helped a family cope with the stress of chronic pain, with the support of a committed partner most important. Although the purpose of the qualitative portion of the study was to help explain the quantitative results, the authors never discussed whether the qualitative data achieved this aim. The authors describe the results of their study as a beginning step to identify strengths or resilient properties in families, which is relevant to the current study.

Lietz (2006) chose to apply the theoretical construct of resilience to study families from a systems perspective (Table 2). However, after citing several definitions, the author failed to identify which one was used in the research. Families were recruited from community centers, religious institutions and schools to explore families' experiences with risk, strengths and family functioning. One adult member of the family completed the questionnaire; the majority (86%)

was described as White. Results reported that high functioning families tend to score higher on the strengths scale. Multiple regression was used to test the model. Families with a higher score on the risk scale, controlling for strengths, had a significantly lower level of family functioning. When the strengths variable was added to the model, a higher score for strengths predicted a higher level of family functioning. Although the results reported by Lietz (2006) are similar to other studies, these data are concerning as several of the instruments, i.e. risk scale and strengths scale were not reported as valid or reliable, since they were either modified or specifically developed for this current study. With the development of the Resiliency Model of Family Stress, Adjustment and Adaptation, McCubbin and colleagues (1997) identified family protective and recovery factors, as resilient properties or resiliency factors to help a family cope with a crisis that disrupts family functioning. McCubbin and McCubbin (1988) define resilience, as "characteristics, dimensions, and properties of families which help families be resistant to disruption in the face of change and adaptive in the face of crisis situations" (p. 247). The majority of research with respect to family resiliency, albeit limited, used the Resiliency Model of Family Stress, Adjustment and Adaptation as a framework to examine the resiliency factors that demonstrate an association or predict outcomes. Most of the studies used the instruments developed by McCubbin (1996) and these are noted for each study in the subsequent table (Table 2).

Overall, the purpose of the reviewed studies was to explore and identify resiliency or protective factors, used by families in response to a stressor or a risk factor, and their association with a specific outcome, such as adaptation. Each of the studies was cross-sectional and correlational. Each used similar instruments to assess protective factors cited in the literature, e.g. family hardiness, social support, relative and friend support and family coping.

For families with a member who was diagnosed with a psychological disorder, Greeff, Vansteenwegen and Ide (2006) engaged 30 families from self-help groups to complete questionnaires (Table 2). One parent and one adolescent from each family completed questionnaires. A significant and positive correlation was reported for the parents between family hardiness and a sense of coherence, and between the educational level of the parents and adaptation. Social support was positively correlated with a sense of coherence, but not significantly.

Subsequently, Greeff and Holtzkamp (2007) and Greeff and Fillis (2009) examined similar protective factors in response to the stress of migration and the stress of being single and poor. For both studies, family hardiness was not only a significant positive correlation, but also, a predictor of adaptation and a sense of coherence. Additionally, social support from family and friends in both studies was identified as an important recovery-enhancing resource for parents. As noted in Table 2, these three studies (Greeff, Vansteenwegen & Ide, 2006; Greeff & Holtzkamp, 2007; Greeff & Fillis, 2009) have similar research designs exploring resiliency factors, as well as similar instruments to measure these factors across three different groups representing different populations. This "program of research" by Greeff has contributed to the knowledge of protective and recovery factors in resiliency research and their mitigating effects on outcomes for families with different health and sociological issues.

Resiliency factors were also studied with parents/families coping with their child's chronic illness. Nabors et al. (2013) assessed the relationship between resiliency factors and their influence on the caregiver's anxiety during hospitalization (Table 2). Primary caregivers, including mothers, fathers, or guardians residing at Ronald McDonald House were invited to complete questionnaires and semi-structured interviews. In the data analysis, the resiliency

factors of family hardiness and family functioning were positively associated with lower levels of caregiver anxiety. Additionally, the number of medical problems for the child, which is considered a risk factor significantly correlated with family functioning and caregiver state anxiety. Thus, the subsequent regression analysis demonstrated that positive family functioning mediated the relationship between family hardiness and caregiver state anxiety. The results of the qualitative analyses for this current study highlighted the importance of support from family and friends. This is similar to results from other studies previously reported in this review.

Other studies examined the relationship between various protective factors and adaptation. Van Riper (2007) recruited mothers of children with Down syndrome from support groups and family referrals and mailed questionnaires to assess several protective factors, e.g. family demands, resources, problem solving and coping. Correlational analyses demonstrated a significant negative association between family demands and adaptation, i.e. these families reported higher levels of critical needs for their family and unresolved strains. Family resources and family problem solving were significantly positively associated with family adaptation. Thus, greater family resources and higher levels of communication occurred in families with higher levels of adaptation. These results were similar to those reported by Chen and Clark (2010) (Table 2), who studied the relationships among family support and hardiness, child dependence, parental perceptions of child's health status, and the impact of employment for families of children with Duchenne Muscular Dystrophy and parental health. Recruiting parents from the Taiwan Muscular Dystrophy Association, all questionnaires were translated from English and administered to either the mother or father, or both parents. Family hardiness and family support were positively correlated with parental health, and predicted 35% of the variance.

In addition to assessing resiliency factors for families of children with chronic illness, some of the studies examined differences between races/ethnic groups. Svavarsdottir, Rayens and McCubbin (2005) studied predictors of adaptation in American and Icelandic families of children with asthma (Table 2). Families (mothers and fathers) of the United States and Iceland individually completed mailed questionnaires related to family hardiness and sense of coherence. Adaptation was measured through assessment of family hardiness with respect to the severity of the child's illness, and the care giving demands for the family. Demographic data (marital status, number of children, education and employment) for each ethnic group was comparable, except for annual income, which was lower for Icelandic families. As with other studies, family hardiness predicted adaptation for both mothers and fathers. For fathers, a sense of coherence was a predictor, as well as a moderator for the family demands on adaptation, which supported the authors' hypotheses. Interestingly, Icelandic mothers indicated a higher degree of contentment with their families' adaptation.

Lee, Jackson, Parker, DuBose and Botchway (2009) conducted a descriptive correlational study on a convenience sample of African American and Caucasian families (68 mothers, 3 fathers) with school-aged children diagnosed with asthma (Table 2). Similar to Chen and Clark (2010), the authors questioned whether there was an association between family resources, coping and family well-being. However, these researchers also examined the differences between African American and Caucasian groups. Results demonstrated a significant positive relationship for both groups between family resources and parental well-being, and for Caucasians, coping behaviors were also significantly related in a positive direction. For African Americans, coping behaviors were significantly negatively related to the number of members in the household.

Comparison of cultural differences was one of the aims of the study conducted by Ahlert and Greeff (2012). Using a purposive sample of families with deaf or hard of hearing children from seven institutions/schools in South Africa, the researchers recruited Black/African, Colored/Biracial and White married, cohabitating and single families (Table 2). Both quantitative and qualitative data were collected to identify resilience qualities (social support, family hardiness, relative and friend support, family problem solving, communication and coping) associated with family adaptation. For all three groups, all correlations were positive, except for incendiary communication from the Family Problem Solving and Communication Scale and the parent and family problems from the Questionnaire on Resources and Stress. Due to the decreased sample size for the White group, best-subset regression analysis was only calculated for the Black/African and Colored/Biracial groups. Differences were noted for the combination of factors that best predicted adaptation for the Black/African (relative and friend support, spiritual and community support, problem-solving and communication skills) and the Colored/Biracial (family hardiness, availability and use of community resources and internal coping resources). The qualitative analysis from the open-ended questions noted different challenges for each group, as well, and yet all were learning to accept their child's disability.

Although many of these studies published in the last ten years, examined associations between resiliency factors and a criterion of adaptation or parental well-being, none of them involved families of premature infants. In fact, there have only been two published articles addressing resiliency factors and family adjustment for mothers and fathers with a premature infant. In the first study, Pinelli (2000) (Table 2) investigated the relationship between family coping and resources, and family stress and adjustment during the initial two to four days in the neonatal intensive care unit (NICU), hypothesizing that a relationship would exist. Research

questions addressed the variance between the protective factors and adjustment, as well as the differences between mothers and fathers. Using a convenience sample of 124 mother/father pairs, each parent was asked to complete questionnaires assessing state anxiety, family coping, family resources (predictors) and family adjustment and stress, which were the criterion variables. Similar to the studies with chronically ill children, Pinelli reported family resources were strongly related to positive family adjustment and parental stress. Hierarchical linear regression modeling (HLM) was used to examine within-couple variation, as well as the relationship between the predictors and criterion variables. Although mothers had higher levels of anxiety, they also had significantly higher scores for perceived family resources and coping. In contrast, fathers had a higher score on adjustment, indicating difficulty with adjustment.

Doucette and Pinelli (2004) conducted a follow-up study with a subset of parents' from Pinelli's (2000) study 18 to 24 months after the initial NICU hospitalization. Parents responded to the same questionnaires, except family strains were assessed rather than anxiety. HLM analysis was again used to examine results for parents individually and as couples. Results revealed that mothers' family adjustment scores were higher than fathers' scores. However, there were significant gender differences between parents with respect to family adjustment, coping, resources and family strains. Scores for the various instruments were compared with the first study using a paired t- test. Although family adjustment improved over time for mothers, this decreased for fathers, and particularly, for fathers whose infants had ongoing health problems. Internal family resources (esteem, communication, mastery and health) also decreased for both mothers and fathers over time, but there was a significant decrease for fathers. Both parents' coping scores increased significantly, with mothers using more coping strategies than fathers. Overall, the internal family resources were significantly related to family adjustment.

Because of the change in these resiliency factors over time, the authors recommended that families be evaluated early in their NICU hospitalization to identify internal and external resources (Table 2).

Summary

Much of the family resiliency research has focused on resiliency factors and their association with various outcomes, in an effort to understand the relationship. The studies included in this literature review have described an association between protective factors (social support, family hardiness, family resources and the ability to problem-solve) and a sense of coherence, adjustment or adaptation. Surprisingly, there were several studies from different countries, and yet in the United States, differences in family structure, race or ethnicity are not specifically addressed. Even more surprising is the paucity of literature investigating resiliency for families of premature infants. There is a gap in identifying protective and recovery factors for all types of families, not only nuclear families consisting of a mother and father. There is a gap in examining any differences in factors for racial groups. Moreover, there is a gap in understanding the significance of these factors on family functioning. The next section of this literature review will examine the current state of the science on family functioning.

Family Functioning

The limited number of research studies examining family functioning is scattered in the psychological, medical and sociological literature. Nine articles met the inclusion criteria for this review (Table 3). Most of them define family functioning through the operationalization of the measures in the study versus the association with a specific theoretical or conceptual framework. Thus, family functioning appears to be a construct or concept assessed to identify

Table 3

Studies of Family Functioning

Author	Aims/Conceptual Framework	Design	Sample/Population	Instruments	Findings
Streisand, et al. (2003)	To examine the association between parenting stress and family functioning	Correlational	116 parents 96 mothers 20 fathers 86% White 85% married	Pediatric Parenting Inventory for Parents (PIP) McMaster Family Assessment Device (FAD)	Parents with more parenting stress reported poorer family functioning. PIP communication scale significantly related to family's level of affective responsiveness.
Drotar, et al. (2006)	To document the impact and burden of Extremely Low Birth Weight (ELBW) and associated problems on families of ELBW children now school-aged. To document predictors of individual differences of family impact within the ELBW group.	Prospective Correlational	219Extremely Low Birth Weight 176 Term Newborn Weight Primary caregiver (mother, father, grandmother, etc.) of each group interviewed	CES-D Vineland Adaptive Behavior Scales Kaufman Assessment Battery for Children Questionnaire for Identifying Children with Chronic Conditions Impact on Family Survey Life Stressors and Social Resource Inventory	Total family impact was greater in the ELBW group Negative impact on family for financial impact, caretaker burden and family burden for ELBW group
Moore, et al. (2006)	To investigate changes in family effects overtime and to explore moderating influences of the family environment on these effects	Longitudinal Exploratory	184 families 64< 750 g 54 750-1499 g 66 term 88% mothers 4% fathers 8% grandparents	Brief Symptom Inventory Four Factor Index Life Stressors and Social Resources Inventory Family Burden Interview	More long-term burden and parent psychological distress for families of VLBW than for term Children at higher medical risk present greater challenges to families
Musil, et al. (2006)	To examine how demographic factors, family stress, grandmother resourcefulness, support and role reward affect perceptions of functioning	Descriptive	486 grandmothers 319 White 167 Non-White	FILE (modified) Self-Control Schedule Duke Social Support Index, FAD-GFS, Communication scales	Grandmothers with decreased perception of family functioning reported less support, resourcefulness, reward and strains and stressful family events

Author	Aims/Conceptual Framework	Design	Sample Population	Instruments	Findings
Knafl, et al. (2007)	To describe patterns of family functioning (using cluster analysis) based on mother and father assessments of family satisfaction and hardiness. To describe the relationship of these patterns to parental quality of life and child functioning	Non-categorical with focus on psychological challenges	52 parents 73% White 13% African American 4% Asian 3% Hispanic	Family APGAR Family Hardiness Index (FHI) Quality of Life Index	Pattern of family functioning not significantly associated with type of genetic condition Expected quality of life lower for the Diminished /Compromised cluster
Ozono et al. (2010)	To identify distinct clusters of families with childhood cancer survivors. To evaluate their differences with respect to anxiety, depression and post-traumatic stress symptoms	Descriptive Correlational Multisite (3)	247 individuals 88 adolescent cancer survivors 87 mothers 72 fathers	Family Relationship Index (FRI) State-Trait Anxiety Inventory Impact of Event Scale-Revised Zung Self-Rating Depression Scale Child Depression Inventory	Three cluster types identified: cohesiveness, expressiveness, conflict ANOVA indicated that conflictive type had highest level of depression, state-trait anxiety and post-traumatic stress symptoms
Saroj et al. (2010)	To examine the impact of illness on families and the long-term effects on the health of parents of young adults who were born ELBW compared with NBW To examine whether a negative impact was greater for parent of young adult with neurosensory impairment	Longitudinal Correlational	130 mothers with ELBW infants 126 mothers with NBW	Bradburn Affect Balance Scale Ontario Child Health Study Questionnaire Spielberger State-Trait Anxiety, FAD-GF Center for Epidemiological Studies Depression Scale Social Support Index Impact of Child's Illness on the Family	No significant differences between two groups for marital disharmony, family dysfunction and social support Mothers of ELBW with neurosensory impairment reported significantly less family dysfunction

Author	Aims/Conceptual Framework	Design	Sample/Population	Instruments	Findings
Treyvaud, et al. (2011)	To examine differences between families with very preterm (VPT) and term born (TB) children on family functioning, parenting stress and burden on the family	Correlational (secondary analysis from the Victorian Infant Brain Studies)	184 VPT 71 TB 239 mothers 11 fathers	FAD-GF Parenting Stress Index Impact on Family Scale General Health Questionnaire Bayley Scales of Infant Development Social Risk	VPT families reported significantly higher scores on family functioning (indicating poorer family functioning) Family functioning weakly related to having a child with a neurodevelopmental disability and parental mental health problem
Treyvaud, et al. (2014)	To evaluate the long term influence of very preterm birth on parental mental health, family functioning and parenting stress at age 2 and 7 years	Longitudinal Correlational (recruited from the Victorian Infant Brain Studies cohort)	148 families of preterm infants 66 families of term infants	General Health Questionnaire FAD-GF Hospital Anxiety and Depression Scale Social Support Questionnaire Parenting Stress Index Neurodevelopmental assessment	Families of VPT reported higher levels of anxiety, depression symptoms and poorer family functioning Higher total parent-related stress at 2 years predicted higher total parent-related stress scores at 7 years Poorer family functioning at 2 years was predictive of same family functioning at 7 years

dimensions of high-risk families, as a predictor of dysfunctional families, particularly with families who are caring for a child with a chronic illness, or as an outcome/criterion.

Streisand, Kazak and Tercyak (2003) conducted a cross-sectional study to examine the association between parenting stress and family functioning (Table 3). Parents of children who had completed treatments for cancer were surveyed using instruments to measure parent stress, and family functioning. The results indicated that parents of children who were receiving treatment experienced more difficulty in four of the five domains of the Family Assessment Device (FAD) (affective responsiveness, affective involvement, behavior control and general functioning). However, using regression analysis to control for the child's treatment status, the authors found similar results. In other words, FAD domains were significantly correlated with the Pediatric Parenting Inventory for Parents domains of communication, emotional distress, medical care and role functioning for all parents. This indicated that parents with more frequent and difficult stressors also reported poorer family functioning.

