

SOCIODEMOGRAPHIC DISADVANTAGE, STRESS, AND PARENTING IN
MOTHERS OF CHILDREN WITH CANCER

By

Heather Bemis

Thesis

Submitted to the Faculty of the
Graduate School of Vanderbilt University
in partial fulfillment of the requirements

for the degree of

MASTER OF SCIENCE

in

Psychology

August, 2013

Nashville, Tennessee

Approved:

Professor Bruce E. Compas

Professor Megan Saylor

ACKNOWLEDGEMENTS

This research was supported by grant R01 CA 118332 from the National Cancer Institute. Additionally, this research would not have been possible without the guidance of my advisor, Dr. Bruce Compas. His enthusiastic support and encouragement has been integral to the development of my interests and skills, and I am extremely grateful for his mentorship.

I would also like to thank my fellow graduate students and friends in the psychology department at Vanderbilt, as well as the research assistants on the Coping & Communication team, for both their assistance and their fantastic companionship. Finally, I want to thank my family and my partner, Kaveh, for their enduring support, and especially, for serving as my inspiration.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	ii
LIST OF TABLES	iv
Chapter	
I. INTRODUCTION	1
II. METHOD	16
Study 1	16
Participants	16
Measures	17
Procedure	18
Study 2	19
Participants	19
Measures	20
Procedure	21
Statistical Analyses	23
III. RESULTS	24
Study 1	24
Descriptive Analyses	24
Sociodemographic Risk Variables and General Stress	24
Sociodemographic Risk Variables and Cancer-Related Stress	25
Study 2	26
Descriptive Analyses	26
Sociodemographic Risk Variables and Observed Parenting	26
General Stress, Cancer-Related Stress, and Observed Parenting	27
Linear Regression Analyses	27
IV. DISCUSSION	29
REFERENCES	41
APPENDIX	47

LIST OF TABLES

Table	Page
1. Demographic Characteristics of Mothers in Study 1 and Study 2.....	47
2. Definitions and Examples of IFIRS Codes Used in these Analyses.....	48
3. Definitions, Examples, Descriptive Statistics, and Reliability of IFIRS Composite Scores used in these Analyses.....	49
4. Means, Standard Deviations and Independent Samples t-test Comparing Single Versus Partnered Mothers on Levels of General Perceived Stress, Cancer-Related Stress, Positive Parenting, and Negative Parenting.....	40
5. Correlations of Mothers' Annual Family Income, Education Level, and Number of Children Living in the Home with General Stress, Cancer-Related Stress, and Parenting Behaviors.....	51
6. Summary of Linear Regression Analysis for Variables Predicting Mothers' Positive Parenting Behaviors.....	52
7. Summary of Linear Regression Analysis for Variables Predicting Mothers' Negative Parenting Behaviors.....	53

CHAPTER I

INTRODUCTION

Pediatric cancer is a prevalent, serious, and potentially life-threatening condition that affects over 13,000 families annually in the United States (SEER Cancer Statistics Review, 2010). Fortunately, advances in treatment have allowed for survival rates to greatly increase since the 1970's; however, a diagnosis of cancer and its treatment continues to present families with extreme and varied stressors, including the potential for the death of a child. Treatment of pediatric cancer is often extraordinarily taxing and involves frequent medical visits, unpredicted hospital stays, painful procedures, difficult side effects, and a great deal of medical expenses.

Parents of children with cancer have reported that disruption in daily role functioning (including financial concerns, concerns about one's job, and having less time to spend with other family members), demands related to cancer caregiving, and communicating with others about cancer constitute significant and prevalent sources of stress (Rodriguez et al., 2012). Several studies have shown that a subset of these parents is also at increased risk for psychological distress, including symptoms of depression (e.g., Barrera et al., 2004; Norberg, Lindblad, & Boman, 2005), anxiety (e.g., Dahlquist et al., 1993), and post-traumatic stress symptoms (PTSS) (e.g., Alderfer, Cnaan, Annunziato, & Kazak, 2005; Bruce, 2006; Dunn et al., 2012). Mean levels of psychological distress remain significantly higher than normative levels over the first

several months of a child's treatment (e.g., Maurice-Stam, Oort, Last, & Grootenhuis, 2008; Pai et al., 2007).

Additionally, parents are met with the need to provide information and emotional support to their ill child. In one study, parents consistently described the importance of "being there" for their child, which included providing emotional support, being physically available, developing trust, and advocating for their child (Kars, Duijnste, Pool, van Delden, & Grypdonck, 2008). Parents of children with cancer must confront the difficult task of balancing this need to provide informational and emotional support to their child within the context of their own stresses and fears.

Given these challenges, it is important to identify which families may benefit most from interventions aimed to reduce the burden of cancer on families, effectively cope with stress, and build skills for parent-child communication within the context of a child's cancer diagnosis and treatment so that researchers and clinicians can efficiently target and sensitively tailor assistance programs to families in need. It is essential to remember that at the same time that families are coping with illness, many parents are also affected by significant, chronic stress in other life domains -- particularly those from backgrounds that are typically considered at a sociodemographic disadvantage, such as single-parent status, low income, and lower educational attainment (e.g., Braveman, Egerter, & Williams, 2011; Kazak, 1989; Matthews & Gallo, 2001; Moore, Vandivere, & Ehrle, 2000). Broader research, including literature on other chronic illnesses as well as studies among families of healthy children, suggests that sociodemographic factors may have important implications for stress, adjustment and parenting (e.g., Evans, Boxhill, & Pinkava, 2008; Kazak, 1989; Repetti, Taylor, & Seeman, 2002; Taylor, Repetti, &

Seeman, 1997). Though individuals from sociodemographically disadvantaged backgrounds are likely to bear an even greater burden when confronted with a child's cancer diagnosis and treatment, few studies have rigorously examined how these factors might contribute to the experience of parents of children with cancer. The goals of the present research are to extend the existing literature on sociodemographic disadvantage, stress, and parenting to families facing pediatric cancer and to rigorously examine how these constructs exert both independent and collective influence on the psychosocial sequelae of this population.

Sociodemographic Disadvantage and Stress

Sociodemographic disadvantage is a multidimensional construct that can be conceptualized as social and demographic factors that represent access to both material and social resources. It is related to socioeconomic status (SES) but encompasses a broader array of social factors, such as marital status, that may or may not be directly connected to income or material assets (e.g., Adler & Rehkopf, 2008; Adler & Snibbe, 2003; Brown et al., 2008; Gallo & Matthews, 2003; Matthews & Gallo, 2011). The present study will focus on four major sociodemographic risk factors for child-well being that have been identified: poverty, parental educational attainment (lack of high school diploma or GED by the child's parent), single parenthood, and more than one child living in the household (Moore et al., 2000). Research in the fields of psychology and public health have rarely examined how each of these factors independently contributes to psychological well-being in children and adults; instead, the vast majority of studies have combined various sociodemographic factors, most commonly education, occupation, and

income to form a more general indicator of SES and how this may relate to psychological and physical welfare (Adler & Snibbe, 2003; Matthews & Gallo, 2011). Thus, though a goal of the present research is to parse out the ways in which these four sociodemographic risk factors each contribute to stress and parenting, a parsimonious review of the link between sociodemographic disadvantage and stress requires some combination of the four factors listed above as they relate to psychosocial outcomes.

As of 2011, 15% of the population, or 46.2 million people in the United States were living below the poverty line (U.S. Census Bureau, 2012). The poverty rate for children living in female-headed families with no spouse present was over 47.6 percent, which is more than four times the rate of children in married-couple families (10.9 percent; U.S. Census Bureau, 2012). There is an abundance of evidence that living in poverty negatively affects psychological well-being. It has long been established that in North America, adults living in poverty experience more negative life events than lower and middle class adults (e.g., Baum, 1999; Dohrenwald, 1973; Kessler, 1979). Socioeconomic status has also been linked to higher scores on measures of chronic and perceived stress, as well as daily hassles (Gallo, Bogart, Vranceanu, & Matthews, 2005; Hatch & Dohrenwend, 2007; McLeod & Kessler, 1990). Single mothers are also at increased risk for stress and have reported more daily hassles related to economic, family, and personal health problems; this holds true even after controlling for family income (Compas & Williams, 1990).

Recently, Cohen and Janicki-Deverts (2012) examined self-reported perceived levels of stress across three national surveys administered in 1983, 2006, and 2009 using the Perceived Stress Scale (PSS; Cohen & Williamson, 1988). The authors found that

across all three surveys, lower education and income, as well as unemployed occupational status, were related to greater levels of stress. Women also reported higher levels of stress than men. Minorities experienced elevated levels of stress compared to whites; however, these differences were not significant when controlling for education, income, and unemployment. The fact that these results were consistent across a wide time frame suggests that sociodemographic disadvantage has remained a stable risk factor for heightened stress over time in the United States, and that little has changed since early studies linking lower socioeconomic status to negative psychological outcomes.

There are a myriad of overlapping factors that contribute to the experience of chronic stress among those living in low-SES environments. Research indicates that access to high-quality housing, shops, adequate healthcare services, and transportation is diminished in lower-SES communities (Evans, 2004; Lovasi, Hutson, Guerra, & Neckerman, 2009). Conversely, these communities are characterized by increased crowding, noise, reported and perceived threats of crime, poorer transportation and recreational facilities, and greater exposure to physical hazards and toxins (Evans, 2004; Taylor et al., 1997). The problems faced by sociodemographically disadvantaged individuals are often overlapping, creating an accumulating total of acute and chronic stressors. Further, because these individuals experience less social support (Schoon & Parsons, 2002; Whelan, 1993) and have fewer material and psychological resources to cope with the hassles endured (Matthews & Gallo, 2011), potential vulnerability to the adverse impacts of these stressors is also exacerbated.

