

In It Together: Parental Dyadic Coping in the Face of Childhood Cancer
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In It Together: Parental Dyadic Coping in the Face of Childhood Cancer

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Abstract of the Dissertation

In It Together: Parental Dyadic Coping in the Face of Childhood Cancer

In this study, the author aimed to gain a deeper understanding of dyadic coping processes of parents who have a child living with cancer. The study used secondary data collected by a National Cancer Institute funded protocol that used a cross-sectional, multi-center, exploratory study design. Data was collected at a single time point, and employed a survey composed of existing instruments that were altered to reflect the needs of this sample. Instruments included measures designed to assess relationship satisfaction (Revised Dyadic Adjustment Scales), dyadic coping appraisals (Gottman-17), congruent dyadic coping (measured via a mathematical measure of congruence), parent role (mother or father), and the state of their relationship at various time points during treatment. The Systemic Transactional Model proposed by Bodenmann (1995) and the Developmental-Contextual Model proposed by Berg and Upchurch (2007) provided the theoretical bases for this study. The final sample included 184 participants (of which 49 were a sub-set of couples). Results indicated that the dyadic coping appraisals variable significantly predicted and explained relationship satisfaction. However neither congruent dyadic coping nor parent role was a significant predictor of relationship satisfaction. Results also revealed that ratings of relationship status appeared to decline across the course of treatment. Finally, the demographics were also explored in order to better characterize this sample of participants and thus describe the generalizability of results. Implications for clinical interventions and future research ideas are discussed.

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Chapter 1: Introduction

Although cancer in children is rare, it is the leading cause of death by disease past infancy in the United States (National Cancer Institute [NCI], 2014). Researchers have found that the impact of the childhood cancer experience on the parents' relationship is significant, detrimental, and frequently hinders a return to pre-cancer functioning (Chesler & Parry, 2001; da Silva, Jacob, & Nascimento, 2010; Schulz, Cowan, Cowan, & Brennan, 2004). Dyadic coping – an approach that defines stress and coping by including the role of interpersonal processes is frequently and reliably used to understand the experience of couples coping with stressors such as chronic illness (Revenson, 1993). In the current work, the author aimed to gain a deeper understanding of factors contributing to dyadic coping processes of parents who have a child living with cancer. It is important to note that in this study the experiences of parents of children treated at major tertiary cancer treatment centers are examined, and thus cannot be fairly generalized to the experiences of parents and children in other contexts.

Statement of The Problem

As of 2010, there were approximately 380,000 survivors of childhood and adolescent cancer in the United States (Ward et al., 2014). The number of survivors will continue to increase, given that the incidence of childhood cancer has been rising slightly in recent decades and that survival rates overall are improving (Howlader et al., 2014). Many families whose child has cancer experience financial, psychosocial, and family management burdens, which have not yet been well quantified (Patterson, Holm, & Gurney, 2004). These additional stressors in combination with caring for

non-ill family members and maintaining other relationships can be extremely difficult and are rarely, if ever, mentioned after a pediatric cancer diagnosis is given. It is therefore necessary to increase the focus on helping families who are living with the stress of caring for a child with long-term health care needs.

When a child is diagnosed with cancer, his or her parents experience various types of stress related to coping with and treating the child's disease. For example, parents are often faced with changing caregiver or spousal roles (Chesler & Parry, 2001; da Silva, Jacob, & Nascimento, 2010; Schulz, Cowan, Cowan, & Brennan, 2004) and new financial burdens because of time away from work in order to attend to their child's medical needs (Corden, Sloper, & Sainsbury, 2002). Parental burdens may also include disruption of social roles and changes in daily activities. Thus, a cancer diagnosis in a child may affect the family's overall functioning and the quality of the parents' relationship, as demonstrated by reports of higher levels of family conflicts and marital distress (Conger, 2010).

Theoretical works in the areas of external stress and communication outside of the childhood cancer literature provide some insight on how a couple copes with the diagnosis of cancer of one of the partners. However, these processes are not well documented or understood in couples coping with the cancer diagnosis of their child. The application of dyadic frameworks to the experience of parents coping with their child's cancer may fill an important gap in the literature.

Theoretical Frameworks

Two theories were used in this study to provide a basis for the relationships between the independent variables of interest and the outcome variables. First, the

systemic transactional model (STM) proposed by Bodenmann (1995) proposes that coping is a stress management process in which partners either ignore or react to each other's stress signals in order to maintain a high level of stability in the relationship on the individual and dyadic level (Bodenmann, 2005). Second, the Developmental-Contextual Model (DCM) proposed by Berg and Upchurch (2007) contextualizes dyadic coping with chronic illness across the adult life span.