Psychological distress was also studied for a convenience sample of Japanese adolescent cancer survivors and their parents in a cross-sectional, multisite study at three separate hospitals (Ozono et al., 2010). Compared to other studies, this sample size was considerably larger and based on the GPOWER procedure to estimate the power of the analysis (Erfelder & Faul, 1996). Family functioning was assessed with the Family Relationship Index (12-item scale that originated from the Family Environment Scale) to categorize family perceptions of cohesiveness, expressiveness and conflict and to identify cluster types (supportive, conflictive and intermediate). This method was described as an empirically derived typology of family functioning. Differences between cluster types were subsequently examined with respect to depression, anxiety and posttraumatic stress disorder, using a separate Japanese version of the

measure for each category (Table 3). One of the instruments, The Child Depression Inventory was used, despite not being validated with a Japanese sample. The results identified more families in the intermediate cluster, which was characterized by moderate cohesiveness, moderate expressiveness and moderate conflict. An ANOVA indicated that the conflictive type, characterized by low cohesiveness, low expressiveness and high conflict had the highest levels of posttraumatic stress disorder, depression and anxiety. Although Ozono and colleagues showed an association between stress and family functioning similar to Streisand, Kazak, and Tercyak (2003), they also expanded their investigation by describing family functioning with respect to patterns of behavior with the intention was to inform future interventional studies.

Likewise, Knafl, Knafl, Gallo, and Angst (2007) used a cluster analysis technique for a secondary analysis to describe patterns of family functioning, only with families of children with a genetic condition (Table 3). Parents were recruited as part of the larger study from three outpatient specialty clinics, including Phenylketonuria, Cystic Fibrosis, Neurofibromatosis, Sickle Cell disease, Thalassemia, Marfan's, and Hemophilia. In contrast to the previous studies in this review where stress and family functioning were examined, these researchers approached family functioning from a strengths perspective. Parents' perceptions of family functioning were assessed with two specific measures of hardiness and satisfaction (Table 3). After identifying the clusters through statistical analysis, patterns were named based on the scores, i.e. well adapted, discrepant, diminished satisfaction, diminished hardiness and compromised. A Quality of Life Index instrument was used as the criterion measure, along with the Functional Status H for parent perception of child functioning. Results revealed that parents perceived their quality of life changed significantly, depending on their cluster, i.e. diminished, compromised parents had a lower quality of life in comparison with well-adapted parents with a higher quality of life.

Similarly, child functional status changed significantly such that functional status was lower for children of diminished/compromised parents versus children whose parents were identified in the well-adapted or discrepant clusters. Interestingly, pattern of functioning was not significantly associated with a specific type of genetic condition; rather, it served as a representation for multiple genetic conditions and the relationship with respect to parent and child outcomes.

Overall, studies examining family functioning included samples of parents, i.e. mothers and fathers. However, grandmothers may also be caregivers for their grandchildren and experience similar challenges. Musil, Warner, Zauszniewski, Jeanblanc, and Kercher (2006) investigated the relationship between demographic factors, family stress, resourcefulness, support and role reward, and perceptions of family functioning (Table 3). Unlike other studies described previously, The Resiliency Model of Family Stress, Adjustment and Adaptation was used as the conceptual framework for the study. Grandmothers were classified as having custody of their grandchildren, living in a multigenerational home caring for their grandchildren, or non-caregiving. Their mean age was 57 years. Each completed several mailed questionnaires to assess stress, resourcefulness, social support and perceptions of family functioning.

Confirmatory factor analysis was used to understand the variance of measured variables across the three groups. As hypothesized, custodial grandmothers reported less subjective support and worse perceptions of family functioning. However, because the results across the grandmother subgroups did not differ significantly, structural equation modeling was used for a composite model. Although less support, resourcefulness and reward contributed to poorer family functioning, it was intrafamily strain and social support that most affected the grandmother perceptions of family functioning. Because grandmothers may play a vital role in the lives of their grandchildren as well as other family members, Musil and colleagues

contributed further to the importance of studying family structure more broadly and beyond the nuclear family.

Nevertheless, for family functioning research involving families of premature infants, only mothers and fathers were included. Ethnicity was sometimes noted in the demographic data, but differences were not analyzed. Family functioning has primarily been studied as a criterion in longitudinal studies of families with premature infants who were school age or older. Treyvaud and colleagues (2011) and Treyvaud, Lee, Doyle, and Anderson (2014), researchers from Australia, conducted a longitudinal study to examine differences between families with very preterm (VPT) (< 30 weeks gestation or < 1250 g) and term born (TB) children on family functioning, parenting stress and burden on the family at age two and seven years (Table 3). The families (2011:184 VPT, 71 TB and 2014: 148 VPT, 66 TB) were part of a cohort from the Victorian Infant Brain Studies and the primary caregiver completed questionnaires, which was usually the mother. The instruments chosen to measure stress, family burden and family functioning were similar to those in other family functioning studies. Different instruments were used to assess stress, anxiety and mental health at each of the time periods, which limits the comparison of these assessments, particularly when the authors did not include reliability and validity psychometrics for the General Health Questionnaire and the Hospital Anxiety and Depression Scale. Results indicated less evidence of differences on stress between the VPT and TB families at age two years. However, families of VPT reported higher levels of total parenting stress, as well as higher levels of depression and anxiety at seven years. In fact, at both times, families of VPT reported higher scores on the Family Assessment Device representing poorer general family functioning. This outcome at two years was reported as predictive of the same outcome at seven years. Based on their results, the authors suggested that early problems with

parent stress and family functioning would likely continue throughout childhood, suggesting a need for family support soon after the birth of the preterm infant to affect family functioning.

Other studies documented family changes and outcomes between school-age children who were born preterm and term. Moore, Taylor, Klein, Minich, and Hack (2006) expanded upon their initial investigation by conducting annual assessments over a three-year period (Table 3). The families were divided into three groups based on the birth weight of the child, i.e. < 750g, 750-1499 g and term birth as the control. Although some attrition occurred, the sample was approximately the same for each group (total $N = 184$). Interestingly, Moore and colleagues did include grandparents who were primary caretakers (8%), mothers (88%) and fathers (4%), and "minority" race was approximately one third of the total sample. No other information was given to clarify the use of the term minority. Instruments measured stress, burden and social resources and were similar to those used in other studies (Table 3). Linear mixed model analysis was used to examine changes over time, taking into account various factors that change. Again, parents in the lowest birth weight group reported more long-term burden and psychological distress as family outcomes, and appeared to have greater challenges with their children who were also classified at a higher medical risk. Drotar et al (2006) also studied family outcomes and reported similar findings with a school age group of extremely low birth weight (ELBW: <1000g) in comparison with children who were term weights (NBW). For these two groups interviews were conducted with the child's primary caregiver, which included mothers, aunts and grandmothers, as well. In addition, for each group, the Black/African American race comprised 62% and 67%, respectively. However, these differences were not analyzed as part of the results. Besides the impact of stress on family outcomes for the ELBW group, findings revealed that the presence of neurodevelopmental impairment and chronic conditions had a more generalized

impact versus a specific aspect of family life as assessed by the Impact on Family Survey. Additionally, a multifactorial predictive model of risk identified socioeconomic factors (poverty, less parental education), maternal depression, and the functional impact of the child's chronic conditions associated with higher levels of family impact for the ELBW group.

Given the similarity of results reported by the longitudinal studies with premature infants, the work of Saigal, Pinelli, Streiner, Boyle, and Stoskopf (2010) presents an alternate perspective from Canada (Table 3). Recalling a primarily White cohort group of mothers who had ELBW infants and mothers who had NBW approximately 20 years later, the impact of illness on families and the long-term effects on the health of the parents were examined. It was not clear where this convenience sample was obtained, only that they were monitored since birth. Maternal mood, marital disharmony, anxiety, depression and social support were measured along with family functioning (Table 3). However, the methods section provided little information on where the parents completed the questionnaire, who completed the questionnaires and any reliability and validity psychometrics for the instruments. Results were reported for mothers only. There were no significant differences between the two groups. Interestingly, mothers of ELBW with neurosensory involvement reported significantly less family dysfunction than did mothers with ELBW young adults who did not have neurosensory issues. In fact, the authors concluded that differences between the groups noted when the child was an adolescent no longer existed in young adulthood, except for the impact on parent employment.

As noted at the beginning of this section, there is a paucity of research on family functioning. The majority of studies focused their investigations on parental stress while caring for a child with a chronic illness, and the impact on family functioning or family outcomes. A few studies examined patterns of family functioning and the associated impact on quality of life

for parents and child functioning. However, the studies examining this concept for families of premature infants were primarily longitudinal and compared outcomes between parents of children who were born premature and parents of children who were born term. None of the studies assessed family functioning during the hospitalization in the neonatal intensive care unit. Regardless, the outcomes for all studies were similar; parents caring for a child with a chronic illness, or for a child who was born premature and who may or may not have co-morbidities, reported increased parental stress and family burden and decreased family functioning.

Summary

Although the studies described their samples as families, this typically included mothers and rarely, fathers. Notably, Drotar et al (2006) and Moore et al (2006) included other family, particularly grandmothers, if they were primary caregivers for the children. This is a gap in the study of family functioning because in effect, the majority of studies were assessing the mother's perception of family functioning. Race and/or ethnicity for the participants was rarely identified, or only noted as one of the demographic characteristics in a table. Differences between racial / ethnic groups were not evaluated with respect to any of the study variables, which is another significant gap. The current study addressed these gaps by operationalizing a broader definition of the family and assessing family functioning during hospitalization. Additionally, the current study examined family functioning for its association with resiliency factors (a strengths based approach guided by a conceptual framework), rather than a focus on stress, family burden, anxiety and depression.

Chapter Summary

Despite the change in family structure during the 20th century, the family resiliency and family functioning literature primarily included samples of mothers and married couples who

were NHW. This reveals a gap in understanding the 21st century family, comprised of a variety of family structures, races and ethnic groups. In general, the family resiliency and family functioning literature is descriptive, cross-sectional and correlational. Many studies of family functioning do not cite theoretical or conceptual frameworks so that consistency in conceptual clarity is dubious. Concepts are operationalized according to what instruments are used to measure resiliency and family functioning. Nevertheless, the Resiliency Model of Family Stress, Adjustment and Adaptation, and the study of protective factors have been used to demonstrate an association between these factors and specific outcomes, e.g. parental stress or family functioning. Additionally, there was some consistency in measurement using similar instruments, which contribute to the validity and reliability of the instruments. However, with respect to families of premature infants, this literature is very limited, revealing a gap in understanding the needs of these families. Even more evident is the lack of research with families from other races and ethnic groups in the United States.

The current study examined both resiliency and family functioning for families in a neonatal intensive care unit before discharge, in an effort to predict those factors that affect family functioning, and to inform future intervention research. Gaps in the literature are addressed by: a) including family members, in addition to spouses and b) families from two different racial groups. The methods for this current study are presented in Chapter 3.

Chapter 3

Methods

In this chapter, a comprehensive description of the methods for the current study is presented. Details for the research design, sample, setting, and procedural specifications for the research are delineated. Psychometric properties for each measure are described, including Cronbach's alphas from the current study by racial group. Data management and analysis are outlined followed by a discussion of the limitations.

Design

This current study used a predictive correlational design, which is effective in a beginning program of research to describe the variables of interest, i.e. families, protective and recovery factors, and family functioning. A correlational design allows discovery of any associations between variables, as well as the degree of the relationship, without exploring cause. A predictive correlational design predicts the value of one variable based on the values obtained from another variable. This design is also an opportunity to collect data for one or more predictor and outcome variables, and to examine the interrelationships.

Setting

Five individual level III or IV neonatal intensive care units (NICU) within the Milwaukee community participated in the study. For each hospital/NICU, contact was initiated with nursing leaders (Chief Nursing Officer, NICU Director and Manager) to explain the purpose, aims and methods of the study. Further introductions with the staff nurses occurred during a tour of the unit, and with each visit to the unit. Table 4 provides a description of each NICU and the number of families recruited. Three of the NICUs (B, D, and E) reported approximately 40 -

50% of their patient population as NHB. The NICUs varied in their level of measurement for reporting annual admissions and/or patient days.

Table 4

Descriptive Data of Neonatal Intensive Care Units and Number of Families Recruited

NICU	Location	Bed capacity	Acuity level	# Families recruited	
				NHB	NHW
A	Central City	24	III	3	4
B	Central City	30	III	7	10
C	Suburban	23	III	3	9
D	Central City	54	III	0	1
E	Suburban	70	IV	11	31

Sample

The inclusion criteria for the biological mothers in the study were: a) mother was greater than or equal to18 years of age, b) mother self-identified as either NHB or NHW, c) mother spoke and understood English, d) mother was single, married or co-habitating, e) mother had a singleton birth of a premature infant with a gestational age < 37 weeks, f) the premature infant was hospitalized in the NICU $\geq$ 2 weeks, and g) the infant was in stable condition and expected to be discharged with the mother. The inclusion criteria for a family member of the biological mother in the study were: a) family member was greater than or equal to18 years of age, b) family member self-identified as either NHB or NHW (the same as the mother), and c) family member spoke and understood English. Exclusion criteria included: a) biological mother and family member who was less than 18 years of age, b) mothers and fathers who were assuming foster care or would adopt the premature infant, c) surrogate mothers, d) biological mothers of premature infants with a major anomaly or whose prognosis was poor and may not be discharged

home, e) biological mothers of multiples (e.g. twins, triplets, etc.), and f) premature infants who were previously discharged and readmitted to the hospital.

Recruitment flyers were created that briefly described the study as learning how families come together to care for their premature infant. The flyer asked if they were NHB or NHW, and whether they were willing to answer some questions about their family. The family would receive a $15 gift card for participation. A cell phone number was added so that families could text or call for questions or to schedule a time to meet. No families were recruited because of reading the flyer. Two mothers used the cell phone number to text a specific time for a meeting and in another instance; a nurse used the number to text about a mother visiting.

For the current study, both married and single mothers were recruited as outlined in the inclusion criteria. This decision was based on the national percentage of single parent families overall (27%), and specifically, NHB single parent families (55%) in 2012 (Vespa, Lewis, & Kreider, 2013). A family member of the biological mother who met the inclusion criteria was also recruited. If the biological father was not considered a member of the mother's family, then a significant person, who was considered a member of the family, was recruited. Each participant self-identified as NHB or NHW.

The goal for this sample was 64 families in each racial group (NHB and NHW). After nine months of data collection, a sample of 24 NHB and 55 NHW families was recruited and completed the study. An additional four NHB mothers completed the measures, but were unable to engage another family member. The data from these four mothers were not included in the final sample for analysis.

The sample consisted of biological mothers who delivered a premature infant at less than 37 weeks gestational age (NHB: $M_{\text{gestation}} = 28.74$ weeks, $SD = 3.62$; NHW: $M_{\text{gestation}} = 29.76$

weeks, *SD* = 3.45) and one other person considered family by the mother. For each group, the family member included spouse, biological father, grandmother or kin/other family member. This last category, kin/other family member was disclosed on the demographic questionnaire as a cousin, brother or sister. In the current study, the family was defined as the biological mother and one other person that she considered family. This was intentional in an effort to recognize other family structures besides the classic nuclear family (Bumpass & Lu, 2000; Gibson-Davis, Edin, & McLanahan, 2005; Teachman, Tedrow, & Crowder, 2000). However, the other family member was more often the spouse and/or biological father for NHB (65%) and NHW (91%).

The mean age in years for categories of participants is reported in Table 5. An independent t-test was calculated to detect any statistical significance between NHB and NHW. There were no statistically significant differences in mean age between NHB and NHW for any of the family groups, i.e. for mothers, fathers and other family member (grandmother/kin/family member).