Sociodemographic Disadvantage and Parenting

Limited access to resources and associated stress likely makes it more challenging to parent, and the adverse effects of sociodemographic disadvantage on parenting have also been well documented. Dating back to studies of paternal behaviors during the Great Depression (Elder, Nguyen, & Caspi, 1985), economic downturn and difficulty have been associated with negative outcomes including less responsive, less nurturing, and less sensitive parenting behaviors. Economic strain has also been associated with greater family violence, greater prevalence of single parent families, and less effective parenting (Wadsworth & Compas, 2002). In concert with these findings, it has been demonstrated that positive parenting behaviors such as maternal responsiveness suffers in the context of increased noise (Wachs, 1989), crowding (Evans, Maxwell, & Hart, 1999; Wachs, 1989), chaotic living conditions (Matheny, Wachs, Ludwig, & Phillips, 1995), and smaller social networks (Bradley et al., 2001), all of which are common to lower-income environments, as established by the literature reviewed above.

As an example of this research, in a sample of African-American, Mexican-American, and European-American families, Baer (1999) found that single-parent families demonstrated more family conflict and lower levels of positive communication than nuclear families across all three ethnic groups. Though SES was not a significant predictor of family conflict and communication in the Baer (1999) study, one of the primary stressors reported by single parents is income (Conger & Elder, 1994). Thus it appears that, as with stress, the effects of different sociodemographic factors on parenting are both unique and inter-connected.

Less attention has been given to the potential underlying mechanisms that might

account for the relationship between these demographic conditions and parenting. However, given the abundance of evidence linking environmental factors to chronic stress, some researchers have hypothesized that stressful life conditions may exert influence on parenting behaviors among sociodemographically disadvantaged individuals. Patterson (1988) suggested that stressful life conditions may influence how a parent views a child, in that as stress increases the child may be perceived in a more negative light. In an observational study of parenting behavior, Conger and colleagues used demographic variables including income, single-parent head of household, educational achievement, and mother's age at first birth as proxies for chronic life stress (Conger, McCarty, Yang, Lahey, & Kropp, 1984). The variables representing environmental stressors accounted for 52.9% of the variance in parents' psychological distress, and accounted for 36.6 % of the variation in observed positive and negative parenting behaviors; psychological characteristics (emotional distress, authoritarian child-rearing values, and perceptions of the child) explained up to 15.1% of the variance in observed maternal behaviors.

Evans et al. (2008) were the first to explicitly examine stress as a mediational pathway between socioeconomic status and parenting in attempt to answer the question of *why* poverty might interfere with responsive parenting. The authors hypothesized that mothers living in poverty may exhibit less responsive parenting due to a “daunting array of psychosocial and physical stressors that diminishes their capacity to be a responsive parent” and that “mothers living in poverty may also be less attuned to the needs of their children because they themselves lack adequate social networks,” (p. 232). Self-report measures of perceived stress and social networks among low-income rural mothers, along

with youth reports of maternal responsiveness, indicated that low-income youth experienced less responsive parenting under the conditions of increased maternal stress and decreased maternal social networks.

Thus, though a significant base of research has linked sociodemographic disadvantage to poor parenting outcomes, it has also been documented that the wide array of stressors faced by sociodemographically disadvantaged individuals contributes to challenge of being a parent. Huston, McLoyd, and Garcia-Coll (1998) aptly advised that the inclination to view inadequate parenting in low-income families as a character flaw does not sufficiently appreciate the role of the environmental impact of poverty on families.

Sociodemographic Disadvantage, Stress, and Parenting Among Families of Children with Chronic Illnesses and Cancer

Particularly within the added stress of a child's illness, it is important to recognize the cumulative load of burdens accrued by parents and explore the impact of these exogenous, uncontrollable stressors on their ability to employ effective parenting strategies. The issues discussed above are especially salient to families facing chronic illness because a child's health condition may affect the financial burdens of a family, the social and community interactions of both the child and parents, and the need for effective communication and support among family members. Though some work has begun to investigate the themes of sociodemographic factors, stress, and parenting in the field of pediatric psychology, much more information is needed regarding how these issues influence the psychosocial sequelae of this population.

A review by Shudy et al. (2006) demonstrated that a pediatric critical illness or injury is stressful for the entire family. Studies of families post-hospital discharge of a child found that psychological distress was increased in mothers of children diagnosed with a chronic versus acute illness or injury; the most severe stressor for parents was role alteration and feelings of helplessness. A handful of studies have explicitly reported on effects of socioeconomic status among families facing pediatric illness. One recent assessment of family functioning across six independent studies of various pediatric chronic health conditions (cystic fibrosis, obesity, sickle cell disease, inflammatory bowel disease, epilepsy, and a healthy comparison sample) identified lower household income as a risk factor for poorer family functioning, along with older child age and, inconsistent with prior literature, fewer children in the home (Herzer et al., 2010). Among families of children with Type 2 Diabetes Mellitus (T2DM), videotaped observations of family functioning at meal times revealed that while families dealing with diabetes exhibited poorer family functioning (communication, affect management, family roles, overall functioning) than healthy controls, families with lower socioeconomic status exhibited lower levels of overall family functioning across both groups (Piazza-Waggoner et al., 2008).

In the literature specific to childhood cancer, some studies have examined stress and parenting, and a minority has examined the relationships of these to sociodemographic categories. A recent systematic review of family adjustment to childhood cancer confirmed that childhood cancer is a highly stressful event for families and may lead to psychological distress among a subgroup of parents, though findings are mixed in relation to the trajectory and stability of family functioning across a child's

treatment (Long & Marsland, 2011). The authors noted a lack of quantitative research on parenting in this population, and few studies in their review covered issues related to sociodemographic factors (most focused on comparisons of families facing cancer versus healthy controls, rather than predictors and correlates of family functioning among families facing cancer). Still, changes in income or employment status as a result of accommodating a child's treatment needs, as well as costs of treatment were consistently reported among stressful consequences for parents, along with shifts in roles and responsibilities among family members and balancing daily life demands (Long & Marsland, 2011).

In Rodriguez et al.'s (2012) report of cancer-related sources of stress for children and parents, the authors found that cancer caregiving (a construct that included concerns over the effects of treatment, not being able to help one's child feel better, and not knowing if one's child would get better) was reported as stressful for the largest percentage of mothers and fathers (88% and 74.3%, respectively); it was also the case that mothers reported a greater number of daily role functioning stressors (including paying bills and family expenses, concerns about one's job or one's partners' job, and having less time and energy for other family members), communication stressors, and total stressors than fathers.

Manne, Jacobsen, Gorfinkle, and Gerstein (1993) found that families of children with cancer with lower SES (measured by education and income) demonstrated more difficulties with timelines, appointment cancellations and delays, and promptness of reporting a child's reaction to treatment; SES accounted for 35% of the variance in family adherence, while neither functional status nor parenting style were significant. Lower

education level has also been associated with increased symptoms of distress among fathers (Dunn et al., 2012). In turn, parental distress (e.g., depression) has been linked to parenting stress among families of children with cancer (Fernandes, Muller, & Rodin, 2012) and parenting stress specific to caring for a child with cancer has been linked with poorer self-reported family functioning (Streisand, Kazak, & Tercyak, 2003).

A child's chronic illness or cancer diagnosis may also contribute to stress and challenges to parenting processes as the total number of children in the home increases, though no studies have explicitly examined this topic. Because caring for a child's medical illness consumes a great deal of time and energy, parents may struggle to balance caregiving demands and daily role functions alongside spending adequate time caring for and supporting the child's healthy siblings. Indeed, lacking time to spend with siblings and concerns about the negative impact of this have been raised by parents of children with chronic illness (Coffey, 2006). While both mothers and fathers have reported that caregiving and providing emotional support to both the ill child and other children in the family is difficult and time consuming, mothers in particular have found it challenging to care for an ill child while planning activities for the rest of the family (Svavarsdottir, 2005).

Though the above studies represent a solid base of literature on family processes in pediatric populations, Shudy et al.'s (2006) review observed that there is a dearth of research investigating the effects of a number of topics relevant to families of critically ill children, including SES and financial burden. Additionally, according to Shudy et al. (2006) published reports were largely limited to Caucasians, English speakers, and families with married mothers.

Brown et al. (2008) also highlighted single parents in particular as a population in great need of attention in the research on adjustment and caregiving for a child with a medical illness. These parents may face a unique challenge in managing day-to-day caregiving hassles for both an ill child and the child's healthy siblings, and it is likely that the difficulties cited above would be exacerbated among single mothers for whom less support and assistance may be available to help meet these demands. Yet little has been done to address this issue since the publication of Brown et al.'s (2008) call for additional research.

In one previous study (Dolgin et al., 2007), single mothers of children with cancer reported moderately high levels of distress, which remained stable up to six months post-diagnosis. However, Mullins et al. (2011) found that single mothers of children with six different chronic health conditions (type 1 diabetes, asthma, cancer, cystic fibrosis, hemophilia, or sickle cell disease) reported higher levels of parenting stress, but that this was accounted for by income. Another study of Canadian parents of children with cancer found that single parents did not differ from two-parent households on caregiving demand or health related quality of life, but that health related quality of life was associated with lower financial savings and adjusted family income (Klassen et al., 2012). Thus, it remains unclear whether and how various sociodemographic factors, such as single-parent status and income, impact stress and parenting among this largely overlooked population of sociodemographically disadvantaged families facing pediatric illness, and in particular, cancer.