Table 5

Mean Age (Years) of Sample

Variable	Non-Hispanic Black (NHB)		Non-Hispanic White (NHW)	
	n	*Mean (SD)*	*n*	*Mean (SD)*
Mother	24	28.54 (6.35)	55	30.20 (4.70)
Spouse	4	35.75 (13.60)	44	32.11 (4.65)
Biological Father	12	34.08 (6.49)	6	32.00 (5.55)
Grandmother	5	47.00 (5.00)	4	55.50 (8.06)
Kin/Family member	3	26.33 (3.51)	1	35.00
Total	48		110	

Two of the demographic questions asked the participants their current family structure and their relationship with the mother. Approximately half of the NHB mothers (*n* = 24) were cohabitating with the father of their baby (54%), as compared to married (21%) and single (25%). In contrast, fewer NHW mothers (*n* = 55) were cohabitating (15%) and the remaining

were married (85%).

The majority of participants for both groups (NHB: $n = 48$ (71%) and NHW: $n = 110$ (81%) were employed. Hours per week ranged from six to 100 hours with the majority of participants working 40 to 50 hours per week. Education and income levels were also queried for all participants. The majority of mothers for both groups (NHB: $n = 24$, NHW: $n = 55$) reported some college education or a college degree (NHB: 54.2%, NHW: 89%), which was more than spouses or biological fathers reported. However, 33.3% NHB mothers reported an annual household income less than $10,000 as compared to 51% NHW mothers who reported an annual household income greater than $75,000. Data are reported in Table 6.

A Chi-square test of independence was performed to examine the relationship between NHB and NHW for education and income. The Pearson Chi-Square value was significantly different for education $X^2(1, 158) = 22.33$, $p = .00$ with a 38% difference between education and race. For income, the Pearson Chi-Square value was also significantly different $X^2 (1, 155) = 42.54$, $p = .00$ with a 52% difference between income and race.

A second Chi-square test was calculated comparing the education and income for NHB and NHW mothers. The results were similar. The Pearson Chi-Square value was significantly different for education $X^2(1, 79) = 12.07$, $p = .00$ with 37% difference between NHB mothers and NHW mothers. For income $X^2(1, 77) = 19.27$, $p = .00$ with a 56% difference between NHB mothers and NHW mothers. However, a third Chi-square test to evaluate significant proportional differences in education and income between NHB mothers and fathers and NHW mothers and fathers was not significant for either group.

Data Collection

The study was approved by the Institutional Review Board (IRB) for the protection of human subjects at the University of Wisconsin-Milwaukee (UWM) (Appendix A). Because the study included five different hospitals, UWM was asked to serve as the IRB manager for a coordinated IRB agreement among the hospitals. All of the hospitals included in the current study were subsequently contacted by the UWM IRB manager and agreed to participate. Although this meant that medical records could not be viewed by the investigator at any of the NICUs, it eliminated the need to complete IRB applications at each hospital. However, mothers were asked screening questions before consenting either the mother or another family member to ascertain eligibility. Data were collected at all five NICUs during a nine-month period from October 2016 through July 2017. Biological mothers were approached while they were at their infant's bedside. After introductions, the mother was asked a few screening questions (gestational age of baby, number of weeks in the NICU, racial groups, age of mother and family member) and the study was explained. If she agreed to participate, the mother was asked if there was another family member who would be willing to complete the surveys. If she said yes, the mother was given a consent form to read and asked if she had any questions. After the mother signed the consent form, the instruments were administered using a paper and pencil scannable form. If the other family member was not present at the same time, a meeting was scheduled for a future date, and the same procedure was followed. Often the other family member was not present, and return visits to the NICU were not uncommon at various times during the day and evening. Families were recruited as early as seven in the morning and as late as 11 at night. There was no discernible pattern to parent visiting in any of the NICUs.

Table 6

Education and Income Levels for Sample

	Non-Hispanic Black (NHB) *n (%)*					Non-Hispanic White (NHW) *n (%)*				
	Mother	Spouse	Biological Father	Grandmother	Other family	Mother	Spouse	Biological Father	Grandmother	Other family
Variable	*n* = 24	*n* = 4	*n* = 12	*n* = 5	*n* = 3	*n* = 55	*n* = 44	*n* = 6	*n* = 4	*n* = 1
Education										
Less than high school	1 (4.1)	1 (25.0)	3 (25.0)	1 (20.0)	0 (0.0)	0 (0.0)	1 (2.3)	0 (0.0)	0 (0.0)	0(0.0)
HS Diploma/GED	10 (41.7)	3 (75.0)	4 (33.3)	1 (20.0)	2 (66.7)	6 (10.9)	6 (13.6)	4 (66.6)	2 (50.0)	0(0.0)
Some College	7 (29.2)	0 (0.0)	3 (25.0)	1 (20.0)	1 (33.3)	13 (23.6)	12 (27.3)	1 (16.7)	0 (0.0)	0(0.0)
College Degree	6 (25.0)	0 (0.0)	2 (16.7)	2 (40.0)	0 (0.0)	36 (65.5)	25 (56.8)	1 (16.7)	2 (50.0)	1(100.0)
Income										
0-9,999	8 (33.3)	1 (25.0)	1 (8.3)	2 (40.0)	0 (0.0)	1 (1.8)	0 (0.0)	1 (16.7)	1 (25.0)	0 (0.0)
10,000-19,999	5 (20.8)	0 (0.0)	3 (25.0)	1 (20.0)	2 (66.7)	5 (9.1)	2 (4.5)	0 (0.0)	0 (0.0)	0 (0.0)
20,000 -29,999	3 (12.5)	1 (25.0)	3 (25.0)	0 (0.0)	1 (33.3)	4 (7.3)	1 (2.3)	1 (16.7)	0 (0.0)	0 (0.0)
30,000-49,999	4 (16.7)	2 (50.0)	1 (8.3)	2 (40.0)	0 (0.0)	6 (10.9)	3 (6.8)	1 (16.7)	1 (25.0)	0 (0.0)
50,000-75,000	2 (8.3)	0 (0.0)	2 (16.7)	0 (0.0)	0 (0.0)	11 (20.0)	10 (22.7)	2 (33.3)	2 (50.0)	1 (100.0)
>75,000	1 (4.2)	0 (0.0)	1 (8.3)	0 (0.0)	0 (0.0)	28 (50.9)	27 (61.4)	1 (16.7)	0 (0.0)	0 (0.0)

Occasionally, a small cohort of parents/families visited consistently. However, once this cohort was recruited, there were fewer families available. Nurses sometimes suggested times that families visited, but it was only an estimate.

In addition to the five instruments, each family member was asked to complete a demographic questionnaire asking for age, relationship to mother, gender, education completed, employment, number of jobs, number of hours worked, income and number of adults and children living in the home. The scales were completed within a 20-30 minute time period. At the completion of the scales by both family members, they were given a $15 gift card to a national retailer and thanked for their time.

Measures

The criterion variable family functioning was measured using the McMaster General Family Functioning Scale. Family traditions (as measured by the Family Tradition Scale), family hardiness (as measured by the Family Hardiness Index), family resources (as measured by the Family Inventory of Resources for Management) and social/spiritual support (as measured by the Family Crisis Oriented Personal Evaluation Scales) were the predictor variables. Each of the instruments selected were chosen for their reported validity and reliability to measure these specific concepts for the current study. All of the instruments (scales) were administered at the time of consent. The majority of the measures were 30 items or less, except for the Family Inventory of Resources for Management scale, which was 55 items.

McMaster Family Assessment Device - General Functioning Subscale

The McMaster Family Assessment Device and the associated seven subscales were developed as part of the McMaster Approach; a comprehensive model of family assessment and treatment based on systems theory (Miller, Ryan, Keitner, Bishop, & Epstein, 2000). The

McMaster Family Assessment Device: General Functioning Subscale (GFS) is one subscale of the Family Assessment Device that was used to measure the criterion family functioning for the current study. A highly correlated item subset of the Family Assessment Device was selected to create the General Functioning Scale; twelve items with six reflecting healthy family functioning, and six reflecting unhealthy family functioning (Epstein, Baldwin, & Bishop, 1983).

Measurement of the GFS involves using a Likert scale with a range from 1 (*strongly agree*) to 4 (*strongly disagree*), and the negatively worded items are reversed. Designed as a self-report questionnaire, each participant rates agreement or disagreement with respect to how the item describes his or her family by selecting one of the four responses. A total score is calculated and then divided by the number of items on the subscale (12) giving a total score range between 1 and 4, with a score greater than 2 (cutoff score) indicating greater family dysfunction (Epstein, Baldwin, & Bishop, 1983; Miller et al., 2000). To determine an overall family member score, individual scores were averaged.

An independent assessment of the psychometric properties of the 12-item GFS was conducted using the data set from the Ontario Child Health Study, which included 1822 families. Results supported construct validity of the GFS as a measure of family functioning (Byles, Byrne, Boyle, & Offord, 1988). Discriminant validity was reported between clinical and nonclinical families (Epstein, Baldwin, & Bishop, 1983). The GFS was considered separately in a confirmatory factor analysis, and it correlated highly with the principal component of the other items in the subscales, indicating support for use as a global index of family functioning (Kabacoff, et al., 1990; Tutty, 1995). Concurrent validity was assessed by administering the instrument with two other self-report family assessment measures: the Family Unit Inventory and FACES II. The internal reliability of the GFS was reported as Cronbach's alpha coefficient = .86

(Byles, Byrne, Boyle, & Offord, 1988). The current study revealed similar Cronbach's alpha coefficient (α = .85). However, the alphas were lower for the NHB group (NHB: α = .79, NHW: α = .87). The Flesch-Kinkaid grade level was calculated as 7.0. Because of the widespread use of the GFS, it is viewed as a well-established instrument of family functioning. Notably, it has also been used in several studies with parents of children and adolescents including: parents of children with a chronic illness (Brehaut et al., 2009; Nabors et al., 2013), parents of children with cancer (Foley, Barakat, Herman-Liu, Radcliffe, & Molloy, 2000; Streisand, Kazak, & Tercyak, 2003), parents of children with Smith-Magenis Syndrome (Morse, Rohan, & Smith, 2014), and parents of a premature infant (Doucette & Pinelli, 2004; Pinelli, 2000). It has also been used with NHB participants and psychometric properties were similar to other groups (Chapman & Woodruff-Borden, 2009; Harper & Robinson, 1999; Petrocelli, Calhoun, & Glaser, 2003).

Family Tradition Scale

The protective factor of family traditions (routines/rituals, family celebrations and time together) was measured with the Family Tradition Scale (McCubbin & McCubbin, 1996). This index is a 20-item scale consisting of four subscales: Holidays, Transitions, Religious Traditions and Family Special Events. Family traditions are important to family life and particularly, in the face of adversity. The Holiday Traditions six-item subscale measured the extent to which a family participates in maintaining holiday traditions, e.g. gift exchange, decorating, activities and people involved. The Family Transitions six-item subscale measured the extent to which a family maintains traditions around the transitions or changes in the family, i.e. marriage, deaths, ceremony and practices. The Religious Traditions four-item subscale measured the extent to which a family participates in maintaining traditions with respect to religious occasions. The

Family Special Events four-item subscale measured the extent to which the family is involved in keeping the traditions around events perceived as special to the family. An individual score is determined for each subscale by scoring each *Yes* response as a 1, each *No* response as a 0 and then adding the total number of *Yes* responses. A total Traditions score was obtained by summing the subscale scores for each family member. Validity of the Family Traditions Scale was measured in relationship to other criterion indices, i.e. family sense of coherence, family hardiness, family bonding and family satisfaction and were positively correlated. The overall internal reliability was reported as Cronbach's alpha coefficient = .85 (H. I. McCubbin & M. A. McCubbin, 1996). For the current study the Cronbach's alpha coefficient = .89 (NHB: $\alpha = .85$ and NHW: $\alpha = .91$). Although Cronbach's alphas were not reported in the literature for the individual subscales, the current study computed the alphas for each subscale per group: Holidays (NHB: $\alpha = .52$, NHW: $\alpha = .56$), Transitions (NHB: $\alpha = .73$, NHW: $\alpha = .81$), Religion (NHB: $\alpha. = .66$, NHW: $\alpha = .89$) and Family Special Events (NHB: $\alpha = .78$, NHW: $\alpha = .84$). The Flesch-Kinkaid grade level was calculated as 7.7. At this time, use with NHB has not been reported in the literature. McCubbin and McCubbin (1996) published use with multiracial families.

Family Hardiness Index

Family hardiness is a second protective factor. It is described as family member accord/positive outlook, family strengths and family resources and was measured with the Family Hardiness Index (McCubbin & McCubbin, 1996). This index is a 20-item instrument that consists of three subscales: Commitment, Challenge and Control over family life. Commitment is an eight item scale (Cronbach's alpha = .81) which measured the family's sense of internal strengths, dependability and ability to work together. Challenge is a six item scale

(Cronbach's alpha = .80) which measured the family's efforts to be innovative and active to experience new things and to learn. Control is a six item scale (Cronbach's alpha = .65) which measured the family's sense of being in control of family life, rather than being shaped by outside events and circumstances (H. I. McCubbin & M. A. McCubbin, 1996). The current study computed Cronbach alphas for Commitment (NHB: α. = .64, NHW α = .58) and Challenge (NHB: α = .63, NHW: α = .59) that were lower and Control (NHB: α = .75, NHW: α = .65) was similar as reported in the literature. The overall internal reliability was reported as Cronbach's alpha coefficient = .82 and for the current study was different for each of the groups (NHB: α = .76, NHW: α = .44) (H. I. McCubbin & M. A. McCubbin, 1996). Kapp and Brown (2011) reported an internal reliability FHI total Cronbach's alpha score as α = .40 with a sample of 19 mothers who were South African, Afrikaan and Xhosa.

Validity of the Family Hardiness Index was measured in relationship to other criterion indices of family functioning: Family Flexibility (i.e. the ability to change to meet challenges), Family Times and Routines (i.e. the ability to maintain stability and continuity) and the indices of Family Satisfaction, Marital Satisfaction and Community Satisfaction and were noted as positively correlated. The Flesch-Kinkaid grade level was calculated as 5.2. At this time, the instrument has also been used with NHW, Asians and Hawaiians.

For each of the 20 items, the respondent identifies the degree to which each statement most accurately describes the family on a 0 to 3 scale with a range from 0 *(false*) to 3 (*true)*. Negative items were reversed scored prior to calculating a sum score. A total Hardiness score was obtained by summing the subscale scores for each family member.

Family Inventory of Resources for Management

Family resources is the third protective factor and is described as family esteem and

communication, extended family support, mastery and health, and financial well-being. Family resources were measured using the Family Inventory of Resources for Management (FIRM) (McCubbin & McCubbin, 1996). Factor analytic procedures were performed on the initial 98 self-report items. Using data from 322 families with a chronically ill child, four final scales (55 items) were developed that represented perceived family resources (Cronbach's alpha = .89). The overall Cronbach alpha for the current study was slightly lower (NHB: α = .79, NHW: α = .72). The first subscale is Family Strengths I: Esteem and Communication which is a 15 item scale that indicated the presence of personal, family system and social support resources in six areas: a) family esteem (respect from friends, relatives, co-workers and family members), b) communication (sharing feelings and discussing decisions), c) mutual assistance (helping each other and relatives), d) optimism, e) problem-solving ability, and f) encouragement of autonomy among family members (Cronbach's alpha = .85). For the current study, the alpha's for each group were similar (NHB: α = .84, NHW: α = .87). The second subscale is Family Strengths II: Mastery and Health and contained 20 items reflecting personal, family system and social support resources over three dimensions: a) a sense of mastery with respect to family events and outcomes (fate control, flexibility, managerial abilities), b) family mutuality (emotional support, togetherness, cooperation), and c) physical and emotional health. Cronbach's alpha for this subscale was α = .85 and similar for the current study (NHB: α = .91, NHW: = .87). The third subscale, Extended Family Social Support included four items referring to the mutual help and support given to and received from relatives (Cronbach's alpha = .62 and current study NHB: α = .63, NHW: .68). Lastly, Financial Well-Being contained 16 items that indicated the family's perceived financial efficacy: a) ability to meet financial commitments, b) adequacy of financial reserves, c) ability to help others, and d) optimism about the family's financial future. The

Cronbach's alpha = .85 in the literature and for the current study was NHB: α = .61 and NHW: α = .78. Lee, Jackson, Parker, DuBose and Botchway (2009) reported overall FIRM Cronbach alpha's as α = .90 for African Americans and α = .96 for Caucasians.

The authors also reported significant positive correlations between the four subscales and the family environment dimensions (cohesion, expressiveness and organization), and negative correlations with family conflict/family functioning, which they believed offered support for the validity of FIRM (H. I. McCubbin & M. A. McCubbin, 1996). The values for 30 of the items were reversed so that all items were weighted in the same positive direction for interpretation of results. The respondent identifies the degree to which each statement most accurately describes the family on a 0 to 3 scale with a range from 0 (*not at all*) to 3 (*very well*). Scores for each subscale were added to obtain a total FIRM score for each family member. The Flesch-Kinkaid grade level was calculated as 10.1

Family Crisis Oriented Personal Evaluation Scale

The recovery factor of social/spiritual support was measured using the Family Crisis Oriented Personal Evaluation Scale (FCOPES) (McCubbin & McCubbin, 1996). The FCOPES is a 30-item instrument with five subscales: Acquiring Social Support, Reframing, Seeking Spiritual Support, Mobilizing Family to Acquire and Accept Help, and Passive Appraisal. This instrument was developed to focus on specific behaviors during difficult situations. It emphasized two levels of interaction outlined in the Resiliency model: individual to family system and family to social environment. Validity was obtained with factor analyses using varimax rotation on two large samples of husbands and wives. The internal reliability of the FCOPES measure was reported as Cronbach's alpha coefficient = .81 (H. I. McCubbin & M. A. McCubbin, 1996). For the current study, the Cronbach's alpha coefficient was similar (NHB: α

= .88, NHW = .83). Acquiring Social Support was nine items (Cronbach's alpha = .84) measuring a family's ability to actively obtain support from relatives, extended family, friends and neighbors. Reframing was eight items (Cronbach's alpha = .82) assessing the family's ability to redefine stressful events in an effort to make them more manageable. Seeking Spiritual Support was four items (Cronbach's alpha = .79) measuring the family's ability to obtain spiritual support. Mobilizing Family to Acquire and Accept Help was a four item scale (Cronbach's alpha = .71) measuring the family's ability to seek out community resources and accept help. Passive Appraisal was a five item scale (Cronbach's alpha = .64) assessing the family's ability to deal with problems. For the current study the Cronbach's alpha were similar for Acquiring Social Support (NHB: $\alpha = .81$, NHW: $\alpha = .76$)), Reframing (NHB: $\alpha = .83$, NHW: $\alpha = .78$) and Passive Appraisal (NHB: $\alpha = .61$, NHW: $\alpha = .63$)). Seeking Spiritual Support was higher (NHB: $\alpha = .78$, NHW: $\alpha = .92$) and Mobilizing Family to Acquire and Accept Help was lower for NHW (NHB: $\alpha = .77$, NHW: $\alpha = .56$) than the alphas reported in the literature. A Likert scale was used with higher scores indicating greater use of coping strategies. The values for four of the items are reversed so that all items are weighted in the same positive direction for interpretation of results. A total coping score was obtained for each family member by summing the number noted by the respondent with a range from1 (*never*) to 5 (*always*). The Flesch-Kinkaid grade level was calculated as 7.4. Two studies published use of this measure with NHB families, but psychometric properties were not reported in the literature (Hanline & Daley, 1992; Myers, Taylor, Kerby, Arrington, & Richardson, 1992).

Data Management

A paper copy of the scales was administered to participants on scannable forms created by Teleform ® software. Teleform reader and verifier functions were subsequently used to extract

the data from the forms and flag any data needing review, before exporting to a password protected encrypted flash drive. During this process, it was discovered that the FCOPES scale did not scan correctly. This scale, as well as the demographic data were subsequently manually entered and crosschecked by a research assistant. A codebook was created for each scale and demographic question. Reverse scoring through recoding of variables was done for specific items on four scales.

The Statistical Package for the Social Sciences (SPSS version 24) was used to manage data and conduct statistical analyses. Data were screened for missing data, inaccurate data and outliers. Frequency tables with minimum and maximum values and histograms for each survey were computed to ascertain missing data. Little's MCAR was calculated to identify any problems with the distribution of missing data. Expectation Maximization (EM) was used for imputation. Outliers for each of the scales were determined through boxplot analysis.

Data Analysis

All data were assessed for normality, skewness, homogeneity of variances, collinearity and linearity. Descriptive statistics were used to analyze the demographic data (age, race, education, income, family structure and gestational age of infant) of the participant sample.

The inferential analyses for each of the research aims provided information about the relationships between the predictor variables (family traditions, family hardiness, family resources and social/spiritual support) and the criterion variable (family functioning). Select demographic factors were used as covariates to evaluate their relationship with the predictor and variables.

Aim #1 *To determine any association between individual demographic factors and protective and recovery factors for families of premature infants.* Demographic factors that included

nominal data and protective and recovery variables (scales/subscales) were analyzed using Spearman's Rank Order correlation. For the demographic variable that was continuous, a Pearson's Product Correlation was calculated.

Aim #2 *To examine the differences in protective and recovery factors between Non-Hispanic Black or Non-Hispanic White families of premature infants***.** To address this aim, total scores, means and standard deviations were calculated for each scale, as well as each of the individual subscales for each scale. These analyses were run between groups (NHB vs. NHW) and within groups (mother, spouse, biological father, grandmother, kin/family member). An independent sample t-test was computed between the NHB and NHW groups for each of the total scales. A 2x3 factorial ANOVA was computed to determine the main effects of racial groups and family relationship (mother/father/other family member) on each of the total scales and subscales, as well as the interaction effect. Bonferroni's correction was computed for each of the analyses determined to be significant.

Aim #3 *To determine whether any protective and recovery factors are predictors of family functioning for Non-Hispanic Black and Non-Hispanic White families.* Analysis of this aim began with a series of scatterplots for each scales/subscales (predictor variables) and family functioning (criterion variable) to determine linearity between the variables. A Pearson's Correlation Coefficient was then computed for each variable and the criterion to determine the strength and direction of the relationship. Results indicated that a multiple regression model was appropriate to examine the potential relationship between the predictor variables in the scales/subscales and the criterion variable, with the goal of identifying which protective and recovery factors may predict family functioning. Since the individual subscales for the scales totaled 16, both the Backward Elimination and Stepwise procedures were performed to compare

choice of variables that would contribute most and least to the model. Both procedures identified the same six subscales, which were subsequently used in the Hierarchical Multiple Regression analysis.

Limitations

A predictive correlational research design is non-experimental. Potential threats to internal validity included: a) participant reading level that may affect understanding the questions, b) a measurement effect related to the timing of the administration for the participant and the interaction effect of other personal factors or the infant's condition, and c) a subject effect because the person administering the scales was NHW and different than the NHB participants. Because only NHB and NHW participants were recruited, this excluded any participants who were biracial or born in a country other than the United States.

External validity was potentially affected by ethnicity; that is, if one or more of the scales has not been specifically validated with the NHB group, then there was the potential that this group may interpret questions differently because the questions were not relevant for them. Only the General Functioning Subscale and the Family Crisis-Oriented Personal Evaluation Scale were used previously with the NHB population.

Additionally, sample size was not achieved for either group. A medium effect size with 80% power was initially calculated with a sample size of 64 in an effort to demonstrate statistical significance without committing a Type I or Type II error. During the data collection phase of the current study, the sample size was recalculated using a large effect size. It was determined that a sample of 51 NHW and 17 NHB was needed to detect a large effect size (0.8) with 80% power and a 0.05 significance level.

Summary

This predictive correlational study explored resiliency and family functioning by examining the association between resiliency (protective and recovery) factors and family functioning for two specific groups of families (NHB and NHW) . The goal was to address the gap in the literature related to resiliency of families with premature infants, as well as analysis for two different racial groups. This chapter provided a synopsis of the study design, sample, data collection procedures and measures. A description of data management, including data cleaning methods, handling of missing data and statistical tests conducted was also provided. Finally, potential threats to the research study were reviewed. The findings of the current study are reported in Chapter 4.

Chapter 4

Findings

The objective of the research design for the current study was to explore resiliency (protective and recovery) factors and family functioning with families of premature infants. Findings are related to the research aims. Both descriptive and inferential analyses are reported as part of the predictive correlational design. This chapter is a presentation of the outcome of the data analyses, including a description of the preliminary analyses, a report of the primary analyses for each of the aims, and a summary.

Preliminary Data Review

Data collected from participants ($N = 158$) who completed the scales were initially screened for missing data and outliers. Each of the scales had a percentage of missing values: General Functioning Scale (GFS) 3.2%, Family Hardiness Index (FHI) 3.8% and Family Crisis Oriented Personal Evaluation Scales (FCOPES) 2.6%. The Family Inventory of Resource Management (FIRM) had 9.6% missing data points. This scale was 55 questions and the longest of the five scales. The Family Tradition Scale (FTS), which was the last scale in the packet, had 5.1% missing values. Four of the five scales displayed a range of one to five outliers. Calculations with and without outliers did not reveal any major differences in scores and therefore, the outliers were included.

Using Little's MCAR, each missing data point was reviewed for each of the individual scales and resulted in $X^2 = 3658.35$ (df = 3592, $p = .216$). This finding was not statistically significant indicating that the data was scattered across all continuous scale variables and missing completely at random. Expectation Maximization (EM) was used for imputation of missing data. Further examination of the values that were imputed by EM revealed numerical

values that were not within range for three of the surveys. A decision was made to replace with numbers that were between the minimum and maximum range for the specific scale. Subsequently, data were assessed for normality, skewness, homogeneity of variances, collinearity and linearity. These statistical procedures confirmed that the data did not violate any of the assumptions required of the statistical tests chosen to address the aims of this current study.

Primary Analysis for Study Aims

Aim #1 *To determine any association between individual demographic factors and protective and recovery factors for families of premature infants.*

To address this aim, frequencies for the demographic information from the biological mother and other family member for each group (NHB: $n = 48$, NHW: $n = 110$) were reviewed. Each participant was asked his or her age in years. Biological mothers and fathers from both groups (NHB and NHW) were similar in age with a range from late twenties to early thirties (Table 5). Because age was collected as interval data, Pearson Product Moment correlations were calculated for each NHB and NHW group. Age was not significantly associated with any of the protective and recovery variables in the scales, nor for any of the subscales. All correlations of age with the total scales, as well as the subscales for each group were none to very small in magnitude and none were statistically significant at the alpha .05 level or less. Table 7 describes this data for each group.

Table 7

Pearson Product Moment Correlations between Racial Groups for Age and Protective and Recovery Scales/Subscales

	Age of all participants			
	Non-Hispanic Black (NHB) (n = 48)		Non-Hispanic White (NHW) (n = 110)	
	r	*p*	*r*	*p*
Family Traditions	-.08	.59	-.11	.26
Holidays	-.15	.32	-.16	.10
Transitions	-.06	.68	-.09	.38
Religion	.06	.70	-.07	.47
Special Events	-.11	.46	-.07	.46
Family Inventory of Resource Management	-.14	.34	-.18	.06
Strengths I	-.14	.35	-.13	.18
Strengths II	-.03	.86	-.11	.24
Extended Social Support	-.23	.12	-.14	.14
Financial Well-Being	-.05	.75	-.00	.96
Family Hardiness	-.16	.28	-.14	.14
Commitment	-.10	.51	-.02	.86
Challenge	-.24	.10	-.10	.31
Control	-.03	.82	-.14	.14
Family Crisis Oriented Personal Evaluation Scale	-.11	.49	.11	.25
Acquiring Social Support	-.24	.10	.10	.31
Reframing	-.14	.36	.07	.49
Spiritual Support	.17	.25	.05	.57
Mobilizing Family To Acquire and Accept Help	.06	.69	.03	.76
Passive Appraisal	-.08	.57	.05	.58

Spearman's Rank Order Correlations were computed with the nominal data that was ranked ordered, i.e. education and income and the total scales and subscales. The data are reported in Tables 8 and 9. The Family Inventory of Resources for Management (FIRM) scale showed a weak correlation in magnitude for education (r = .31) for NHW and was statistically significant.

Table 8

Spearman's Rank Order Correlations between Racial Groups for Education and Protective and Recovery Scales/Subscales

	Education of all participants			
	Non-Hispanic Black (NHB) (n = 48)		Non-Hispanic White (NHW) (n = 110)	
	r	*p*	*r*	*p*
Family Traditions	.11	.46	-.01	.96
Holidays	.09	.55	-.09	.37
Transitions	.10	.51	-.02	.86
Religion	.16	.27	.04	.71
Special Events	.10	.52	.02	.86
Family Inventory of Resource Management	.12	.41	.31	.00**
Strengths I	.01	.95	.16	.10
Strengths II	.09	.56	-.04	.72
Extended Social Support	.11	.47	.23	.01*
Financial Well-Being	.10	.51	.36	.00**
Family Hardiness	-.13	.39	.06	.50
Commitment	-.06	.69	.14	.16
Challenge	-.04	.81	.04	.67
Control	-.19	.20	-.03	.79
Family Crisis Oriented Personal Evaluation Scale	.22	.13	-.07	.50
Acquiring Social Support	.21	.15	-.09	.34
Reframing	.13	.40	.16	.09
Spiritual Support	.22	.13	-.04	.66
Mobilizing Family To Acquire and Accept Help	.19	.42	-.11	.24
Passive Appraisal	.03	.84	-.07	.49

*p<.05, **p<.01

Additionally, two of the FIRM's subscales, Extended Social Support (r = .23) and Financial Well-Being (r = .36), also revealed statistical significance, but the correlation was weak for the NHW group. None of the correlations were statistically significant for NHB, and the majority of the correlations for both scales and subscales showed almost none or a weak correlation.

Income was another demographic factor that showed statistical significance with a small correlation in magnitude for the FIRM scale (r = .39) and a moderate correlation with the subscale Financial Well-Being (r = .58), but again, only for NHW. The NHW group also revealed a weak correlation with income and The Family Crisis-Oriented Personal Evaluation Scale (r = -.20), as did the subscale Mobilizing Family to Acquire and Accept Help (r = -.28). Similar to education, none of the correlations was statistically significant for NHB and the correlations between income and the scales and subscales were weak.

Income frequencies for the NHW group demonstrated that 70.9% of the NHW (n = 55) mothers reported an annual income greater than $50,000 as compared to 12.5% of the NHB *(n* = 24) mothers. Table 9 describes the non-parametric correlations for income.

Aim #2 *To examine the differences in protective and recovery factors between Non-Hispanic Black and Non-Hispanic White families of premature infants.*

Participants in each group (NHB: n = 48 and NHW: n = 110) completed four scales, which included subscales that focused on one or more of the protective and recovery variables. The Family Traditions Scale, Family Inventory of Resources for Management and Family Hardiness Index and their associated subscales measured the protective factors. The Family Crisis-Oriented Personal Evaluation Scale and subscales measured the recovery factors. Examination of the mean scores for each scale and subscale for each group provided insight into individual perceptions of family members with respect to the factors represented by the scales. Higher scores indicated confidence in their resources and/or capabilities. Mean scores and standard deviations for each scale and subscale are reported in Table 10.