Present Research and Hypotheses

Further research is needed to clarify how sociodemographic disadvantage may impact stress and parenting in the context of pediatric illness. There is a base of literature that suggests that associations between these factors exist. However, few studies have specifically examined and compared effects of various sociodemographic risk factors on stress and parenting in this population, and none have attempted to elucidate the mechanisms through which these variables act upon one another. Further, the vast majority of studies examining links between sociodemographic disadvantage, stress, and parenting among both healthy and ill samples have relied solely on self-report measures. In the present studies, I pursue the questions set forth by Evans and colleagues (2008) in examining whether increased stress may account for parenting behaviors among sociodemographically disadvantaged mothers of children with cancer, and I attempt to corroborate this evidence through the much needed use of both self-report and observational methods. The acceptability and feasibility of the use of observational methods among families of children with cancer near diagnosis was established in Dunn et al. (2011).

The literature has positioned us to make hypotheses about how sociodemographic factors might affect stress and parenting in families of children with cancer, but we do not yet have definitive answers. It is possible that sociodemographic factors (including single-parent status, income, parental education level, and number of kids in the home) in a population of families facing pediatric cancer may influence levels of both general and cancer-specific stress, and that this in turn may impinge on parenting. In other words, any sociodemographic group differences in observed parenting behaviors in parents of

children with cancer may be accounted for by increased levels of stress among the more sociodemographically disadvantaged families. By identifying which subgroups may be most vulnerable to stress and parenting challenges, this research could be helpful in informing effective interventions for families facing the tremendous burden of a child's cancer diagnosis and treatment. The purpose of the present research is to extend the existing literature on sociodemographic disadvantage, stress, and parenting to include these families, as well as to highlight the need for researchers and clinicians to consider the larger ecological context of families facing pediatric cancer.

Accordingly, in the present studies I explore the following questions and hypotheses:

1. Are sociodemographic variables associated with general levels of stress among these parents?
 - a. Hypothesis: Higher levels of perceived general stress will be associated with single parent status, lower family income, fewer years of parental education, and greater number of children in the home.
2. Are sociodemographic variables associated with stress that is specifically related to cancer?
 - a. Hypothesis: Higher levels of cancer-related stress will be associated with single parent status, lower family income, fewer years of parental education, greater number of children in the home, and higher levels of general stress.
 - b. Exploratory analyses will examine in more detail whether and how sociodemographic variables are associated with specific subtypes of cancer-related stress.

3. Are sociodemographic factors related to observed parenting behaviors?
 - a. Hypothesis: Single parent status, lower family income, fewer years of parental education, and greater number of children in the home will be associated with lower levels of observed positive parenting behaviors and higher levels of observed negative parenting behaviors.
4. Do levels of general and cancer-related stress affect parenting behaviors?
 - a. Hypothesis: Both general and cancer-related stress will be associated with lower levels of observed positive parenting behaviors and higher levels of observed negative parenting behaviors.
 - b. Exploratory analyses will examine in more detail whether and how specific subtypes of cancer-related stress are related to observed positive and negative parenting behaviors.
5. What is the impact of stress on the relationship between sociodemographic factors and parenting among families of children with cancer?
 - a. Hypothesis: Increased stress (general and cancer-related) will account for the relationship between sociodemographic variables and observed parenting behaviors.

CHAPTER II

METHOD

Study 1

Participants

Participants were 318 mothers recruited from cancer registries at two pediatric hospitals in the Midwestern and Southern United States as part of a larger study of family adjustment to childhood cancer. Eligible mothers had children who (a) were ages 5–17 years old; (b) had a new cancer diagnosis or relapse/recurrence of initial cancer diagnosis (i.e., child’s treatment progressed to maintenance phase or further and initial diagnosis recurred) within the previous 6 months; (c) were actively receiving treatment through the oncology division; and (d) had no pre-existing developmental disability. Because a major component of the larger project in which the current study is embedded was the use of direct observations of parent–child communication in the context of childhood cancer (see Study 2), the minimum age for children was set at 5 years as an estimate of when children would be able to participate in this type of discussion.

Demographic characteristics of the sample are shown in Table 1. Mothers ranged from ages 23 to 59 years old ($M = 37.5$; $SD = 7.1$) and had a mean of 16 years of education ($SD = 3.9$). Participants represented a variety of annual family income levels: 27.4% earned \$25,000 or under, 27.7% earned between \$25,001 and \$50,000, 15.1% earned between \$50,001 and \$75,000, 11.3% earned between \$75,001 and \$100,000, and 15.7% earned over \$100,000. The sample was 84.9% White/Caucasian, 9.4%

Black/African-American, and 0.9% Asian-American and 3.8% of other races, while 5.0% were Hispanic/Latino. The sample comprised 238 (74.8%) mothers who were partnered (married or living with someone as if married) and 78 (24.5%) were not partnered (single, divorced, separated, or widowed). Mothers reported a range of 1 to 7 children living in the home ($M = 2.6$, $SD = 1.1$).

Participants' children were on average 10.6 years old ($SD = 3.9$) and 52.8% were male. Children had a variety of cancer diagnoses including leukemia (35.8%, $n = 114$), lymphoma (25.2%, $n = 80$), brain tumors (8.8%, $n = 28$) and other solid tumor (30.2%, $n = 96$). Mothers of children with new diagnoses comprised 91.3% of the sample; there were no significant differences enrollment or completion time based on the child's first-time diagnosis versus relapse status.

Measures

Demographic and medical data. Parents provided demographic data on age, race, ethnicity, years of education, annual family income, and marital status. Participants also gave permission for research staff to review the child's medical records for information on diagnosis or relapse status.

Perceived Stress. Mothers completed the Perceived Stress Scale (PSS; Cohen & Williamson, 1988). The PSS is a widely used instrument that assesses subjective experiences of psychological stress (e.g., how often have you felt difficulties were piling up so high that you could not overcome them). It consists of 10 items for which participants rated how often each item was true for them on a scale from 0 (Never) to 4 (Very Often) in the past month. Internal consistency for the total PSS score with the current sample was .87.

Cancer-Related Stress. Participants completed the stressor items from the Responses to Stress Questionnaire-Pediatric Cancer Version (RSQ; Miller et al., 2009; Rodriguez et al., 2012) to assess the experience of stressors specific to having a child with cancer. The stressor items from the RSQ-Pediatric Cancer Version include a list of 12 cancer-related stressors (e.g., disruptions in daily role functioning, communication with their child about cancer, cancer caregiving). Stressor items were developed in respect to previous research and the research team's clinical experience with families facing childhood cancer. Participants rate how stressful each of 12 items has been recently on a scale from 1 (Not at all) to 4 (Very). Internal consistency for the total RSQ Stressor score with the current sample was .83

The RSQ stressor items can also be grouped into three subdomains (Rodriguez et al., 2012): (a) daily/role functioning (paying bills and family expenses, concerns about my job or my spouse/partner's job, having less time and energy for my other children and/ or spouse, needing more help/support); (b) cancer communication (talking with my child about cancer, talking to my other children, family, and friends about cancer, understanding information about cancer and medical treatment, arguing with my child about taking medicines and other treatment); and (c) cancer caregiving (not being able to help my child feel better, the effects of my child's treatment, not knowing if my child's cancer will get better). Internal consistencies for each subdomain on ranged from .72 to .74. In the present research these subdomains were used to conduct exploratory analyses.

Procedure

The Institutional Review Boards at both sites approved the study protocol. Mothers were approached at the two research sites in the outpatient hematology/oncology

clinics or in inpatient rooms by a member of the research team. The staff member introduced the study and assessed mothers' interest in participating. Variation in the time at which parents were first approached by the research team occurred based on the timing of communication of the diagnosis from the medical team to the research team, parents' availability to hear about the study, and parents' needing time to consider the study before consenting. After providing informed consent during a visit to the hospital, mothers were given questionnaire packets that they completed in the hospital, outpatient clinic, or took home and returned at a subsequent visit. Families were compensated \$50 for completion of the study questionnaires.

Participants were recruited within 0-10 months of their child's diagnosis or relapse of their original cancer ($M = 1.4$; $SD = 1.2$) and returned questionnaires between 0-13 months following diagnosis ($M = 2.4$; $SD = 2.0$).

Study 2

Participants

All mothers who completed the measures in Study 1 were invited to take part in a second study involving an observed interaction along with their child; 114 Mother-child dyads participated in Study 2. Children ranged from 5 to 17 years old and were on average 10.3 years old ($SD = 3.7$); 53.1% percent of the sample was male. Table 1 shows the demographic characteristics of the mothers in Study 2. Mothers were on average 37.9 years old ($SD = 6.9$); 81.4% were White/Caucasian, 10.6% Black/African-American, 0.9% Asian-American and 6.2% of other races, while 5.2% were Hispanic/Latino. With respect to mothers' reported annual family income, 25.7% earned less than \$25,000,

25.7% \$25,001–50,000, 14.2% \$50,001–75,000, 12.4% \$75,001–100,000, and 20.4% over \$100,000. Mothers completed an average of 17.2 years of education ($SD = 3.9$) and a range of 1 to 7 children living in the home ($M = 2.3$, $SD = 1.1$). The sample comprised 86 (76.1%) mothers who were partnered (married or living with someone as if married) and 27 (23.9%) were not partnered (single, divorced, separated, or widowed). Observed interactions were conducted between 1 and 13.5 months ($M = 5.7$, $SD = 3.0$) after the child's diagnosis or relapse. Six participants (5.3%) were recruited into the study following a relapse of their original cancer.