Table 9

Spearman's Rank Order Correlations between Racial Groups for Income and Protective and Recovery Scales/Subscales

	Income of all participants			
	Non-Hispanic Black (NHB) (n = 48)		Non-Hispanic White (NHW) (n = 110)	
	r	*p*	*r*	*p*
Family Traditions	-.27	.07	-.03	.77
Holidays	-.07	.64	-.00	.96
Transitions	-.17	.25	-.02	.83
Religion	-.19	.21	-.03	.74
Special Events	-.14	.37	-.03	.79
Family Inventory of Resource Management	-.06	.71	.39	.00**
Strengths I	-.11	.46	.13	.19
Strengths II	.02	.91	-.08	.45
Extended Social Support	-.09	.53	.08	.40
Financial Well-Being	.14	.35	.58	.00**
Family Hardiness	-.35	.02	.02	.84
Commitment	-.18	.24	.18	.07
Challenge	-.24	.10	-.01	.94
Control	-.24	.11	-.13	.18
Family Crisis Oriented Personal Evaluation Scale	.00	.98	-.20	.04*
Acquiring Social Support	.06	.69	-.17	.07
Reframing	-.07	.62	.13	.18
Spiritual Support	-.03	.83	-.11	.27
Mobilizing Family To Acquire and Accept Help	.04	.79	-.28	.00**
Passive Appraisal	.05	.76	-.17	.07

*p<.05 **p<.01

Table 10

Protective and Recovery Survey and Subscale Mean Scores between Family Relationships and Racial Groups

	Non-Hispanic Black (NHB)					Non-Hispanic White (NHW)				
Variable	Mother	Spouse	Biological Father	Grandmother	Other Family	Mother	Spouse	Biological Father	Grandmother	Other Family
	n = 24	*n* = 4	*n* = 12	*n* = 5	*n* = 3	*n* = 55	*n* = 44	*n* = 6	*n* = 4	*n* = 1
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Family Traditions Scale	13.75	10.25	11.42	13.37	18.87	13.34	12.78	14.33	12.25	13.00
	(4.50)	(3.50)	(4.68)	(4.27)	(1.02)	(5.19)	(5.12)	(6.09)	(6.65)	
Holidays (6)	4.88	3.75	5.08	5.25	6.00	5.20	5.09	5.50	4.50	6.00
	(1.30)	(0.50)	(1.16)	(0.43)	(0.00)	(0.89)	(1.10)	(0.84)	(1.73)	
Transitions (6)	4.13	2.75	2.83	4.05	5.67	3.56	3.38	4.00	3.00	3.00
	(1.83)	(1.50)	(1.90)	(1.74)	(0.58)	(2.14)	(2.04)	(2.10)	(2.94)	
Religion (4)	1.92	1.50	1.42	1.77	3.30	1.53	1.54	2.00	1.50	1.00
	(1.44)	(1.29)	(1.16)	(1.61)	(1.12)	(1.75)	(1.61)	(2.19)	(1.91)	
Special Events (4)	2.83	2.25	2.08	2.31	3.91	3.05	2.77	2.83	3.25	3.00
	(1.49)	(1.26)	(1.51)	(1.71)	(0.16)	(1.42)	(1.54)	(1.60)	(0.96)	
Family Inventory of	142.10	119.96	139.17	150.14	146.67	147.35	147.16	147.35	135.00	137.00
Resources For	(14.81)	(16.29)	(13.98)	(16.18)	(11.72)	(9.32)	(10.23)	(6.56)	(16.77)	
Management										
Strengths I (60)	49.38	38.54	49.39	51.65	53.67	53.27	51.11	50.83	47.50	40.00
	(7.34)	(7.77)	(6.23)	(4.73)	(7.09)	(4.43)	(6.57)	(2.79)	(5.92)	
Strengths II (80)	37.81	36.25	38.65	38.30	31.00	35.18	36.57	40.18	31.75	58.00
	(13.04)	(3.30)	(11.25)	(20.21)	(9.17)	(6.95)	(8.08)	(6.96)	(6.65)	
Extended Social	11.38	7.75	11.36	12.40	13.33	12.13	11.93	11.36	11.50	9.00
Support (16)	(2.55)	(1.50)	(1.76)	(0.89)	(1.53)	(1.14)	(1.45)	(1.76)	(1.00)	
Financial Well-Being	43.54	37.42	39.77	47.80	48.67	46.77	47.55	45.17	44.25	30.00
(64)	(5.67)	(6.59)	(6.81)	(5.36)	(4.16)	(6.55)	(6.27)	(7.73)	(7.93)	

Note: Adjacent to each subscale is the total number of points for the specific subscale in parentheses.

	Non-Hispanic Black (NHB)					Non-Hispanic White (NHW)				
Variable	Mother	Spouse	Biological Father	Grandmother	Other Family	Mother	Spouse	Biological Father	Grandmother	Other Family
	n = 24	*n* = 4	*n* = 12	*n* = 5	*n* = 3	*n* = 55	*n* = 44	*n* = 6	*n* = 4	*n* = 1
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Family Hardiness Index	34.04	26.60	31.67	31.67	37.71	33.20	33.83	33.00	30.50	30.00
	(6.27)	(5.27)	(5.25)	(5.25)	(12.65)	(3.34)	(3.66)	(2.45)	(1.73)	
Commitment (24)	16.67	14.25	14.92	18.51	19.33	18.42	18.86	18.00	19.00	14.00
	(3.05)	(3.95)	(2.94)	(4.29)	(0.58)	(2.00)	(2.04)	(2.76)	(0.82)	
Challenge (18)	11.75	8.50	10.99	12.40	12.67	11.35	10.88	10.50	9.75	9.00
	(2.75)	(3.88)	(2.25)	(3.36)	(2.52)	(1.39)	(1.88)	(1.52)	(1.71)	
Control (18)	5.63	3.85	5.76	6.80	5.67	3.44	4.09	5.76	3.44	7.00
	(3.47)	(0.60)	(3.41)	(6.57)	(2.31)	(0.60)	(2.90)	(3.41)	(2.17)	
Family Crisis Oriented	67.21	57.57	70.77	71.20	91.33	72.43	67.91	74.17	83.50	70.00
Personal Evaluation	(14.14)	(12.43)	(19.31)	(9.91)	(12.01)	(10.49)	(10.39)	(17.57)	(2.89)	
Social Support (36)	17.04	15.50	18.67	17.80	29.67	22.69	21.02	23.83	27.00	21.00
	(7.01)	(2.65)	(6.36)	(2.28)	(4.16)	(4.37)	(4.37)	(4.54)	(0.82)	
Reframing (32)	22.83	20.25	22.33	23.20	27.33	23.48	24.77	25.00	24.75	21.00
	(3.85)	(6.65)	(8.14)	(4.21)	(1.53)	(3.54)	(3.59)	(4.47)	(3.59)	
Spiritual Support (16)	11.00	8.07	9.61	12.40	11.67	9.44	7.95	8.33	11.50	10.00
	(2.84)	(2.68)	(4.37)	(2.30)	(3.51)	(4.07)	(4.82)	(5.85)	(1.91)	
Mobilizing Family to	8.42	9.25	9.33	9.40	11.67	9.95	8.25	9.33	10.75	9.00
Acquire and Accept	(3.78)	(2.87)	(4.03)	(2.88)	(3.51)	(2.24)	(2.43)	(3.72)	(2.63)	
Help (16)										
Passive Appraisal (16)	5.96	3.50	8.00	6.00	8.33	4.79	4.18	6.17	6.25	7.00
	(3.04)	(1.73)	(3.62)	(2.92)	(2.08)	(2.34)	(2.55)	(4.75)	(2.06)	

Note: Adjacent to each subscale is the total number of points for the specific subscale in parentheses

Testing differences between groups

Independent t-tests were calculated to examine differences between groups (NHB and NHW) and family relationships (mother/father/other family) for each scale, as well as subscales. Significantly, there were differences between the racial groups (NHB: $M = 140.6$, $SD = 15.8$ and NHW: $M = 146.7$, $SD = 10.0$) for the Family Inventory of Resources for Management (FIRM) total score (t (64) = -2.47), $p = .02$). NHW reported higher scores on this scale indicating more resources and capabilities to manage their crisis. Notably, there were also large differences in mean scores that were statistically significant between NHB mothers and spouses for the Challenge subscale of the Family Hardiness Index and the Extended Social Support subscale of the FIRM. For the Challenge subscale, which measured the ability to be innovative and learn new things, NHB mothers ($M = 11.75$, $SD = 2.75$) reported higher scores than their spouses ($M = 8.50$, $SD = 3.88$), and this was significant (t (26) = 2.07, $p = .05$). For the Extended Social Support subscale, that measured mutual assistance and support with family and friends, NHB mothers ($M = 11.38$, $SD = 2.55$) had higher scores than their spouses ($M = 7.75$, $SD = 1.50$), and this was statistically significant (t (26) = 2.74, $p = .01$).

Factorial ANOVAs (2x3) were calculated to compare the main effects of racial groups (NHB and NHW) and family relationships (mother/father/other family) and the interaction effects for the scales and subscales. For this data analysis, spouses and biological fathers were recoded into one group representing the fathers of premature infants. Grandmothers and other family members were also recoded into one other family group.

The Family Crisis-Oriented Personal Evaluation Scales (FCOPES) demonstrated a main effect for race F (1,148) = 3.90, $p = .05$. The NHB group had a lower mean score ($M = 68.63$, $SE = 2.26$, 95% CI [64.15, 73.09]) than the NHW group ($M = 74.87$, $SE = 2.20$, 95% CI [70.51,

79.22]). This scale assesses the ability of the family to access social and spiritual support, as well as problem-solving capabilities. A Bonferroni's Correction was computed and revealed a *MD* = 14.84, *SE* = 5.61, *p* = .03, but only between the NHW fathers and other family members.

Acquiring Social Support, a subscale of FCOPES, also revealed a main effect on race. A difference in mean scores was noted between NHB (*M* = 17.57, *SE* = .91, 95% CI [15.77, 19.38]) and NHW (*M* = 23.68, *SE* = .89, 95% CI [21.93, 25.44]). A post hoc analysis using Bonferroni's Correction revealed a *MD* = 5.64, *SE* = 2.26, *p* =.04, but only between NHW fathers and other family members.

Two subscales demonstrated a significant main effect on family relationships. The Challenge subscale, which measured a family's efforts to be innovative and learn new things was *F* (2,148) = 3.04, *p* = .05. Interestingly, mean scores were similar for mothers (*M* = 11.55, *SE* = .25, 95% CI [11.06, 12.04]) and other family members (*M* = 11.08, *SE* = 9.72, 95% CI [9.72, 12.43]) and higher than those scores for fathers (*M* = 10.60, *SE* = .29, 95% CI [10.02, 11.18]). The Least Significant Difference (LSD) post hoc test was calculated and revealed significance, *MD* = .75, *SE* = .34, *p* = .03 but only between mothers and spouse/biological fathers.

The FCOPES Spiritual Support subscale *F* (2,148) = 3.54, *p* = .03 revealed different mean scores for mothers (*M* = 10.22, *SE* = .51, 95% CI [9.22, 11.22), fathers (*M* = 8.61, *SE* = .59, 95% CI [7.44, 9.78]) and other family members (*M* = 11.95, *SE* = 1.39, 95% CI [9.21, 14.69]) reflecting the various perceptions of the importance of spirituality for each group. Three post hoc tests were calculated and revealed significant results. Both the Tukey HSD (*MD* = 3.70, *SE* = 1.47, *p* = .03) and the Bonferroni's Correction (*MD* = 3.70, *SE* = 1.47, *p* = .04) noted a significant difference in means between the fathers and other family members. The LSD (*MD* = 1.62, *SE* = .69, *p* = .02) demonstrated a significant difference between mothers and fathers.

A significant interaction effect was only found for the Family Inventory of Resources for Management (FIRM) scale and one of its subscales, Financial Well-Being. The main effects for race yielded F (1, 148) = .11, p = .75 and the main effect for family relationships yielded F (2, 148) = 5.62, p = .21 indicating that neither main effect was significant. However, the interaction effect was statistically significant: F (1,148) = 5.62, p = .00. For the NHW group, there was a higher mean score for the mothers (M = 147.35, SE = 1.58, 95% CI [144.23, 150.48]) and fathers (M = 147.18, SE = 1.66, 95% CI 143.90, 150.46]) than for the other family members (M = 135.00, SE = 5.87, 95% CI [123.40, 150.48]). However, for the NHB group, the mean scores for mothers (M = 142.10, SE = 2.40, 95% CI 137.37, 146.84]), fathers (M = 134.37, SE = 2.94, 95% CI [128.57, 140.17]) were lower than the other family members (M = 150.14, SE = 5.25, 95% CI [139.77, 160.52). Thus, there were different patterns for the NHB family relationships and the NHW family relationships. Application of Bonferroni's correction revealed a significant difference for FIRM (MD = 12.35, SE = 5.09, p = .05) between NHW mothers and other family members.

The subscale Financial Well-Being was (F (2,148) = 3.99, p = .02). This subscale measured perceptions of the family's financial efficacy. There were contrasting scores between racial groups and within the racial groups. For NHW: mothers (M = 46.77, SE = .86, 95% CI [45.07, 48.48]), fathers (M = 47.26, SE = .90, 95% CI [45.48, 49.05]), other family member (M = 44.25, SE = 3.19, 95% CI [37.94, 50.56]) and NHB: mothers (M = 43.54, SE = 1.30, 95% CI [40.97, 46.12]), fathers (M = 39.19, SE = 1.60, 95% CI 36.03, 42.34]), other family member (M = 47.80, SE = 2.86, 95% CI [42.16, 53.44]). The post hoc Bonferroni's Correction revealed a significant difference (MD = -8.61, SE = 3.07, p = .02) between NHB spouse/biological father and other family member.

Aim #3 ***To determine whether any protective and recovery factors are predictors of family functioning for Non-Hispanic Black and Non-Hispanic White families of premature infants.***

Correlation Coefficients

Analysis to address this aim began with scatterplots to determine any associations among the variables. Most of the scales and subscales showed a negative linear correlation with the criterion family functioning. There were no significant outliers and the assumption of normality was met. Subsequently, Pearson Product Moment correlations were computed to assess the strength and direction of the associations between the variables, as well as any significance (Table 11).

Table 11

Pearson Product Moment Intercorrelations for Protective and Recovery Scales between Racial Groups

	NHB (n = 48)					NHW (n = 110)				
Variable	1	2	3	4	5	1	2	3	4	5
1. FTS	1					1				
2. FIRM	-.12	1				.04	1			
3. FHI	.00	.48	1			-.01	.07	1		
4. FCOPES	.16	.32	.06	1		.22	-.09	.29	1	
5.GFS	-.03	-.30*	-.30*	-.19	1	-.13	-.20*	-.24*	-.22*	1

*p<.05

Correlations were weak or small in magnitude, indicating that the variables were measuring different concepts and there was low inter-correlation between the surveys. For NHB, there was a nonsignificant weak correlation (r = .48) between the Family Inventory of Resources for Management and the Family Hardiness Index. For both NHB and NHW, the criterion, General Functioning Subscale (GFS), which measured family functioning, showed some significance

with three of the other scales. However, the magnitude was so small, this may be considered more of a random effect rather than a correlation.

Pearson correlations were also calculated between groups for each of the 16 subscales and the criterion, General Functioning Scale (GFS). Data from 10 subscales were significantly correlated for one or both groups. However, the majority of the subscales demonstrated a weak association with the GFS (Table 12)

Table 12

Pearson Product Moment Correlations for Protective and Recovery Subscales and Criterion between Racial Groups

	General Functioning Scale	
	Non-Hispanic Black (*n* = 48) *r*	Non-Hispanic White (*n* = 110) *r*
Family Traditions		
Holidays	-.34*	-.25**
Transitions	.03	-.08
Religion	.12	-.05
Special Events	.03	-.13
Family Inventory of Resource Management		
Strengths I	-.67**	-.62**
Strengths II	-.32*	-.54**
Extended Social Support	-.36*	-.44**
Financial Well-Being	-.45**	-.32**
Family Hardiness Index		
Commitment	-.49**	-.58**
Challenge	-.27	-.41**
Control	.07	.42**
Family Crisis Oriented Personal Evaluation Scale		
Accepting Social Support	-.17	-.13
Reframing	-.32*	-.55*
Spiritual Support	-.05	-.15
Mobilizing Family to Acquire And Accept Help	-.08	-.10
Passive Appraisal	.14	.45**

*p< .05, **p<.01

Notably, the Strengths I subscale was significantly, moderately correlated with GFS for both NHB and NHW groups. Strengths II, Commitment and Reframing were also moderately correlated with GFS, but only for the NHW group.

Selection of predictor variables for regression model

Results from the statistical analyses for the current study provided evidence of meeting the basic assumptions of independence, linear relationships, homoscedasticity, multicollinearity and outliers to run a multiple regression model. The purpose of the regression model was to examine the potential relationship between the predictor variables and the criterion variable, with the goal of identifying which protective and recovery factors may best predict family functioning. Regression models were calculated for both the total scales and the subscales.

Since the 16 individual subscales needed to be reduced to decrease the potential number of confounders and increase power, the Stepwise statistical procedure was performed to compare variables that would contribute most and least to the model. Six subscales representing variables from the four total scales were identified (Family Traditions: Holidays and Transitions, Family Inventory of Resource Management: Strengths I and II, Family Hardiness: Commitment and Family Crisis Oriented Personal Evaluation Scale: Passive Appraisal) for inclusion in the regression model. The subscales associated with the variables were subsequently used in a hierarchical multiple regression analysis.