Measures

Iowa Family Interaction Rating Scales (IFIRS; Melby & Conger, 2001). The IFIRS was used to code videotaped interactions between mothers and children that consisted of the mother and child having a conversation about the child's cancer. The IFIRS is a global observational coding system designed to measure verbal and non-verbal communication, behaviors, and emotions in parent-child interactions (Melby & Conger, 2001). Behaviors and emotional aspects displayed by the individuals are assigned a value from 1 to 9, with 1 reflecting the absence of the behavior or emotion, and 9 indicating a behavior or emotion that is "mainly characteristic" of the parent or child during the interaction (Melby & Conger, 2001). The rating for each code is determined by the frequency, intensity, and proportion of verbal and nonverbal behaviors that are represented by the code. A total of 24 codes were scored for mothers, and fifteen codes were scored for children. All observations were independently coded by pairs of two trained observers who then met to determine a consensus code, following the guidelines established by Dunn et al. (2011).

For the analyses in the present study, a positive communication composite score was derived by summing the five positive maternal codes (warmth/support, prosocial, listener responsiveness, communication, and child-centeredness) and a negative communication composite score was derived by summing the five negative maternal codes (externalized negative, hostility, antisocial, neglect/distancing, and intrusiveness). Tables 2 and 3 present definitions and examples of the codes used to create these composites. Similar positive and negative composites have been used in previous research using the IFIRS with a variety of pediatric populations (e.g., DeLambo, Ievers-Landis, Drotar, & Quittner, 2004; Lim, Wood, & Miller, 2008). Mean reliability between coders (percentage of codes < 2 points apart) for mothers' individual IFIRS codes was 77.4%. The internal consistency was .89 for the positive communication composite and .73 for the negative communication composite.

Data from Study 1. The data collected in Study 1 using the demographics questionnaire, PSS, and RSQ were subsequently used in Study 2 in order to assess the respective associations of sociodemographic factors, overall stress, and cancer specific stress to observed parenting behaviors.

Procedure

All families who completed the questionnaire study were approached by phone or in person at the hospital approximately 3 months later to participate in the observation study. Each mother-child dyad completed an observation session in which they were videotaped while having a conversation about the child's cancer. Study sessions took place in private rooms at both hospital sites. After a research assistant explained the study and obtained informed consent, mothers were given several suggested prompts to

facilitate the discussion (e.g., What have we each learned about cancer and how it is treated? What kinds of feelings or emotions have we each had since we found out you have cancer? What are the ways we each try to deal with these feelings and emotions?). The research assistant left the room after turning on the video camera and returned after 15 minutes. After the observation the research assistant debriefed the participants to address any lingering questions or distress potentially stimulated by the interaction. The Institutional Review Boards at both sites approved the study protocol and consent procedures and families were compensated for their participation.

There were several reasons for this two-phase recruitment process. First, the observation is timed to occur early in active treatment when cancer-related issues are still emotionally significant but after the family has had some time to develop their ways of talking about cancer. Further, because the observational study is more labor intensive and complex for families, accrual rate for this second study is not as high as the questionnaire study (36% of mothers who completed questionnaires enrolled in Study 2)¹. By collecting the questionnaire data first we were able to collect extensive data on the families who enroll in the communication phase of the study as well as those who decline to participate in this second phase. This has allowed us to collect detailed data on the psychological adjustment of a large, representative sample of children with cancer and their parents near the time of diagnosis as well as to compare these two groups and assess the representativeness of the sample of families who participate in the observation study. Acceptability and feasibility of the study methods are reported in Dunn et al. (2011).

¹ This percentage underestimates the recruitment rate of eligible participants into Study 2. The enrollment number in Study 1 (318) includes 77 participants who were consented into an early pilot phase of the study, which did not incorporate the option to participate in the observational task. Of the mothers from Study 1 who completed questionnaires and were invited to participate in Study 2, the enrollment rate was 47.3%.

Families who completed the observation did not differ from those who did not complete the observation on child age, $t(222) = 1.1, n.s.$; or relapse status relapse status, Yates' $\chi^2 = 0.4, n.s.$ Those who completed the observation and those who did not complete the observation also did not differ on race, Yates' $\chi^2 = 1.0, n.s.$; ethnicity, Yates' $\chi^2 = 0.1, n.s.$; relationship status, Yates' $\chi^2 = 0.002, n.s.$; family income, Yates' $\chi^2 = 0.9, n.s.$; number of children in the home; $t(216) = 0.1, n.s.$; or maternal PSS scores, $t(220) = 0.5, n.s.$; or RSQ total cancer related stressor scores, $t(220) = 0.3, n.s.$ Mothers who completed the observation completed more years of education ($M = 17.2$) than those who did not ($M = 15.9$), $t(219) = -2.4, p = .02$.

Statistical Analyses

Means and standard deviations of PSS and RSQ stressor item scores and positive and negative parenting composites were calculated for Studies 1 and 2, respectively. Pearson correlations were calculated for hypothesized associations except for those involving rank ordered data (i.e., annual family income), for which Spearman correlations were calculated. Independent samples t -tests were used to examine differences between single and partnered mothers on the dependent variables. Relative impact of the sociodemographic variables and stress on positive and negative parenting behaviors was assessed using linear multiple regression analyses.

CHAPTER III

RESULTS

Study 1

Descriptive Analyses

As expected, annual family income was positively correlated with mothers' education level ($\rho = .52, p < .01$). Single parent status was associated with lower family income ($t(233.1) = -11.7, p < .001$) and lower education level ($t(312) = -3.4, p < .01$). Number of children living in the home was not associated with the other sociodemographic variables. Mothers' overall mean score on the PSS was 21.2 (SD = 7.0) and the overall mean score on the RSQ total cancer-related stress was 29.2 (SD = 6.8). Scores on the PSS and RSQ total cancer-related stress were positively correlated with one another ($r = .54, p < .01$). No significant differences were found on the PSS or RSQ when comparing mothers of children with new versus relapsed disease. Mothers' race, child age, and child gender were not significantly associated with PSS or RSQ stressor item scores.

Sociodemographic Risk Variables and General Stress

Comparisons of both general and cancer-specific stress based on sociodemographic risk factors are presented in Tables 4 and 5. Single mothers ($M = 22.2$) did not report significantly greater levels of perceived general stress than partnered mothers ($M = 20.9; t(311) = 1.5, p = .14$). Family income was significantly negatively correlated with PSS scores ($\rho = -.17, p < .01$). Education level was also significantly

negatively correlated with PSS score ($r = -.19, p < .01$). Number of children living in the home was not associated with levels of mothers' perceived general stress.

Sociodemographic Risk Variables and Cancer-Related Stress

Single mothers ($M = 30.5$) reported significantly greater levels of cancer-related stress than partnered mothers ($M = 28.7$) on the RSQ total cancer-related stress, $t(310) = 2.1, p < .05$. Correlational analyses indicated that family income ($\rho = -.12, p < .05$) and education level ($r = -.15, p < .01$) were also significantly negatively associated with cancer-related stress on the RSQ. Number of children living in the home was positively correlated with RSQ cancer-related stress ($r = .17, p < .01$).

Exploratory analyses examined whether sociodemographic variables were related to specific subtypes of cancer-related stress on the RSQ (i.e., daily role functioning, cancer communication, and cancer caregiving). Tables 3 and 4 include results from independent samples t -tests and correlational analyses, respectively, on these outcomes. Single parents reported significantly greater daily role functioning stress ($t(307) = 2.12, p = .03$) than their partnered counterparts; differences between single versus partnered mothers on cancer communication stress were marginally significant ($t(304) = 1.86, p < .07$), while no significant differences existed in cancer caregiving stress based on relationship status. Family income was also significantly associated with daily role functioning stress ($\rho = -.16, p < .01$), but was not significantly associated with cancer communication stress or cancer caregiving stress. Mothers' level of education was negatively correlated with cancer communication stress ($r = -.18, p < .01$), while here was no significant relation of education level to daily role functioning stress or cancer caregiving stress. Finally, number of children living in the home was significantly

positively correlated with mothers' reported daily role functioning stress ($r = .17, p < .01$) and cancer communication stress ($r = .13, p < .05$), but was not associated with cancer caregiving stress.

Study 2

Descriptive Analyses

For mothers' IFIRS codes, the mean score for the 5 scales included in the observed positive parenting composite on a 9-point scale was 6.5 ($SD = 1.0$) and 2.9 ($SD = 1.1$) for 5 scales included in the observed negative parenting composite. Positive and negative parenting composite scores were significantly negatively correlated ($r = -.63, p < .001$). Positive and negative parenting composites were not significantly different between mothers of children with new versus relapsed disease. Mothers' race and child gender were not associated positive or negative parenting. Child age was not associated with negative parenting behaviors but was negatively correlated with positive parenting behaviors ($r = -.28, p < .01$).

Sociodemographic Risk Variables and Observed Parenting

Table 4 presents differences in observed parenting behaviors based on relationship status. Differences in positive parenting behaviors between single ($M = 30.8$) versus partnered ($M = 32.8$) trended towards significance, $t(111) = -1.8, p = .075$, whereas relationship status was not significantly associated with negative parenting behaviors. Correlational analyses between observed parenting behaviors and sociodemographic variables are presented in Table 5. Annual family income was related to both positive ($\rho = .32, p < .01$) and negative ($\rho = -.21, p < .05$) parenting behaviors,

while mothers' education level was also related to positive parenting behaviors ($r = .33, p < .01$) but was not significantly related to negative parenting behaviors. Number of children living in the home was not associated with either positive or negative parenting composite scores.

General Stress, Cancer-Related Stress, and Observed Parenting

Levels of perceived general stress, measured by PSS scores from Study 1, were not significantly correlated with positive or negative parenting behaviors among mothers who participated in the observation task. However, total cancer-related stress on the RSQ was significantly related to observed parenting behaviors. Specifically, total cancer-related stress was negatively correlated with positive parenting behaviors ($r = -.28, p < .01$) and positively correlated with negative parenting behaviors ($r = .22, p = .02$).