Hierarchical Linear Multiple Regression

Hierarchical multiple regression was chosen because it is a statistical procedure that enables a choice of where to enter the predictors into the regression equation. With this model, it is possible to control for the effects of covariates on the results, including demographic characteristics. As each variable was entered into the model, the variation in the criterion

(family functioning) was statistically evaluated. Hierarchical multiple regressions were computed individually for total scores and subscale scores. Income and education were recoded as dummy variables and entered into the model as covariates.

A hierarchical regression model was computed using the total scales (Family Traditions, Family Inventory of Resource Management, Family Hardiness Index and Family Crisis-Oriented Personal Evaluation Scales). Income was entered in the first step. This model was statistically significant F (1, 154) = .59; p = .05 and explained 1.9% of the variance in family functioning. In Step 2 the variable education was entered and was also statistically significant F (2, 152) = 3.29; p = .04. This variable, in addition to the income variable in step one, explained 2.9% of the variance in family functioning. Race was entered in Step 3 and was significant F (3, 151) = 4.87, p = .00. When controlling for income and education, race only accounted for 7% of the variance. After entry of the four total scales in Step 4, which was statistically significant (F (7, 147) = 5.22, p = .00, the total variance in family functioning explained by the model was 16%. Table 13 depicts the results of the hierarchical regression.

Income and education were not significant as predictors for the model. However, race (NHB and NHW) significantly predicted family functioning in Model 3, β = .26, t (2.78), p = .01 and in the final Model 4, β = .21, t (2.37), p = .02. Three of the total scales, Family Traditions Scale, Family Inventory of Resources for Management, and the Family Crisis Oriented Personal Evaluation Scale were not significant predictors in the final model. The Family Hardiness Index was significant in the final model β = -.19, t (-2.37), p = .02. Additionally, none of the covariates or total scales were correlated with family functioning in this regression model.

Table 13

Hierarchical Regression Model Estimating Effects of Demographic Variables and Total Scales on Family Functioning

	Model 1				Model 2				Model 3							
Model 4 Variables	Adj R^2	B	SE	β	AdjR^2	B	SE	β	Adj R^2	B	SE	β	Adj R^2	B	SE	β
Income	.02	-.13	.07	-.16		-.08	.08	-.09		.02	.08	.02		-.00	.08	-.01
Education					.03	-.12	.08	-.14		-.08	.08	.10		-.06	.07	-.06
Race									.07	.22	.08	.26**		.18	.01	.21**
Family Traditions Scale													.16	-.00	.01	-.05
Family Inventory of Resources for Management														-.01	.00	-.15
Family Hardiness Index														-.02	.00	-.19**
Family Crisis-Oriented Personal Evaluation Scale														-.00	.00	-.14

**$p < .01$

Table 14

Hierarchical Regression Model Estimating Effects of Demographic Variables and Subscales on Family Functioning

	Model 1				Model 2				Model 3				Model 4			
Variable	Adj R^2	B	SE	β	Adj R^2	B	SE	β	Adj R^2	B	SE	β	Adj R^2	B	SE	β
Income	.02	-.13	.07	-.16*		-.08	.08	-.09		.02	.08	.02		.01	.05	.01
Education					.03	-.12	.08	-.14		-.08	.08	.10		.02	.05	.02
Race									.07	.22.	.08	.26**		.02	.06	.03
Strengths I													.60	-.03	.00	-.44***
Commitment														-.05	.01	-.32***
Strengths II														.01	.00	.11
Holidays														-.07	.02	-.19**
Passive Appraisal														.02	.01	.13**
Transitions														.02	.01	.11

*p <.05, **p<.01, ***p<.00

A second hierarchical regression was computed using the same demographic factors and the six subscales previously identified in the Stepwise Regression to contribute most to the model (Table 14). Income was once again entered in the first model and was statistically significant F (1, 153) = 3.97, p = .05. It explained 1.9% of the variance on family functioning. Education was entered in the second step and was also statistically significant F (2, 152) = 3.29, p = .04, and accounted for 2.9% of the variance. Race was entered in Step 3 and was also significant F (3, 151) = 4.87, p = .00. Similar to the first regression model, race accounted for 7% of the variance on family functioning.

The subscales were entered in Step 4, and this model was statistically significant F (9, 145) = 26.26; p = .00 explaining 60% of the variance in family functioning when combined with the covariates from the previous steps. Income was only a statistically significant predictor when it was entered as a variable in the first step β = -.16, t (-2.0), p = .05. Education was not a statistically significant predictor in any of the models. Although race (NHB and NHW) significantly predicted family functioning in Model 3, β = .26, t (2.78), p = .01, it was not a statistically significant predictor in the final model.

In Model 4, two of the subscales, Strengths II (personal, family system and social support resources) and Transitions (traditions for marriage, funerals and other ceremonies) were not significant as predictors of family functioning. Passive appraisal (problem-solving) β = .13, t (2.15), p = .03 was significant as a predictor of family functioning, as was Holidays (β = -.19, t (3.08), p = .00. However, Commitment (internal strengths, dependability and ability to work together) β = -.32, t (5.24), p = .00, and Strengths I (family esteem, communication, mutual assistance, optimism, problem-solving and autonomy) β = -.44, t (7.10), p = .00 were the strongest statistically significant predictors of family functioning

Summary

This predictive correlational study explored resiliency and family functioning by examining the association between resiliency (protective and recovery) factors and family functioning for two specific groups of families (NHB and NHW) who experienced the birth of a premature infant. Results of this current study were presented in this chapter. This included a description of the data analysis specific to each aim. Discussion of the findings will be described in Chapter 5.

Chapter 5

Discussion

The purpose of the current study was to explore resiliency and family functioning for families of premature infants from two different racial groups. The goal was to learn more about the specific resiliency (protective and recovery) factors that may influence how families cope and potentially, affect family functioning. The intent was also to learn more about similarities and differences between two groups of families from contrasting racial groups. This chapter begins with a summary of major findings followed by a discussion of the results specific to the three aims. Additionally, limitations and implications for theory, research, practice and policy are considered.

Summary of Major Findings

In the current study, hierarchical linear modeling was used to test if scales/subscales measuring resiliency (protective and recovery) factors, as well as the covariates of income, education, and race significantly predicted family functioning. The subscales Strengths I, (family esteem, respect, communication, mutual assistance, problem solving and autonomy), and Commitment (dependability and the ability to work together) were the strongest statistically significant predictors of family functioning. Although the beta weights for each subscale were negative, -.44 and -.32 respectively, this made sense considering that a high family functioning score indicated poorer family functioning. In other words, for every one unit increase in the predictor variable, the criterion (family functioning) would decrease by -.44 or -.32 units. Therefore, higher scores on the Strengths I and Commitment subscales (representing the domains of the protective factors) predict better family functioning as measured by the General Functioning Subscale. An additional four subscales (Holidays, Passive Appraisal, Transitions

and Strengths II) and the covariates of income, education and race explained 60% of the variance in family functioning. However, in the final model, race was not a statistically significant predictor.

Twenty-four NHB and 55 NHW families were recruited in five separate neonatal intensive care units. Specific demographic variables (age, education and income) were not significantly correlated with any of the protective and recovery variables from the scales/subscales (Tables 5 and 6) except for the Family Inventory of Resources for Management Scale (FIRM). There were statistically significant, albeit weak correlations for education and income for NHW. In addition, a subscale of the FIRM, Financial Well-Being was statistically significant and weakly correlated for education, but moderately correlated for income for NHW. A Chi-square analysis revealed that the percentage of NHB and NHW families was significantly different for both education and for income. This finding had implications with respect to material and financial resources that could potentially help manage the many demands created by the premature infant's birth.

The results of the mean scores for each of the scales/subscales for race and family relationships are reported in Table 10. A significant difference was found between NHB and NHW for the means scores on the FIRM scale. Nevertheless a major finding was that statistical analyses using factorial ANOVAs and Bonferroni's correction showed very few significant differences between race and family relationships with the majority of scales/subscales. Unequal samples sizes were a limitation in the statistical analyses.

The current study is the first known to examine differences in resiliency factors for NHB and NHW families of premature infants. The majority of research with families of premature infants has focused on stress and family functioning without examining differences in racial groups. The current study addresses this gap in the literature because it identifies specific

resiliency factors (both protective and recovery variables) and their relationship with family functioning. In this study, there were few meaningful racial differences in the final analyses.

Summary of Major Findings for Aim #1 *To determine any association between individual demographic factors and protective and recovery factors for families of premature infants*.

The current study recruited families from five central city and suburban NICUs in Milwaukee County. There is a gap in the literature in understanding families of premature infants from different races. According to the Fetal Infant Mortality Review (FIMR) in 2015, the NHB premature birth rate was 14.3%, as compared to NHW at 7.82%. Although FIMR reported the highest percentage of premature births to mothers 35 years and older, the current study described the average for NHB mothers as 28.54 years and 30.20 years for NHW mothers.

Nevertheless, demographic factors in the current study mirrored those in the reports published by the Wisconsin Minority Health Program (2017). NHW median income ($56,083) is greater than NHB ($26,053) in Milwaukee County, and in the current study 67.4% of NHB reported annual household income <$30,000 as compared to the 14.7% of the NHW group. There were also a larger number of married households in this report for NHW (82%) than NHB (33%), and this contrast was similar to the current study for NHB (21%) and NHW (85%). For the current study, grandmothers and other family members only comprised 7.5% of the total sample.

The majority of the participants (88%) were mothers and fathers (spouse and/or biological father), with few other family members, such as grandmothers or siblings. This indicates that parents, regardless of their legal relationship are involved at various levels during the NICU hospitalization of their premature infant. This is relevant in understanding the family of the 21st century that may include family, extended family and friends.

For this current study, grandmothers and other family members only comprised 7.5% of the total sample. During the brief interaction with these family members, it was sometimes difficult to ascertain their involvement with the parent. Nevertheless, multigenerational bonds continue to be important to the family, and specifically during a crisis. Bengston (2001) describes the 21st century family as an intergenerational relationship that shifts over time. During periods of disruption, grandparents come forward to provide for the well-being of the next generation. Indeed, grandparents provide socialization and/or guardianship for grandchildren, economic resources and a stabilizing presence.

The neonatal literature describes the importance of meaningful involvement with families and support for making infant care decisions. This promotes empowerment of families to build their competence, confidence and sense of control, which are valuable resiliency factors that help families cope (Cone, 2007; Forsythe, Maher, Kirchick, & Bieda, 2007). Tran (2009) discussed the importance for nurses to understand that parents/families require different types and levels of support to cope with caring for their premature infant, including some with special needs. She described the challenge of helping parents and families develop areas of strength and to address those areas needing the most support. McAllister and Dionne (2006) described a model to help nurses understand parents' needs and perspectives, as well as several strategies that incorporate the development of protective and recovery factors.

Summary of Major Findings for Aim #2 *To examine the differences in protective and recovery factors between Non-Hispanic Black or Non-Hispanic White families of premature infants.*

The results of scales and subscale scores provided insight into specific protective and recovery factors that may affect family functioning. Family traditions did not emerge as important to either the NHB or NHW group, except for the traditions around holidays where

families typically come together to celebrate, i.e. Thanksgiving and Christmas. Holidays was the only variable significantly correlated with family functioning, albeit a weak correlation. The majority of the participants in this sample were mothers and fathers (88%), who by their age in years could be classified as millennials (Fry, 2017). The Family Traditions Survey, of which Holidays was a subscale is approximately 25 years old and may not reflect the participants' generational perspective. Millennials are not marrying as often as previous generations, not attached to organized religion, linked to social media, burdened by debt, and yet, appear optimistic about their future (Taylor, Doherty, Parker, & Krishnamurthy, 2014). They may be detached from traditional institutions, which may explain why scores were low for both NHB and NHW on the Family Traditions Survey.

In contrast, the Family Inventory of Resources for Management (FIRM) scale revealed significantly higher scores for NHW than NHB, and an independent t-test showed a significant difference between the racial groups. FIRM was the most comprehensive of all of the scales (55 questions), measuring a broad range of strengths and abilities (physical and emotional health, communication skills, respect, optimism, problem-solving abilities, and a sense of mastery over outcomes) that individuals use during a period of adjustment and adaptation. In the current study, NHB families reported overall lower incomes than NHW. Families who have fewer resources may have less confidence to problem-solve and plan for the future of their premature infant. Lee, et al. (2009) used the FIRM with a convenience sample of 33 African Americans and 38 Caucasians to study the impact of family resources and coping on the well-being of parents providing care to a child with asthma. They reported similar mean scores for the FIRM between the two groups, and described this as an interesting result, since 88% of the African

American group was single and had an annual income < $50,000. They proposed that the families had a strong support system from extended family members.

Hogue and Silver (2011) described several complex, confounding factors (stress, social issues, impoverished neighborhoods, economic environment, access to quality medical care, genetics) that potentially influence preterm birth disparities. Other researchers in the literature have also reported the association between decreased socioeconomic resources and these confounding factors (Betancourt et al, 2005; Williams & Jackson, 2005; Drotar et al., 2006; Walker & Chestnut, 2010).

However, there is limited research on the impact of socioeconomic disparities for families of premature infants and the development of those capabilities reflected in the FIRM scale. Mundy (2010) administered the NICU Family Needs Inventory to a racially diverse group of parents and found a difference in the response by NHB. This group identified support, assurance and comfort significantly more important to them than for NHW or Hispanics. Barton, Roman, Fitzgerald & McKinney (2002) studied NHB mothers of premature infants and their use of resources. Surprisingly, many mothers reported both a lack of knowledge and underutilization of support services; only half of the mothers who were aware used them at any time, and these mothers had infants with special needs.

Forsythe, Maher, Kirchick, & Bieda (2007) identified essential elements to safely transition high-risk infants from hospital to home. Inherent in their recommendations are interventions that would help families develop resiliency and promote family functioning, e.g. participation in care and decision-making, education on care of the infant, and identification and utilization of referral services. Because FIRM measures resources of esteem, communication, social support and financial well-being, these appear to be important protective factors for parents of premature

infants. If families possess these factors before the crisis, this may help them to cope with the crisis. However, if families are vulnerable, they will need ongoing assessment and guidance to help them develop these strengths.

Family hardiness was another protective factor that assessed commitment, challenge and control in a family. For families of premature infants, commitment reflects their ability to work together. Control becomes a primary concern at this time because they feel that they have less control over the events in the NICU environment. Although NHB mothers scored higher on the Control subscale as compared to all other family members, NHW mothers had the lowest scores (Table 10). This may reflect mothers' anxiety over events with their infant and/or the NICU environment itself. Indeed, several studies have evaluated the effects of the NICU environment on parents (Ashwar, Rekah, & Kumar, 2017; Pepper, Rempel, Austin, Ceci, & Hendson, 2012; Cone, 2007).

In the current study, the Cronbach alpha scores for select scale/subscales were particularly low for the NHW group, ranging from .44 to .65. This may potentially indicate that the scale or subscale was not measuring what was intended, and therefore, findings did not accurately reflect the participants' perceptions. For example, the subscales for the Family Hardiness Index, Commitment and Challenge were in the range .58 to .64 for both groups. Because Commitment was a significant predictor in family functioning, the lower Cronbach's alpha scores may question the interpretation of this finding. Interestingly, the reliability analyses in SPSS also include a score if a specific item was deleted. Further analysis may indicate deletion of a few items that may be perceived differently today than when the scale was developed approximately 25 years ago.

Kapp and Brown (2011) utilized the Family Hardiness Index in their study with 19 mothers from South Africa (with varying ethnicity) and reported .40 for a total scale alpha score. However, Leske and Jiricka (1998) reported an alpha of .74 for a total scale score. Their sample included 67% White family members and 33% African American. Thus, further use of this scale with different ethnic groups is necessary to understand the difference in these scores across studies and confirm reliability.

The Family Crisis-Oriented Personal Evaluation Scale (FCOPES) was the one scale that was designed to measure recovery factors with a focus on specific behaviors during periods of crisis. NHB had a lower total survey score than NHW, indicating less family resources for coping. However, mothers in both groups revealed a higher total score than their spouses, but not the biological father when the parents were unmarried. Grandmothers and other family members in both groups had the highest total score, which may reflect their response with respect to their own life and not necessarily their relationship with the mother. Pinelli (2000) reported significantly higher total coping scores for mothers as compared to fathers. In addition, a factorial ANOVA revealed a significant main effect for race for the FCOPE.

The statistical analysis of the various scales and subscales provided data that were compelling for further study between racial groups, e.g. family resources, commitment, and social support. Future studies need to include a larger sample size to detect these differences. As noted in Chapter 4, further analysis with Bonferroni's correction revealed very few statistical differences between racial groups and family relationships. This may be related to the smaller sample of NHB (n = 48) for the current study, as well as the unequal sample size between the two groups.

Summary of Major Findings for Aim #3 *To determine whether any protective and recovery factors are predictors of family functioning for Non-Hispanic Black and Non-Hispanic White families.*

The analyses conducted to address this aim revealed significant correlations between several of the subscales for the protective and recovery factors and the family functioning criterion (GFS). Each of the subscales for the FIRM scale was significantly correlated with GFS. In particular, Strengths I subscale was moderately correlated with GFS for both racial groups and Strengths II subscale was moderately correlated for NHW. This indicated the importance of resources for families, e.g. esteem, communication, finances and social support, and the potential effect on family functioning. The FIRM scale and subscales were also significant in the findings for Aim #2 indicating the importance of the particular protective factors associated with this scale for families of premature infants.

The Family Hardiness Index Commitment subscale was also significantly correlated for both NHB and NHW families, with a moderate association in magnitude for NHW. Nevertheless, the Cronbach alphas reported for the current study raise questions with respect to the reliability of the instrument to measure what was intended.

The hierarchical regression model provided data to identify which protective and recovery factors may best predict family functioning. The subscales Strengths I (family esteem, respect, communication, mutual assistance, problem solving and autonomy), and Commitment, which measured dependability and the ability to work together were the strongest predictors of family functioning. The recovery factor, Passive Appraisal (problem-solving) was significant as a predictor of family functioning, as was Holidays (protective factor), but both had very low beta weights indicating the domains for these factors were not as strong in their predictive ability on

family functioning. The four subscales (Holidays, Passive Appraisal, Transitions and Strengths II) and the covariates of income, education and race explained 60% of the variance in family functioning. Contrary to expectations, race was not a statistically significant predictor in the final model. The mean scores for the scales/subscales for each group were both similar and diverse. Further research is needed with the subscales FIRM and Family Hardiness Index with a larger sample to detect significant differences, as well as contribute to the understanding of the diverse Cronbach alpha scores for the some of the subscales for each group.

Studies that have reported use of the FIRM have not always published individual subscale scores. However, they have all associated family resources (as measured by the FIRM) with their dependent variable or criterion, regardless of whether is well-being, adaptation or family functioning. Lee et al. (2009) used the FIRM with African American and Caucasian parents and found a positive relationship between family resources and family well-being for both groups. Doucette and Pinelli (2004) reported higher scores on the FIRM for their study of parent couples in the NICU and suggested that these scores were related to the higher education and income levels of their participants. In her study of parents of premature infants, Pinelli (2000) reported that adequate family resources were a significant predictor for positive family adjustment for mothers.

Conclusion

Findings from the current study demonstrated the relevance of the association between specific resiliency factors (protective and recovery) and family functioning for NHB and NHW families who experienced the birth of a premature infant. Age was not significantly correlated with any of the protective and recovery variables from the scales and subscales for either racial group. However, there was a significant difference in education and income between NHB and NHW. In the final hierarchical regression model, the subscales Strengths I and Commitment

were the strongest predictors of family functioning. Race was not a significant predictor indicating that there were fewer differences between NHB and NHW on the scales and subscales.

Limitations

This current study used a convenience sample of biological mothers and one other family member who self-identified as either NHB or NHW. Due to the high variability in visiting hours of families and sometimes lack of visitation, a limited sample of 55 NHW families and 24 NHB families were recruited over a nine-month period. Four additional NHB mothers were recruited, but they were not included in the final sample because they did not have another family member visit. In particular, there were fewer NHB families available during visiting hours, and the mothers rarely visited with another family member, which proved challenging with the data collection procedure. However, lower income families may be dependent on others for transportation and/or they may not have support for child care.

For the NHB community, there may be a sense of distrust with research investigators (Burkett & Morris, 2015, Knobf et al., 2007). This may be related to the historical devastating outcomes for African Americans involved in research studies, but also, the recognition on the part of this investigator, that racial discrimination exists in the Milwaukee community. Knobf, et al. (2007) recommended a group approach during a class or meeting time that may facilitate efforts to recruit across social strata, especially with lower SES groups. Researchers also recommend community-based and culturally specific approaches, including minority representation on the team (Smith et al., 2007).

A coordinated IRB was used to efficiently obtain approval from the various NICUs without submitting individual IRB proposals. However, medical records could not be viewed to evaluate families for inclusion and exclusion criteria. This required additional screening questions to

ascertain eligibility. Nurses were not asked to assist with the study, but adding a hospital employee to the research team can be a more effective use of time and access to medical records (Weierbach, Glick, Fletcher, Rowlands and Lyder, 2010)

The five scales yielded a total of 137 questions. This is a large number of questions for a participant survey and may be tiring to complete. However, the goal was to explore several protective and recovery factors, which required several different scales. Although the scales were clipped together, it appeared cumbersome at times for some people to manipulate the papers. Nevertheless, the current study had very little missing data. Most participants completed the scales in approximately 20 to 30 minutes.

According to the literature, some of the scales were not previously used with NHB families, questioning the validity and reliability with this specific racial group. For the current study, Cronbach alphas for some of the scales/subscales were comparable to the psychometrics cited for each instrument. However, seven of the sixteen subscales revealed alpha scores less than the recommended 0.7 score for both NHB and NHW. Tavakol and Dennick (2011) discussed the importance of alpha in the evaluation of instruments and suggested that values are frequently reported without adequate understanding and interpretation by the researcher. They note that alpha is affected by the test length and the dimensionality.

Additionally, the unequal sample sizes of the two groups and the small sample size for NHB impacted the current study. For example, the homogeneity of variance assumption was not met with every scale and subscale. Although the ANOVA analysis is robust to some deviation from this assumption, the expectation is that the deviations stay small. Small and unequal sample sizes may also affect statistical power and the Type I error rate, which is why Bonferroni's

correction was used in the current study's statistical analyses. Equal size groups would have maximized power for the study (Rusticus & Lovato, 2014; Sullivan & Fein, 2012).

Implications for Nursing Theory

The adaptation phase of the Resiliency Model of Family Stress, Adjustment and Adaptation (RMFAA) was particularly relevant and provided the theoretical underpinnings of the current study (Figure 1). This model involves several interacting components, such as the demands created by the crisis of a premature birth, the adjustment of the family in the initial weeks of the birth, family-life cycle changes related to the anticipated birth, and any unresolved tension that may already exist and affect family resiliency. These components then interact with the family's resources that are the family's own appraisal of themselves, as well as the extended family and friends in the community. During the adaptation phase, evaluation of family strengths, capabilities and resources are needed to problem solve, cope and manage the change in family life because of the premature infant birth. This calls for reorganization and adaptation by the family creating a new "normal" for the family. Thus, it is the family's resource and appraisal component (protective factors) combined with their problem-solving and coping abilities (recovery factors) that facilitate an outcome of adaptation or maladaptation with respect to the premature infant.

In the current study, the crisis of a preterm birth, the demographic factors of the family, and the resiliency factors (protective and recovery) that represented the domains of family capabilities and resources were examined with respect to the outcome of family functioning. Family functioning was viewed as compatible at the individual to family level of adaptation in the Resiliency model. Despite the changes in family structure and functioning since the development of the RMFAA, the model continues to demonstrate applicability in the study of families and specifically, families of premature infants.

Because it is believed that protective and recovery factors work synergistically and interchangeably in the response to crisis (McCubbin, Thompson, & McCubbin, 1996), the modified model used for the current study (Figure 2) specifically addressed the effect of both protective factors embodied in family processes and capabilities, and recovery factors that develop and evolve in response to the birth of a premature infant. Resources that were financial, as well as support from family and friends were a priority for families. In addition, the ability to work together and depend on each other as a family were also important. Thus the study model could be modified to include those scales/subscales that include the most salient factors from the Family Inventory of Resources for Management, Family Hardiness Index and the Family Crisis Oriented Personal Evaluation Scales.

The personal factors assessed a broad range of demographic factors. After the analysis of this study, personal factors in the model specifically addressing more information from family members to understand the relationship to the biological mother and their role in the family may provide additional insight into family functioning. In addition, more information about numbers of other children and prior premature births contribute to understanding the family structure and the additional needs this creates. Nevertheless, income and education were two factors that were statistically significant between the NHB and NHW groups and were moderately correlated in the regression analysis. Race also remains an important variable as there were both similarities and differences between the two groups, and further investigation is necessary with a larger sample size. Therefore, the study model could be further modified to examine if any of the personal factors would moderate the relationship between the protective and recovery factors that predict family functioning.

Implications for Nursing Research

The findings from the current study support the continuing study of resiliency for families of premature infants, and in particular, specific racial groups. The regression model demonstrated that there are protective and recovery factors predictive of family functioning. Further multi-site research is needed with a larger sample size to examine the effectiveness of specific subscales with the same and additional racial groups, as the study of protective and recovery factors cut across racial and ethnic groups (Hollingsworth, 2013). This research would provide important contributions to the family resiliency body of knowledge and the development of intervention studies in the NICU. However, it would require the logistics of incorporating the NICU nurse at the bedside to recruit families when they are visiting. With data obtained from larger sample sizes and different racial groups, intervention studies could be designed to evaluate best practices that develop resiliency factors and promote family functioning. Financial support is limited and NICUs need evidence from research studies to support their programs with families. Additionally, longitudinal studies of premature infants and their families have demonstrated the continued impact of caring for a premature infant on family functioning and need further investigation, as well.

Furthermore, resiliency research with families of premature infants would provide more data on the family of the 21st century. For the current study, the majority of participants were mothers and fathers, regardless of their marital status. Very few other family members were as significantly involved as the parents. Future studies focusing on the resiliency of the parent dyad would add to this body of knowledge.

In comparison with previous family literature, the families in this current study did not view social or spiritual support as a priority. Esteem, respect, communication and problem solving

were more important to this millennial generation, regardless of racial groups. These resiliency factors could be the same or different with the next generation. Listening to the families and their needs will be imperative. Incorporating the generational perspective in future research may enhance understanding of family needs.

From a design perspective, the scales used in this current study are approximately 25 years old. Many of the measurement instruments designed to assess family functioning and associated with the family functioning frameworks were created using a middle class European American ethnicity as a prototype. Although they were valid and reliable, some of the questions appear outdated with respect to the 21st century family. Modifying the scales to reflect the context and language of the present day families across race and ethnic groups would support continued validity and reliability of the instruments.

Based on the findings of the current study and recognition of the limitations, the next study needs to replicate this one as a multisite study with a larger sample size, which may involve other NICUs in pediatric hospitals outside of the state. Because of the challenges in recruitment, the next study needs to engage study nurses at individual NICUs, as well as research assistants of the same race. Results from a larger study could help inform the development of nursing interventions to incorporate the assessment of family's resources and capabilities in the plan of care.

Implications for Nursing Practice

Neonatal nurses have unique opportunities to meet the needs of the family and support effective family functioning. Understanding individual family strengths through the identification of protective and recovery factors could predict at-risk families before discharge. Individual assessments of family needs and strengths, within the context of their socioeconomic environment, appear to support family functioning. For the nurse, understanding how

adjustment and adaptation impacts families and the resilience they possess and develop is a vital precursor to planning nursing interventions. In addition, it is important for nurses to address the influence of a family's racial group on their perceptions and parental role development. In the current study, race was predictive in the regression model with the total scales, but not predictive in the model with the subscales. Nevertheless, literature from the psychological and sociological databases provides evidence for addressing both race and ethnicity.

The challenge for nursing practice is how to incorporate this assessment and implement a plan or program in the context of current staffing patterns. Indeed, Melnyk and colleagues were unable to successfully implement an instructional program (COPE) with parents of premature infants without the assistance of a specific nurse role to facilitate the program with parents (Melnyk et al, 2010). Intervention studies are needed to study best practices for including an assessment and plan to support the families' strengths and capabilities. Nationally and internationally, programs have been developed to assist families to develop the capabilities they need to care for a premature infant at home (Broedsgaard & Wagner, 2005; Goldstein, 2013; Hudson, Campbell-Grossman, Keating-Lefler, & Cline, 2008; Schlittenhart, Smart, Miller, & Severton, 2011). Continued nursing research with families of premature infants will provide the evidence that nurses need to implement nursing interventions that will optimally influence family functioning.

Implications for Nursing Policy

Advances in technology and medicine have contributed to the increased survival rate of premature infants. Premature births represent 12% of all births annually in the United States (Kelly, 2016). Nevertheless, these infants are at significant risk for physical and developmental disabilities, which impacts long-term family functioning and adaptation. Research conducted by

the Institute of Medicine, as well as the CDC report the costs of caring for premature infants are in the billions. While private insurance through employer health plans and Medicaid support families, there are additional costs related to the care of special needs infants and lost productivity for parents.

Lower income families who have a child with a disability due to prematurity will be affected by poverty more severely than either poor families of nondisabled children or affluent families of children with a disability. Although data collected in the current study was not comprehensive enough to determine the long-term financial challenges for the families who reported incomes less than $30,000 annually, there were significant differences reported in education and income between the NHB and NHW groups.

The issue of poverty is central to the future funding of health care, including the long-term care of premature infants and their families. Continued support by legislators at the state and federal level will be necessary to meet the needs of these families. Beginning solutions to provide resources and help families build on their own strengths have been implemented. Many neonatal intensive care units have developed comprehensive education programs and demonstrated an increase in maternal knowledge and confidence, which affected mother-infant interaction and infant development. Further support, particularly for those infants with the most complex morbidities has been intermittently provided through home visiting nurses, depending on the state's Medicaid services, maternal child health programs and/or benefits provided by private insurance companies (Bakewell-Sachs & Gennaro, 2004; Broedsgaard & Wagner, 2005; Holditch-Davis & Miles, 2000; Melnyk, Crean, Feinstein, & Fairbanks, 2008; Rowe & Jones, 2008; Tran, Medhurst, & O'Connell, 2009).

Summary

The purpose of this current study was to examine the relationship between resiliency factors and family functioning for NHB and NHW families of premature infants hospitalized in a neonatal intensive care unit. None of the demographic factors was significantly correlated with any of the protective and recovery factors. Of the four total scales used to assess protective and recovery factors, the Family Inventory of Resources for Management and the Family Hardiness Index and their select subscales were significantly negatively correlated with family functioning for both groups. Results indicated that the strengths and capabilities associated with these variables might be associated with effective family functioning. In addition, the Strengths I and Commitment subscales and the domains they represent were statistically significant predictors in family functioning. Thus, the assessment of protective and recovery factors appear relevant to the support and development of resiliency in families of premature infants, which in turn may affect family functioning. The optimal development of the premature infant is dependent on effective family functioning. Continued nursing research with families of premature infants is imperative to inform nursing practice and health policy.

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Appendix A

UNIVERSITY of WISCONSIN
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Melissa Spadanuda
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New Study - Notice of IRB Expedited Approval

Date: September 21, 2016

To: Rachel Schiffman, PhD
Dept: Nursing

Cc: Karen Gralton

IRB#: 17.041
Title: Exploring Resiliency and Family Functioning for Families of Premature Infants

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has been approved as minimal risk Expedited under Category 7 as governed by 45 CFR 46.110.

This protocol has been approved on **September 21, 2016** for one year. IRB approval will expire on **September 20, 2017**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, a continuation for IRB approval must be filed by the submission deadline. If the study is closed or completed before the IRB expiration date, please notify the IRB by completing and submitting the Continuing Review form found in IRBManager.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless the change is specifically necessary to eliminate apparent immediate hazards to the subjects. It is the principal investigator's responsibility to adhere to the policies and guidelines set forth by the UWM IRB, maintain proper documentation of study records and promptly report to the IRB any adverse events which require reporting. The principal investigator is also responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research.

As Principal Investigator, it is your responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities which are independent of IRB review/approval (e.g., FERPA, Radiation Safety, UWM Data Security, UW System policy on Prizes, Awards and Gifts, state gambling laws, etc.). When conducting research at institutions outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation and best wishes for a successful project.

Respectfully,

Melissa C. Spadanuda
IRB Manager

Appendix B

FAMILIES MATTER

A nursing research study to learn how families come together to care for their premature infant.