Exploratory analyses were conducted to examine whether specific subtypes of cancer-related stress were associated with observed parenting behaviors. Daily role functioning stress was significantly positively related to negative parenting ($r = .23, p = .016$) but was not related to positive parenting behaviors. Cancer communication stress was significantly negatively correlated with positive parenting ($r = -.30, p = .001$) but not negative parenting behaviors. Finally, cancer caregiving stress displayed a small but significant association with positive parenting behaviors ($r = -.19, p = .04$) and was not associated with negative parenting behaviors.

Linear Regression Analyses

A series of linear multiple regression analyses were conducted in order to test the hypothesis that greater levels of stress might account for observed differences in parenting behaviors. In each regression equation, child age was entered in Step 1,

followed by each sociodemographic risk variable (mothers' relationship status, annual family income, education level, and number of children living in the home) in Step 2, followed by PSS and RSQ stressor item scores in Step 3. Mothers' positive and negative parenting composite scores were entered as the dependent variables. In the model predicting positive parenting (see Table 6), family income was a significant predictor in Step 2 ($\beta = .30, p = .014$), along with child age ($\beta = -.29, p < .01$), whereas the other sociodemographic variables did not significantly account for positive parenting behaviors. Cancer-related stress partially accounted for mothers' positive parenting behaviors ($\beta = -.22, p < .05$), while income ($\beta = .25, p < .05$) and child age ($\beta = -.27, p < .01$) also remained significant in Step 3 of the model. In the model predicting negative parenting (see Table 7), family income was the only significant predictor of negative parenting behaviors in Step 2 ($\beta = -.26, p < .05$), while in Step 3 Family income trended towards significance ($\beta = -.22, p = .094$) and no other variables were significant predictors.

CHAPTER IV

DISCUSSION

The purpose of the current research was to investigate the relationships between variables that have been identified as sociodemographic risk factors (e.g., single-parenthood, income, education level, and number of children in the home; Moore et al., 2000), stress, and parenting behaviors among mothers of children recently diagnosed with cancer. In Study 1, I examined the associations between sociodemographic risk variables and both general and cancer-related stress among mothers of children with cancer. In Study 2, I used an observational method to examine the relationships between sociodemographic factors and parenting behaviors as well as stress and parenting behaviors. I was also interested whether increased levels of stress account for observed differences in parenting.

Though it is well documented in the literature that lower socioeconomic status is associated with increased stress (e.g., Cohen & Janicki-Deverts, 2012; Gallo et al. 2005; Hatch & Dohrenwend, 2007; McLeod & Kessler, 1990) and disrupted parenting (e.g., Conger et al., 1984; Evans et al., 2008; Wadsworth & Compas, 2002), few studies have used rigorous methods to examine the independent associations of specific sociodemographic factors to stress or parenting, nor the complex associations among these three constructs. Further, others have noted that there is a conspicuous dearth of this information among families facing a child's chronic illness (e.g., Brown et al., 2008).

This information will be critical in order to identify ways to effectively and sensitively develop and target assistance programs for families facing childhood cancer.

In the current sample, mothers' mean level of perceived general stress on the PSS (21.2, $SD = 7.0$) was considerably higher than the mean score reported for previous normative samples (e.g., 13.0, $SD = 6.4$; Cohen & Williamson, 1988). This suggests that, on average, mothers in this sample were experiencing high levels of stress in comparison to the general population. This is consistent with previous literature demonstrating elevated levels of stress (e.g., Long & Marsland, 2011; Rodriguez et al., 2012) and distress (e.g., Alderfer et al., 2005; Barrera et al., 2004; Bruce, 2006; Dunn et al., 2012; Maurice-Stam, et al., 2008; Norberg et al., 2005) in parents of children with cancer close to diagnosis.

Partial support was found for the first hypothesis, and full support was found for the second hypothesis. With regard to the first hypothesis, lower family income and lower education level were each associated with greater levels of perceived general stress among mothers; however, single parent status and number of children living in the home were not related to mothers' PSS scores. The finding that income and education were associated with PSS scores is consistent with the literature cited above demonstrating associations between SES and increased stress in the general population. Income and education are two of the most commonly used indicators of socioeconomic status (Matthews & Gallo, 2011) in this literature, and previous research has also found that these variables are related to increased scores on the PSS (Cohen & Janicki-Deverts, 2012). Since Cohen and Janicki Deverts (2012) did not assess marital status and number of children in the home, it is less clear whether our findings that these variables were not

related to PSS scores in the current research differ from their research; however previous studies have found that single mothers experience greater levels of daily hassles (Compas & Williams, 1990).

For the second hypothesis, all four sociodemographic risk variables (single-parent status, lower family income, lower education level, and greater number of children in the home) were significantly associated with greater levels of cancer-related stress, as measured by the RSQ total cancer-related stressor score. Thus, as expected, it is clear that sociodemographic risk factors each significantly increase the experience of cancer-related stress for mothers of pediatric cancer patients. Levels of cancer-related stress may be significantly related to all of the sociodemographic variables assessed in the current study (including relationship status and number of children) because cancer-specific types of stress measure may capture the influence of an increasing stressor load for these mothers. That is, the extreme stress of caring for a child with cancer that is introduced on top of typical daily stresses and strains may be above and beyond mothers' perceptions of their ability to deal with general life demands. Given that parents of children with chronic illnesses have reported concerns about having enough time to spend with other children (Coffey, 2006) and caring for the rest of the family (Svavarsdottir, 2005), this may be intensified among single mothers and mothers with larger numbers of children, for whom receiving adequate social support and caring for healthy siblings in addition to their ill child would likely become increasingly difficult.

In testing the third and fourth hypotheses, various associations emerged between sociodemographic factors, stress, and observed parenting behaviors. Lower family income was linked to fewer positive parenting behaviors as well as increased negative

parenting behaviors. Single-parent status and lower education level were also associated with fewer positive parenting behaviors but were not significantly related to negative parenting. Number of children living in the home was not associated mothers' ability to exhibit effective parenting behaviors with the ill child in the study task, as it was not correlated with either positive or negative parenting behaviors. Contrary to the hypothesis, general stress on the PSS was also not correlated with either type of observed parenting behaviors. However, RSQ cancer-related stress was correlated with both types of parenting, such that greater levels of cancer-related stress were associated with decreased positive parenting behaviors and increased negative parenting behaviors.

Based on previous research showing that increased levels of stress can help to explain why responsive parenting may be lower among individuals living in low-SES environments (Evans et al., 2008), to test the fifth hypothesis we conducted linear multiple regression analyses to analyze whether stress accounted for observed differences in parenting in our sample. In the regression model, cancer-related stress partially accounted for variation in positive parenting, along with annual family income and child age. This result, in combination with the findings reported above, supports the hypotheses that cancer-related stress not only increases as a function of sociodemographic disadvantage, but also that this type of stress in turn inhibits mothers' ability to generate positive parenting behaviors. Since one of the greatest and most important challenges cited by parents of ill children is "being there" for their child as a source of emotional support (Kars et al., 2008), it appears that talking to one's child about their cancer diagnosis and treatment in a clear and supportive manner is a particularly

meaningful yet daunting task for parents who are facing the greatest levels of stress in relation to their child's illness.

In the linear regression model for negative parenting, none of the sociodemographic or stress variables were significant predictors. However, because income and cancer-related stress were both significantly related to negative parenting in bivariate analyses, it is possible that multicollinearity among the predictors precluded the ability of any one variable to significantly account for differences in negative parenting in the regression model. It is also possible that many of the findings for negative parenting were not significant because the mean score and variability for negative parenting (2.9 on a 9-point scale, $SD = 1.1$) were quite low. Because the observations were not conducted in a naturalistic setting, they may not have captured the full range of parental behavior patterns that might be seen in the home or in a typical parent-child interaction. Further, the nature of the study task in particular (a discussion about the child's cancer) was potentially more conducive to the elicitation of responsive behaviors than hostile, harsh, or distancing parenting behaviors; parents may have been able to rise to the task and manage their behaviors in ways that are beneficial to their children. This possible restriction of negative parenting is consistent with previous observational studies of parenting behaviors in pediatric populations that have also found lower scores for negative versus positive parenting composite scores (Lim et al., 2008). Alternatively, it is equally possible that negative parenting behaviors were observed to a lesser degree in the present research because they truly are not elevated among parents in this sample, and the scores accurately reflect the typical behaviors of these mothers.

The exploratory analyses conducted in the present studies provide valuable insight on the cancer-specific subtypes of stress that various demographic factors generate for parents. Daily role functioning stress (which included financial concerns and concerns about having enough time and energy for others in the family) was greatest among single parents, those with lower family income, and greater number of children. Cancer communication stress (which included concerns about talking with one's child and others about cancer and understanding information about medical treatments) increased in conjunction with lower education levels and greater number of children. Cancer caregiving stress was not significantly related to any of the sociodemographic variables.

These findings are consistent with what might be reasonably anticipated given the items in each subdomain, but are novel and potentially important in that no studies to date have examined how sociodemographic risk factors influence the experience of specific cancer-related stressors. Lower income may increase stress over finances and lower education levels may present greater challenges in understanding information presented by physicians. As discussed above, worries related to time, energy, and providing information to both the ill child and healthy siblings may be exacerbated as the number of children in the home increases or among parents who do not have a partner to help with these demands. It is also interesting that cancer caregiving stress (which included stress over not being able to make one's child feel better, effects of treatment, and worries about prognosis) was not significantly greater in relation to any sociodemographic risk variable. These items arguably tap more universal fears that may be salient to the vast majority of parents of children with cancer, regardless of their sociodemographic background. Each of the subtypes of cancer-related stress was also related to either

positive or negative parenting. For example, cancer communication stress was related to fewer observed positive parenting behaviors. Thus, preoccupation with concerns over communicating cancer information may preclude a parent from being fully present and supportive in a discussion with that child about his or her disease. Whereas the present analyses of specific subtypes of cancer-related stress were exploratory because there was not enough previous evidence to warrant hypotheses, these findings increase our understanding of these constructs, indicate that additional research in this area is warranted, and provide the first suggestions for future hypotheses.