Is your baby a preemie who's been in the hospital for 2 or more weeks?

Are you a Non-Hispanic Black or Non-Hispanic White, 18 or over and speak English?

Can you and a family member answer some questions about your family?

Participate in this study by completing some questionnaires and receive a $15 gift card

The nurse conducting this study, Karen Gralton, is a doctoral student at the University of Wisconsin-Milwaukee and a former NICU nurse. If you are interested in participating or have any questions, please **call Karen at 414-881-0365.**

Curriculum Vitae

Karen S. Gralton

EDUCATION	Master of Science in Nursing University of Wisconsin-Madison	1978
	Bachelor of Science in Nursing Alverno College	1973
LICENSURE	Registered Nurse, State of Wisconsin	
CERTIFICATIONS	Pediatric Clinical Nurse Specialist	

EXPERIENCE	**Director** Advanced Practice Nursing/Nursing Student Education	2010-Present
	Clinical Practice Leader Department of Advanced Practice Nursing and Research	2008-2010
	Advanced Practice Nurse – Clinical Nurse Specialist Infant Unit - Children's Hospital of WI	2001-2008
	Staff Nurse Neonatal Intensive Care - Children's Hospital of WI	2000-2001
	Clinical Instructor, Pediatric Nursing Marquette University	2001-2008 Milwaukee, WI
	Staff Nurse Infant Unit - Children's Hospital of WI	1989-2000
	Office Coordinator, Service Director	1986-1989

Upjohn Healthcare Services	Milwaukee, WI
Staff Nurse	1984-1985
Newborn Nursery - Wichita Falls General Hospital	Wichita Falls, TX
Instructor, Pediatric Nursing	1981-1984
The University of Texas at Arlington	Arlington, TX
Pediatric Clinical Nurse Specialist	1978-1981
Pediatric Diabetes Nurse Specialist	
Methodist Hospitals of Dallas	Dallas, TX
Head Nurse, Assistant Head Nurse, Staff Nurse	1973-1976
Milwaukee Children's Hospital	Milwaukee, WI

RESEARCH

2011-2014 Weiss, M. & Sawin, K. J. (Co-PIs) **Gralton, K**. Johnson, N. Schiffman, R. Klingbeil, C., Malin, S. Lerret, S. (Co-Investigators). Self-Management Guided Discharge Teaching for Parents of Hospitalized Children. (Funded by the Consortium for Pediatric Nursing Research, $15,000).

2005-2009 Internally funded IRB approved projects at CHW **Gralton, K** Co-PI, Sawin, K. Co-PI, and Members of Nursing Research Council As Co-Investigators: (2005-2009) Nursing Research in Children's Hospitals, (Survey explores structure, policies and outcomes in children's hospitals who employ personnel specific to nursing research role). (Funded in part by Advanced Practice Nursing and Research Department and funds from the Children's Chair, College of Nursing, UW-Milwaukee).—Data collection reported in literature.

2007 The Effect of an Evidence-Based Educational Intervention on Staff Nurse Utilization of Guidelines to Facilitate Timely Rescue Responses (unfunded – Co-principal investigator)

1978 Thesis: The Relationship between Knowledge of Diabetes and Self-Esteem for Adolescents with Insulin-Dependent Diabetes Mellitus: A Pilot Study

EVIDENCE-BASED PRACTICE PROJECTS

2007-2008 Procedural Preparation for Day Surgery Pediatric Patients (mentor for Evidence-Based Practice Fellowship Program)

2006-2007 Infant Reflux (mentor for unit-based staff nurse project)

2004-2005 Verifying Nasogastric Tube Placement (leader for house wide project with unit-based Advanced Practice Nurses)

PUBLICATIONS – BOOKS

1981 Renal. Endocrine and Metabolic Crises (Book Chapter), Pediatric Critical Care Nursing, ed. K. Vestal

PUBLICATIONS – JOURNAL ARTICLES

2017 Sawin, K. J., Weiss, M. E., Johnson, N., **Gralton, K**., Malin, S., Klingbeil, C., Lerret, S. M., Thompson, J. J., Zimmanck, K., Kaul, M. & Schiffman, R. (2017). Development of a self-management theory-guided discharge instruction for parents of hospitalized children, *Journal of Nursing Scholarship,* 49, 202-213

2017 Weiss, M. E., Sawin, K. J., **Gralton, K.**, Johnson, N., Klingbeil, C., Lerret, S. M., Malin, S., Yakashevay, O., & Schiffman, R. (2017). Discharge teaching, readiness for discharge and post-discharge outcomes in parents of hospitalized children, *Journal of Pediatric Nursing,* 34, 58-64.

2012 **Gralton, K.** & Brett, S. (2012). Integrating the Synergy Model for Patient Care at Children's Hospital of Wisconsin, *Journal of Pediatric Nursing,* 27, 74-81.

2010 Sawin, K.; **Gralton, K**.; Harrison, T.; Malin, S., Balchunas, M., Brock, L., Cavegn, B., Cisler-Cahill, L., Graves, S., Mussatto, K., O, Brien, M., Sherburne, E., & Schiffman, R. (2010). Nurse Researchers in Children's Hospitals, *Journal of Pediatric Nursing,* 25, 408-417.

2006 Malin, S. PhD, RN and **Gralton, K.** MS, APRN, BC Evidence-Based Nursing Practice: Alive and Growing at Children's Hospital of Wisconsin, *Nursing Matters*, 17(8), 16.

2006 **Gralton, K**. (2006). The Hidden Challenges of an Evidence-Based Practice Project (Abstract) *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice,* (20)2

2004 **Gralton, K**. (2004). Reinstating Nursing Orders: A CNS Initiative (Abstract), *Clinical Nurse Specialist: The Journal for Advanced nursing Practice,* 18(3)

2003 **Gralton, K**. (2003). Changing Nursing Practice: Shift Report (Abstract), *Clinical Nurse Specialist: The Journal for Advanced Nursing Practice,* 17(2).

2002 **Gralton, K**. (2002). Small Tests Lead to Big Improvements in Pediatric Patient Care, *Nursing Spectrum (Greater Chicago/NE Illinois & NW Indiana Edition),* 15(24), 16.

1999 **Gralton, K.** (1999). The Incidence of Guiac Positive Stools in Newborns and Infants, *Pediatric Nursing,* 25(3), 306-309.

1979 **Schnackel, K**. (1979). Pediatric Clinical Specialist and Diabetes Nurse Specialist: A Twofold Position, *Nursing Administration Quarterly,* 4(1), 91-95.

JOURNAL REVIEWER

2012 Nursing Education Today

PRESENTATIONS

04/2017 EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series, Milwaukee, WI

04/2016 EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series, Milwaukee, WI

10/2015 Sawin, K., Weiss, M., Frederick, M., **Gralton, K.,** Gricunas, E., Johnson, N., Junemann, K., Klingbeil, C., Lerret, S., Miklosh, M., Ming, M., Orlowski, H., Schiffman, R., Thompson, J., & Malin, S. Using the Individual and Family Self-

management theory to develop and test a discharge intervention for Parents. National Institute of Nursing Research Conference, Washington, D. C.

09/2015 EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin, West 12 Partnership Council

08/2015 Sawin, KJ, Weiss, M., Frederick, M., **Gralton, K.,** Gricunas, E., Johnson, N., Junemann, K., Klingbeil, C., Lerret, S., Miklosh, M., Ming, M., Orlowski, H., Schiffman, R., Thompson, J., Malin, S., for the Consortium for Pediatric Nursing Research. (2015). The feasibility and acceptability of a family self-management intervention for parents of a hospitalized child. Paper presented by Sawin at the 12th International Family Nursing Conference. Improving Family Health Globally through Research, Education and Practice. Odense, Denmark.

08/2015 EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin CRU Partnership Council, Milwaukee, WI

03/2015 EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Fellowship class, Milwaukee, WI

01/2015 Clinical Education Operations Council: Goal setting at Children's Hospital of Wisconsin

04/2014 Professional Nursing Practice at Children's Hospital of Wisconsin Mount Mercy nursing students'

11/2013 Johnson, N. & **Gralton, K.S.** Special Delivery: Self-Management Guided Discharge Teaching for Parents of Hospitalized Children: Pilot Study. Children's Hospital of Wisconsin Annual Pediatric Nursing Conference, Milwaukee, WI.

10/2013 EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series, Milwaukee, WI

10/2013 Gralton, K.S. & Brett. Against All Odds: Building a Model of Care Delivery Into the Electronic Health Record. 2013 ANCC National Magnet Conference, Orlando, FL.

10/2013 Sawin, K., Weiss, M., Schiffman, R., **Gralton, K.**, Johnson, N., Klingbeil, C., and Lerret, S. Parent and Nurse Assessment of Parental Discharge Readiness: What do the Differences Tell Us? . 2013 ANCC National Magnet Conference, Orlando, FL.

08/2013 Sawin, K., Weiss, M., Schiffman, R., **Gralton, K.,** Johnson, N., Klingbeil, Malin, S., & Lerret, S. Transition to Home: Building a Discharge Transition Intervention for Parents of Children in an Acute Care Hospital Using the Individual and Family Self -Management Theory. Invited presentation University of College Cork, Cork, Ireland

06/2013 Feetham, S., Hinds, P., Hohashi, N., Sawin, K., Johnson, N., **Gralton, K**., Szylikt Bousso, R., Santos, M., & Vendramim, P. Translating Family Research to Practice and Policy: Examples from Practice Environments in Three Countries Pre-conference workshop, 11th International Family Nursing Conference, Minneapolis, MN., Podium presentation.

03/2013 Sawin, K., Weiss, K., Schiffman, R., **Gralton, K**., Johnson, N., Klingbeil, C., Malin, S., & Lerret, S. Nurses' Perceptions of a New Family Self-Management Discharge Preparation Intervention using iPad Technology. Midwest Nursing Research Society Annual Conference, Chicago, IL. Podium presentation.

03/2013 Schiffman, R., Weiss, M., Sawin, K., Gralton, K. , Johnson, N., Klingbeil, C., Malin, S., & Lerret, S. Comparison of Parent Self-report and Nurse Assessment of Parental Discharge Readiness after Child Hospitalization. Midwest Nursing Research Society Annual Conference, Chicago, IL. Podium presentation.

04/2012 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series Milwaukee, WI

08/2011 Synergy Model of Care Delivery – Surgicenter

04/2011 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series Milwaukee, WI

02/2011 Advanced Practice Nursing – Children's Hospital of Wisconsin Public Relations Department

04/2010 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series Milwaukee, WI

10/2009 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series Milwaukee, WI

04/2009 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series Milwaukee, WI

03/2009 Sawin, K. J. , Malin, S., **Gralton, K.** Harrison, T. M, Balchunas, M. K, Brock, L., Cavegn, B., Cisler-Cahill, L., Graves, S. M., Mussatto, K. A., O'Brien, M. E.,

Sherburne, E., & Schiffman, R. Nurse Researchers in Children's Hospitals. Presented by Sawin at NAPNAP Annual Meeting, San Diego, CA

10/2008 "Iowa Model of Evidence-Based Practice to Promote Quality Care" at Froedtert Hospital Nursing Research Conference

09/2008 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series Milwaukee, WI

05/2008 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series

02/2008 "Infant Reflux – Staff Nurses Initiate an Evidence-Based Practice Project" at The 9th Annual Evidence-Based Practice Conference: Translating Research into Best Practice with Vulnerable Populations, Phoenix, AZ

05/2007 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series, Milwaukee, WI

11/2006 "Evidence-Based Practice: From Good Idea to Everyday Practice" Oral presentation with Dr. Shelly Malin at the Children's Hospital of Wisconsin Pediatric Nursing Conference, Milwaukee, WI

07/2006 "Using an Evidence-Based Practice Model to Promote Translational Research" Podium presentation at the 17th International Nursing Research Congress Focusing on Evidence-Based Practice, Milwaukee, WI

05/2006 "The Hidden Challenges of an Evidence-Based Practice Project" Poster presentation at the Eighth Annual Building Bridges to Research Based Nursing Practice, Milwaukee, WI

05/2006 "Reality Shock: Implementing Evidence-Based Practice" panel presentation at The Eighth Annual Building Bridges to Research Based Nursing Practice, Milwaukee, WI

05/2006 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series, Milwaukee, WI

04/2006 "Stepping into Evidence-Based Practice" Nursing Grand Rounds at Children's Hospital of Wisconsin, Milwaukee, WI

03/2006 "The Hidden Challenges of an Evidence-Based Practice Project" Poster Presentation at the National Association of Clinical Nurse Specialists Conference, Salt Lake City, UT

06/2005 "EBP: Iowa Model for Evidence-Based Practice to Promote Quality Care" at Children's Hospital of Wisconsin Evidence-Based Practice Series, Milwaukee, WI

04/2004 "Reinstating Nursing Orders" Poster presentation at the 6th Annual Southeastern Wisconsin Nursing Research Conference, Milwaukee, WI

03/2004 "Reinstating Nursing Orders: A CNS Initiative" Presentation to NACNS (National Association of Clinical Nurse Specialists) Annual Conference, Antonio, TX

10/2003 "Reinstating Nursing Orders" Poster presentation at the 2003 WNA/WSNA Annual Convention, Eau Claire, WI

10/2003 "Evidence Based Practice" Presentation at the CHW Joint Clinical Practice Council Retreat, Milwaukee, WI

05/2003 "Improving Shift Report: One Year Later" Poster presentation at the 5th Annual Southeastern Wisconsin Nursing Research Conference, Milwaukee, WI

05/2003 "Changing Nursing Practice: Shift Report" Poster presentation at the Society of Pediatric Nurses (SPN) 13th Annual Conference, Kansas City, MO

03/2003 "Changing Nursing Practice: Shift Report" Poster presentation at the NACNS (National Association of Clinical Nurse Specialists) Annual Conference, Pittsburgh, PA

05/2002 "Changing Nursing Practice: Shift Report" Poster presentation at the 4th Annual Southeastern Wisconsin Nursing Research Conference, Milwaukee, WI

06/1979 "The Relationship Between Knowledge of Diabetes and Self-Esteem for Adolescents with Insulin-Dependent Diabetes Mellitus: A Pilot Study" (Master's Thesis) Presentation at the American Diabetes Association Annual Conference, Los Angeles, CA

CURRENT COMMITTEES / COUNCILS

Chair: Patient Care Operations/Clinical Practice Leader Committee
Unit-Based Clinical Nurse Specialist
APN Advisory and Credentialing

Co-chair: Advanced Practice Nursing Council

Member: Clinical Education Operations Council
Joint Clinical Practice Council
Advanced Practice Nursing Council
Shared Governance Coordinating Committee
APN Discipline
Advanced Practice Providers Committee
Consortium for Pediatric Nursing Research
Magnet Steering Committee
Health Care Services Review
Solutions for Patient Safety – Falls
EBP / Nursing Research Council

COMMUNITY SERVICE

2015-present Wisconsin Lutheran College Advisory Council

2015-present Medical College of Wisconsin Strategic Library Committee

2012-present Southeastern Wisconsin Nursing Association (SEWNA)

2011-present Marquette University Graduate Curriculum Committee

PROFESSIONAL HONORS AND AWARD

2016 Children's Research Institute Grant for Dissertation research
Award - $5000
Wisconsin Association of Pediatric Nurse Practitioners
APN Award

2015 Children's Hospital of Wisconsin
Julie Lathrop Nursing Research Award

2015 Who's Who in America, 69th edition

2010 Children's Hospital of Wisconsin
Julie Lathrop Nursing Research Award

2010 Society of Pediatric Nursing – WI chapter
Evidence-based Practice/Nursing Research Award

2006 Children's Hospital of Wisconsin
Advanced Practice Nursing Excellence Award

2005 Society of Pediatric Nursing
Excellence in Advanced Practice Award

1972 Who's Who among Nursing Students

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

2011 –present Sigma Theta Tau International

2010 –present National Association of Pediatric Nurse Practitioners

2010 –present Midwest Nurses Research Society

2003 - 2011 Society of Pediatric Nurses
Co-Chair, Program Development – 2yr term (2007-2009)

2002-present National Association of Clinical Nurse Specialists
Appointed to Membership Committee – 3yr term (2003-2006)

1986-present Wisconsin Nurses Association

1978-1986 Texas Nurses Association

1973-1978 Wisconsin Nurses Association

1973 –present American Nurses Association