There are some potential implications for intervention and policy that emerge from the findings in the current studies. It is important to consider the increased burden on sociodemographically disadvantaged families facing a constellation of daily psychosocial stressors (e.g., Evans, 2004) combined with the additional stress involved with having a child with cancer, and the impact that this may have on well-meaning parents. Since the current research provides stronger support that sociodemographic disadvantage and stress may be related to positive parenting behaviors than negative parenting behaviors, this suggests that, in addition to the clear need for improved supportive services, sensitive parenting interventions that focus on teaching effective positive communication strategies to these parents are could potentially be very helpful. Clinicians and researchers must also be cognizant of the specific types of stressors that may threaten the well-being of patients and families. For example, it may be beneficial for physicians to incorporate checks on parents' understanding of the information presented to them and to make a concerted and respectful effort to tailor communication and illness education accordingly.

It should be noted that several of the correlations presented in the current studies, though significant, were quite small. Thus, these findings should be viewed with some degree of caution. Particularly, the small correlations suggest that it is not accurate to conclude that sociodemographic disadvantage creates large gaps among parents of children with cancer in terms of stress and parenting outcomes or that clinicians should assume that these factors will automatically come in tandem with extreme levels of stress or diminished parenting. Rather, sociodemographic background variables may be useful indicators for screening, such that presence of a risk factor such as single parent status, lower income, or lower education should be noted as an additional stressor that matters, and should be viewed as a marker for *potential* increased risk for stress, distress, and communication challenges.

The current studies also had several limitations that provide direction for future research. The present analyses were limited only to mothers because very few fathers were recruited into the observational study. However, there is evidence that the psychological well-being of fathers is also at risk following their child's cancer diagnosis (e.g., Dunn et al., 2012) and that distressed fathers may communicate with their children differently than distressed mothers (Jacob & Johnson, 2001). Therefore, it will be important for future studies to make a concerted effort to include fathers in order to gain a more complete understanding of family communication and develop interventions that are relevant to both mothers and fathers. It will also be important to incorporate child data on stress and communication in order to understand interpersonal effects of stress, parenting, and adjustment across family members.

Additionally, it is noteworthy that in Evans et al.'s (2008) study of parenting among mothers from a low socioeconomic status background, both increased stress *and* diminished social support accounted for less responsive parenting. The present studies did not assess social support, but future research should investigate its potentially important contribution – social support may be a critical element to the experience of cancer-related stress and the challenge of communication with an ill child, especially among single parents. Finally, the current research only examined parenting behavior at one time point. It would be useful for future research to incorporate follow-up assessments of both stress and parenting in order to examine how relationships between sociodemographic factors, stress, and parenting function throughout the course of a child's cancer treatment and into survivorship.

This research also highlights the need for further study of these constructs across other types of chronic illness. Cancer-related stress appeared to have a unique relationship to both sociodemographic factors and parenting behaviors in this sample, above and beyond the influence of general perceived stress. Given that each type of childhood chronic illness has distinct stressors and concerns (e.g., Compas, Jaser, Dunn, & Rodriguez, 2012), it is not yet clear to what extent the effects found in the present research are cancer-specific. Other previous studies that have used the IFIRS observational coding system to assess parenting behaviors in pediatric populations have not assessed similar predictor variables (e.g., DeLambo et al., 2004; Jaser & Grey, 2010; Lim et al., 2008) as the present research, making comparisons of this research to other pediatric samples somewhat difficult. However, previous studies among children with diabetes (Piazza-Waggoner et al., 2008) and cystic fibrosis (Herzer et al., 2010) have

suggested that SES is related to family functioning across other pediatric populations. Greater convergence of methods and increased study of sociodemographic risk factors, stress, and parenting among families dealing with a childhood chronic illness is needed to further assess generalizability and to assist a wider range of families.

The present research had several key strengths. First, the sample was relatively large and was recruited close in time to cancer diagnosis or relapse. Methodological rigor is another strength of the current studies, which included assessments of both general stress and stress that is specifically related to cancer, as well as observational methods and double coding (with high reliability between coders) of all observational data. This research is also unique in its specific focus on the separate contributions of sociodemographic factors to the psychosocial sequelae of parents of children with cancer, as well as how these variables combine with stress to influence behavioral outcomes in family interaction. Previous research (e.g., Brown et al., 2008) has highlighted the necessity to incorporate this information into the field of pediatric psychology, and to recognize that sociodemographic factors contribute in critical ways to the experience of chronic illness and should not simply be viewed as “nuisance” variables to control for.

In summary, the present studies confirm the need to consider the larger ecological context of families facing pediatric cancer. This research extends the existing literature on socioeconomic status, stress, and parenting by demonstrating that certain sociodemographic risk factors (e.g., single parent status, lower family income, lower education levels, and greater number of children) present parents with even greater levels of stress when confronted with a child’s cancer diagnosis, and that cancer-related stress may impinge on parents’ ability to demonstrate supportive behaviors when

communicating with their child. The results have identified these subgroups as potentially more at risk for heightened stress and challenges with parenting an ill child, and thus could benefit from additional attention in the literature and sensitively targeted intervention services.

The results also suggest that a two-pronged approach that includes contemporaneous efforts to both reduce maternal cancer-related stress and promote positive parenting and communication skills will be beneficial when intervening with these families. A recent review of the literature on coping with childhood chronic illness suggested that coping strategies such as acceptance and cognitive reappraisal are related to better adjustment in children coping with uncontrollable stressors related to their illness (Compas et al., 2012). Mothers faced with significant stress over the uncontrollable aspects of their child's cancer, such as not knowing if the cancer will be cured, could also benefit from the employment of these types of strategies. Conversely, studies have also shown that coping strategies that involve acting on the source of the stress or one's emotions are related to better outcomes in more controllable stressful situations (e.g., Compas et al., 2012). Thus providing information, support services, and teaching problem-solving and emotional modulation skills would also be valuable to mothers, particularly those from sociodemographically disadvantaged backgrounds, in order to help with stress related to role disruption and making decisions about treatment. Especially when coupled with the teaching of effective communication strategies, building these coping skills would likely improve parents' own adjustment as well as their ability to be there for their children as a positive source of emotional support. The present research and its implications for future study and intervention will be important to

bear in mind as attempts are made to reduce health care disparities, to improve care for all families facing the enormous burden of childhood cancer, and especially, to protect the psychological well-being of particularly vulnerable parents and children.

REFERENCES

- Adler, N. E., & Rehkopf, D. H. (2008). U.S. disparities in health: Descriptions, causes, and mechanisms. *Annual Review of Public Health, 29*, 235-252.
- Adler, N. E., & Snibbe, A. C. (2003). The role of psychosocial processes in explaining the gradient between socioeconomic status and health. *Current Directions in Psychological Science, 12*, 119-123.
- Alderfer, M. A., Cnaan, A., Annunziato, R. A., & Kazak, A. E. (2005). Patterns of posttraumatic stress symptoms in parents of childhood cancer survivors. *Journal of Family Psychology, 19*, 430-440.
- Baer, J. (1999). The effects of family structure and SES on family processes in early adolescence. *Journal of Adolescence, 22*, 341-354.
- Barrera, M., D'Agostino, N. M., Gibson, J., Gilbert, T., Weksberg, R., & Malkin, D. (2004). Predictors and mediators of psychological adjustment in mothers of children newly diagnosed with cancer. *Psycho-Oncology, 13*, 630-641.
- Baum, A. (1999). Socioeconomic stress and chronic stress. In N.E. Adler, M. Marmot, B. McEwen, & J. Stewart (Eds.), *Socioeconomic status and health in industrial nations* (pp. 131-144). New York: New York Academy of Sciences.
- Bradley, R. H., Corwyn, R. F., Burchinal, M., McAdoo, H. P., & Garcia-Coll, C. (2001). The home environment of children in the United States Part II: Relations with behavioral development through age thirteen. *Child Development, 72*, 1868-1886.
- Braveman, P., Egerter, S., & Williams, D.R. (2011). The social determinants of health: Coming of age. *Annual Review of Public Health, 32*, 381-398.
- Brown, R. T., Wiener, L., Kupst, M. J., Brennan, T., Behrman, R., Compas, B. E., ... Zeltzerl, L. (2008). Single parents of children with chronic illness: an understudied phenomenon. *Journal of Pediatric Psychology, 33*, 408-421.
- Bruce, M. (2006). A systematic and conceptual review of posttraumatic stress in childhood cancer survivors and their parents. *Clinical Psychology Review, 26*, 233-56.
- Coffey, J. S. (2006). Parenting a child with chronic illness: A metasynthesis. *Pediatric Nursing, 32*, 51-59.
- Cohen, S., & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in the united states in probability samples from 1983, 2006, and 2009. *Journal of Applied Social Psychology, 42*, 1320-1334.

- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan, & S. Oskamp (Eds.), *The social psychology of health: Claremont symposium on applied social psychology* (pp. 31–67). Newbury Park, CA: Sage.
- Compas, B. E., Jaser, S. S., Dunn, M. J., & Rodriguez, E. M. (2012). Coping with chronic illness in childhood and adolescence. *Annual Review of Clinical Psychology*, *8*, 455–80.
- Compas, B. E., & Williams, R. A. (1990). Stress, coping, and adjustment in mothers and young adolescents in single- and two-parent families. *American Journal of Community Psychology*, *18*, 525-545.
- Conger, R. D. & Elder, Jr., G. H. (1994). Families in troubled times: The Iowa Youth and Families Project. In Conger, R., Elder, Jr., G. H. (Eds.), *Families in troubled times: Adapting to change in rural America* (pp. 3-19). New York: Aldine De Gruyter.
- Conger, R. D., McCarty, J. A., Yang, R. K., Lahey, B. B., & Kropp, J. P. (1984). Perception of child, child-rearing values, and emotional distress as mediating links between environmental stressors and observed maternal behavior. *Child Development*, *55*, 2234-2247.
- Dahlquist, L., Czyzewski, D., Copeland, K., Jones, C., Taub, E., & Vaughan, J. (1993). Parents of children newly diagnosed with cancer: Anxiety, coping and marital distress. *Journal of Pediatric Psychology*, *18*, 365–376.
- DeLambo, K. E., Ievers-Landis, C. E., Drotar, D., & Quittner, A. L. (2004). Association of observed family relationship quality and problem-solving skills with treatment adherence in older children and adolescents with cystic fibrosis. *Journal of Pediatric Psychology*, *29*, 343–353.
- DeNavas-Walt, C., Proctor, B. D., & Smith, J. C. (2012). Income, poverty, and health insurance coverage in the United States: 2011. *U.S. Census Bureau, Current Population Reports, P60-243*. Washington, DC: U.S. Government Printing Office.
- Dohrenwend, B. S. (1973). Social status and stressful life events. *Journal of Personality and Social Psychology*, *28*, 225–235.
- Dolgin, M., Phipps, S., Fairclough, D., Sahler, O. J., Askins, M., Noll, R., Butler, R.W., Varni, J.W., & Katz, E.R. (2007). Trajectories of adjustment in mothers of children with newly diagnosed cancer: A natural history investigation. *Journal of Pediatric Psychology*, *32*, 771–782.
- Dunn, M. J., Rodriguez, E. M., Barnwell, A. S., Grossenbacher, J. C., Vannatta, K.,

- Gerhardt, C. A., & Compas, B. E. (2012). Posttraumatic stress symptoms in parents of children with cancer within six months of diagnosis. *Health Psychology, 31*, 176–85.
- Dunn, M. J., Rodriguez, E. M., Miller, K. S., Gerhardt, C. a, Vannatta, K., Saylor, M., Scheule, C. M., et al. (2011). Direct observation of mother-child communication in pediatric cancer: assessment of verbal and non-verbal behavior and emotion. *Journal of Pediatric Psychology, 36*, 565–75.
- Elder, G. H., Nguyen, T. V., & Caspi, A. (1985). Linking family hardship to children's lives. *Child Development, 56*, 361-375.
- Evans, G. W. (2004). The environment of childhood poverty. *American Psychologist, 59*, 77–92.
- Evans, G. W., Boxhill, L., & Pinkava, M. (2008). Poverty and maternal responsiveness: The role of maternal stress and social resources. *International Journal of Behavioral Development, 32*, 232–237.
- Evans, G. W., Maxwell, L. E., & Hart, B. (1999). Parental language and verbal responsiveness to children in crowded homes. *Developmental Psychology, 35*, 1020–1023.
- Fernandes, C., Muller, R., & Rodin, G. (2012). Predictors of parenting stress in patients with haematological cancer. *Journal of Psychosocial Oncology, 30*, 81-96.
- Gallo, L. C., Bogart, L. M., Vranceanu, A. M., & Matthews, K. A. (2005). Socioeconomic status, resources, psychological experiences, and emotional responses: a test of the reserve capacity model. *Journal of Personality and Social Psychology, 88*, 386–99.
- Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: Do negative emotions play a role? *Psychological Bulletin, 129*, 10-51.
- Hatch, S. L. & Dohrenwend, B. P. (2007). Distribution of traumatic and other stressful life events by race/ethnicity, gender, SES and age: a review of the research. *American Journal of Community Psychology, 40*, 313-332.
- Herzer, M., Godiwala, N., Hommel, K. A. Driscoll, K., Mitchell, M., Crosby, L. E., Piazza-Waggoner, C., Zeller, M.H., & Modi, A.C. (2010). Family functioning in the context of pediatric chronic conditions. *Journal of Developmental and Behavioral Pediatrics, 31*, 26–34.
- Howlader, N., Noone, A. M., Krapcho, M., Garshell, J., Neyman, N., Altekruse, S. F., ...

- Cronin, K.A. (2013). *SEER Cancer Statistics Review, 1975-2010*, National Cancer Institute. Retrieved from SEER website: http://seer.cancer.gov/csr/1975_2010/.
- Huston, A., McLoyd, V. C., & Garcia-Coll, C. (1998). Poverty and behavior: The case for multiple methods and levels of analysis. *Developmental Review, 17*, 376–393.
- Jacob T., & Johnson, S. L. (2001). Sequential interactions in the parent-child communications of depressed fathers and depressed mothers. *Journal of Family Psychology, 15*, 38-52.
- Jaser, S. S., & Grey, M. (2010). A pilot study of observed parenting and adjustment in adolescents with type 1 diabetes and their mothers. *Journal of Pediatric Psychology, 35*, 738–47.
- Kars, M. C., Duijnste, M. S. H., Pool, A., van Delden, J. J. M., & Grypdonck, M. H. F. (2008). Being there: Parenting the child with acute lymphoblastic leukaemia. *Journal of Clinical Nursing, 17*, 1553-1562.
- Kazak, A. E. (1989). Families of chronically ill children: A systems and social-ecological model of adaptation and challenge. *Journal of Consulting and Clinical Psychology, 57*, 25–30.
- Kessler, R. C. (1979). Stress, social status, and psychological distress. *Journal of Health and Social Behavior, 20*, 259–227.
- Klassen, A. F., Dix, D., Papsdorf, M., Klaassen, R. J., Yanofsky, R., & Sung, L. (2012). Impact of caring for a child with cancer on single parents compared with parents from two-parent families. *Pediatric Blood Cancer, 58*, 74–79.
- Lim, J., Wood, B. L., & Miller, B. D. (2008). Maternal depression and parenting in relation to child internalizing symptoms and asthma disease activity. *Journal of Family Psychology, 22*, 264–73.
- Long, K. A., & Marsland, A. L. (2011). Family adjustment to childhood cancer: a systematic review. *Clinical Child and Family Psychology Review, 14*, 57–88.
- Lovasi, G. S., Hutson, M. A., Guerra, M., & Neckerman, K. M. (2009). Built environments and obesity in disadvantaged populations. *Epidemiologic Reviews, 31*, 7–20
- Manne, S. L., Jacobsen, P. B., Gorfinkle, K., Gerstein, F., & Redd, W. H. (1993). Treatment adherence difficulties among children with cancer: The role of parenting style. *Journal of Pediatric Psychology, 18*, 47-62.
- Matheny, A., Wachs, T. D., Ludwig, J., & Phillips, K. (1995). Bringing order out of

- chaos: Psychometric characteristics of the confusion, hubbub, and order scale. *Journal of Applied Developmental Psychology*, 16, 429–444.
- Matthews, K. A., & Gallo, L. C. (2011). Psychological perspectives on pathways linking socioeconomic status and physical health. *Annual Review of Psychology*, 62, 501–530.
- Maurice-Stam, H., Oort, F. J., Last, B. F., & Grootenhuis, M. A. (2008). Emotional functioning of parents of children with cancer: The first five years of continuous remission after the end of treatment. *Psycho-Oncology*, 17, 448–459.
- McLeod, J. D., & Kessler, R. C. (1990). Socioeconomic status differences in vulnerability to undesirable life events. *Journal of Health and Social Behavior*, 31, 162–172.
- Melby, J. N., & Conger, R. D. (2001). *The Iowa Family Interaction Rating Scales: Instrument summary*. In P. K. Kerig & K. M. Lindahl (Eds.), *Family observational coding systems* (pp. 1–22). Mahwah, NJ: Erlbaum.
- Miller, K. S., Vannatta, K., Compas, B. E., Vasey, M., McGoron, K. D., Salley, C. G., & Gerhardt, C. A. (2009). The role of coping and temperament in the adjustment of children with cancer. *Journal of Pediatric Psychology*, 34, 1135–1143.
- Moore, K.A., Vandivere, S., & Ehrle, J. (2000). *New Federalism: National survey of America's families, Series B, No. B-18: Sociodemographic risk and child well-being*. Retrieved from The Urban Institute website: <http://www.urban.org/publications/309566.html#n1>.
- Mullins, L. L., Wolfe-Christensen, C., Chaney, J. M., Elkin, T. D., Wiener, L., Hullmann, S. E., Fedele, D.A., & Junghans, A. (2011). The relationship between single-parent status and parenting capacities in mothers of youth with chronic health conditions: The mediating role of income. *Journal of Pediatric Psychology*, 36, 249–257.
- Norberg, A. L., Lindblad, F., & Boman, K. K. (2005). Coping strategies in parents of children with cancer. *Social Science & Medicine*, 60, 965–975.
- Pai, A. L. H., Greenley, R. N., Lewandowski, A., Drotar, D., Youngstrom, E., & Peterson, C. C. (2007). A meta-analytic review of the influence of pediatric cancer on parent and family functioning. *Journal of Family Psychology*, 21, 407–415.
- Patterson, G. (1988). Stress: A change agent for family process. In N. Garnezy & M. Rutter (Eds.), *Stress, coping, and development in children* (pp. 235–264). Baltimore: Johns Hopkins University Press.

- Piazza-Waggoner, C., Modi, A. C., Powers, S. W., Williams, L. B., Dolan, L. M., & Patton, S. R. (2008). Observational assessment of family functioning in families with children who have type 1 diabetes mellitus. *Journal of Developmental and Behavioral Pediatrics, 29*, 101–105.
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring, *Psychological Bulletin, 128*, 330–366.
- Rodriguez, E. M., Dunn, M. J., Zuckerman, T., Vannatta, K., Gerhardt, C. A., & Compas, B. E. (2012). Cancer-related sources of stress for children with cancer and their parents. *Journal of Pediatric Psychology, 37*, 185–197.
- Svavarsdottir, E. K. (2005). Caring for a child with cancer: A longitudinal perspective. *Journal of Advanced Nursing, 50*, 153–161.
- Schoon, I., & Parsons, S. (2002). Competence in the face of adversity: The influence of early family environment and long-term consequences. *Children and Society, 16*, 260–272.
- Shudy, M., De Almeida, M. L., Ly, S., Landon, C., Groft, S., Jenkins, T. L., & Nicholson, C. E. (2006). Impact of pediatric critical illness and injury on families: A systematic literature review. *Pediatrics, 118*, S203–S218.
- Streisand, R., Kazak, A. E., & Tercyak, K. P. (2003). Pediatric-specific parenting stress and family functioning in parents of children treated for cancer, *Children's Health Care, 32*, 245-256.
- Taylor, S. E., Repetti, R. L., & Seeman, T. (1997). Health psychology: What is an unhealthy environment and how does it get under the skin? *Annual Review of Psychology, 48*, 411–447.
- Wachs, T.D. (1989). The nature of the physical microenvironment: An expanded classification system. *Merrill Palmer Quarterly, 35*, 399–419.
- Wadsworth, M. E., & Compas, B. E. (2002). Coping with family conflict and economic strain: The adolescent perspective. *Journal of Research on Adolescence, 12*, 243–274.
- Whelan, C.T. (1993). The role of social support in mediating the psychological consequences of economic stress. *Sociology of Health and Illness, 15*, 86–101.

APPENDIX

Table 1. *Demographic Characteristics of Mothers in Study 1 and Study 2.*

	Study 1 (n = 318)		Study 2 (n = 114)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	37.5	7.1	37.9	6.9
Years of Education	16	3.9	17.2	3.9
Number of Children in Home	2.6	1.1	2.6	1.1
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
Race				
White	270	84.9	92	81.4
African-American	30	9.4	12	10.6
Asian American	3	.9	1	.9
Other	12	3.8	7	6.2
Marital Status				
Married/Living with someone	238	74.8	86	76.1
Single, divorced, separated, or widowed	78	24.5	27	23.9
Annual Family Income				
≤ \$25,000	87	27.4	29	25.7
\$25,001 – \$50,000	88	27.7	29	25.7
\$50,001 – \$75,000	48	15.1	16	14.2
\$75,001 – \$100,000	36	11.3	14	12.4
≥ \$100,001	50	15.7	23	20.4

Note: Years of education was significantly different for mothers in Study 1 versus mothers in Study 2, $t(219) = -2.4, p = .02$. No other significant differences existed between these groups.

Table 2. *Definitions and Examples of IFIRS Codes Used in these Analyses*

Composite	Code	Definition	Examples
Positive Parenting	Warmth/Support	Verbal and nonverbal behavior that communicated affection, appreciation, concern, or support for the child	“I love you.” Hugging the child
	Prosocial	Demonstrations of helpfulness, sensitivity, cooperation, and respectfulness in the interaction	“I’m sorry, I didn’t realize that was hard for you.” Goal-directed and on task
	Listener Responsiveness	Verbal and nonverbal behaviors that indicated responsiveness as a listener to the verbalizations of the child in an attentive and validating manner	Nodding in response to the child’s statements
	Communication	The extent to which the parent was able to express her points of view, needs, wants, etc. and demonstrate consideration of the child’s points of view in a clear and neutral or positive manner	“That was really hard for me because...” Summarizing a mutual opinion or decision
	Child-centeredness	The extent to which the parent displayed sensitivity and awareness of the child’s needs and timed their actions to be in sync with the child, including sensitivity to the child’s emotions	Child looked uncomfortable and mother said, “Is it hard to talk about this? What’s the hardest part for you?”
Negative Parenting	Externalized Negative	Verbal and nonverbal behavior that expressed anger, hostility or criticism towards people, events, or things outside the interaction task	“I hate the hospital.” “My boss is a real pain.”
	Hostility	Verbal and nonverbal behavior that expressed anger, disapproving, and/or rejecting behavior toward the child	“You’re being a pest about the medicine.” Rolling eyes at the child
	Antisocial	Demonstrations of self-centeredness, insensitivity, active resistance, or lack of constraint in the interaction.	“I’m not going to answer that.” Complaining, bragging
	Neglect/ Distancing	Parent’s insensitivity, missed opportunities to connect or empathize with the child, including being uncaring, unresponsive or dismissive of the child’s feelings or concerns. This code excluded hostility.	Child said “Missing school is the hardest part” and mother responded coolly, “That wasn’t a big deal. I had to quit my job.”
	Intrusiveness	The extent to which the parent displayed domineering and overcontrolling, and adult-centered verbalizations and behaviors in the interaction	Parent gives a continual barrage of speech without allowing the child a chance to talk Non-warm or unwelcome grooming

Table 3. *Definitions, Examples, Descriptive Statistics, and Reliability of IFIRS Composite Scores used in these Analyses.*

Composite	Definition	Examples	<i>M</i> (<i>SD</i>)	Reliability
Positive Parenting	Warm, prosocial, responsive, communicative, and child-centered verbal or non-verbal behavior toward the child.	Nodding or facial expression in response to the child's statements; hugging the child. "I'm so proud of you for being brave."	6.5 (1.0) ^a	.89 ^b
Negative Parenting	Negative, hostile, antisocial, intrusive, and neglectful verbal or non-verbal behavior toward the child.	Frowning or scowling at the child; looking away or not responding to the child's statements. "You always do it wrong."	2.9 (1.1) ^a	.73 ^b

Note. Composite scores were created from codes on the Iowa Family Interaction Rating Scale (IFIRS). ^aMean score on the IFIRS 1 to 9 scale. ^bCronbach's alpha.

Table 4. Means, Standard Deviations and Independent Samples t-test Comparing Single Versus Partnered Mothers on Levels of General Perceived Stress, Cancer-Related Stress, Positive Parenting, and Negative Parenting.

	Single Mothers		Partnered Mothers		P-value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
General stress (PSS)	22.2	6.8	20.9	7.1	.137
Cancer-related stress (RSQ)	30.5	6.0	28.7	6.9	.037
Daily Role Functioning stress	11.7	2.9	10.8	3.2	.034
Cancer Communication stress	9.0	3.1	8.2	3.1	.065
Cancer Caregiving stress	9.8	2.0	9.7	2.3	.505
Positive Parenting	30.8	6.0	32.8	4.6	.075
Negative Parenting	15.4	5.2	14.5	5.4	.420

Note: PSS = Perceived Stress Scale. RSQ = Response to Stress Questionnaire. N = 318 for Stress Variables; N = 113 for Positive Parenting and Negative Parenting.

Table 5. Correlations of Mothers' Annual Family Income, Education Level, and Number of Children Living in the Home with General Stress, Cancer-Related Stress, and Parenting Behaviors.

	PSS Total	RSQ Total	Daily Role Functioning Stress	Cancer Communication Stress	Cancer Caregiving Stress	Positive Parenting	Negative Parenting
Family Income	-.17**	-.12*	-.16**	-.09	-.01	.32**	-.21*
Education Level	-.19**	-.15**	-.09	-.18**	-.08	.33**	-.17
Number of Children	-.003	.17**	.17**	.13*	.09	.02	-.13

Note: Correlations with Family Income are presented as Spearman's rho. N = 318 for Correlations between Sociodemographic Variables and Stress Variables; N = 113 for correlations with Positive Parenting and Negative Parenting.

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

Table 6. *Summary of Linear Regression Analysis for Variables Predicting Mothers' Positive Parenting Behaviors (N=108).*

Variable	β	t	ΔR^2
Step 1			.06*
Child Age	-.24*	-2.6	
Step 2			.15**
Child Age	-.29**	-3.20	
Relationship Status	-.03	-.33	
Family Income	.30*	2.50	
Education Level	.16	1.44	
Number of Children	.04	.41	
Step 3			.03
Child Age	-.27**	-2.92	
Relationship Status	-.01	-.12	
Family Income	.25*	2.08	
Education Level	.15	1.37	
Number of Children	.06	.66	
PSS Total	.11	1.00	
RSQ Stressor Item Total	-.22*	-2.07	

Note: PSS = Perceived Stress Scale. RSQ = Response to Stress Questionnaire.
* $p < .05$. ** $p < .01$.

Table 7. Summary of Linear Regression Analysis for Variables Predicting Mothers' Negative Parenting Behaviors (N=108).

Variable	β	t	ΔR^2
Step 1			.01
Child Age	.09	.98	
Step 2			.08
Child Age	.14	1.43	
Relationship Status	.08	.76	
Family Income	-.26*	-2.0	
Education Level	-.03	-.22	
Number of Children	-.15	-1.54	
Step 3			.03
Child Age	.14	1.44	
Relationship Status	.07	.80	
Family Income	-.22	-1.69	
Education Level	-.02	-.16	
Number of Children	-.15	-1.56	
PSS Total	.09	.79	
RSQ Stressor Item Total	.10	.89	

Note: PSS = Perceived Stress Scale. RSQ = Response to Stress Questionnaire.

*p<.05.