The Systemic Transactional Model

Bodenmann et al. (1995, 2005) provide a full model explaining dyadic coping. Dyadic stress is theorized to trigger dyadic coping, a type of coping that takes into account that one partner's appraisal of stress is communicated to the other partner who perceives, interprets, and decodes these signals and responds with some form of dyadic coping. Depending on the perceived severity and longevity of the stressor, both partners will make an effort to maintain or restore a state of homeostasis as individuals and as a couple. Dyadic stress and coping are best understood from a systemic perspective: each partner's stress and coping mechanisms are interrelated and in turn affect the marital system. For example, the cancer diagnosis of the couple's child concerns both partners simultaneously, but they may experience it and cope very differently. In fact, this framework assumes that chronic stresses that originate outside the relationship and increase the likelihood of marital tension and conflicts are particularly harmful to a marriage because "they erode the relationship quality slowly and often outside of conscious awareness" (Bodenmann, Ledermann, & Bradburry, 2007).

The STM can best be understood when applied across three coping levels: the

individual coping level, the dyadic coping level, and the common dyadic coping level. The individual level refers to the degree which both partners communicate their own stress to each other. The dyadic level refers to the degree to which both partners *appraise* and respond to each other's stress. The dyadic level is further subdivided into supportive and unsupportive dyadic appraisals of coping. The common dyadic coping level refers to the degree to which both partners work together to manage dyadic stress and restore a sense of balance in their relationship (i.e., common positive or negative dyadic coping).

While theoretically robust, this model is not without limitations. One limitation of this model is its failure to take into account the fact that the care that a child receives is a function of the demographic, social, and economic features of the family as a unit (Andersen, 1995). Furthermore, methodologically, the study of individual appraisals of dyadic functioning was based on individual self-reports, treating one member of the couple as the focal person and examining how the spouse is involved in the patient's stressful events and how this involvement relates to dyadic adjustment to a chronic stressor (e.g., cancer; Revenson, 1993). Therefore, the Developmental Conceptual Model that considers dyadic coping mechanisms within a broader context is described below.

The Developmental Conceptual Model

According to the dyadic perspective as described by Bodenmann (2005), "one cannot examine one partner's stress appraisals or coping efforts without considering the effects on the other partner and the marriage" (p. 36). Thus, implicit in Bodenmann's definition of dyadic coping is the existence of dyadic coping appraisals. To explore the relationship between congruent dyadic coping and dyadic coping appraisals, Berg and

Upchurch (2007) proposed the Developmental Conceptual Model (DCM) of couples coping with chronic illness across the adult life span.

The DCM delineates a conceptual separation between dyadic appraisals and dyadic coping. Essentially, a dyadic appraisal involves a partner's answer to the question, "Whose stressor is this?" (Berg et al., 1998; Bodenmann, 1997; Lyons et al., 1998). According to the DCM, appraising the problem as a shared problem may be the starting point for collaborative coping and may activate congruent dyadic coping (Berg et al., 2007). For example, although the child's primary caregiver may initially appraise the child's illness as "my primary concern," repeated daily discussions with the spouse regarding stressors and a sense of sharing these stressors may be associated with changes toward a more shared view of illness ownership and a more similar view of what the illness entails. Thus, according to the DCM, the extent to which patient and spouse share a similar perspective of the event may contribute to the employment of positive forms of dyadic coping and mutual engagement (Berg & Upchurch, 2007).

Furthermore, the DCM defines dyadic coping as a developmental process (see also Bodenmann, 2005; Revenson, 2003) that occurs across time and under the influence of relevant contextual characteristics. The DCM of couples coping with chronic illness across the adult life span aims to explicate the relationship between dyadic appraisal, dyadic coping, and relationship satisfaction over time. In addition, it acknowledges that couples engaged in dyadic coping are affected by broad sociocultural factors as well as more proximal contextual factors (quality of the marital relationship and the specific demands of the chronic illness). In summary, this model outlines four major components affecting couples' ability to cope with chronic illness. These are dyadic appraisals, dyadic

coping, the temporal process of coping with chronic illness, and contextual characteristics.

In this study, the focus was on dyadic appraisals, congruent dyadic coping, parent role, and the temporal process of coping with a child's chronic illness.

Research Objective and Questions

The primary objective of the current research was to gain a better understanding of factors contributing to dyadic coping processes of parents whose child had been diagnosed with cancer. These processes are being studied as they apply to children with access to treatment at major tertiary care centers, which may limit the generalizability of the findings. While the literature on dyadic coping with adults in clinical contexts has grown in recent years (Hofmann, Sawyer, Witt, & Oh, 2010; Khoury et al., 2013), the comparable research on parents of children with cancer is limited (Burke, 2001). The research that does exist is usually exploratory, limited by small sample sizes, and lacking in methodological rigor (Burke, 2010). The author of the current study asked the following research questions:

1. To what extent does the use of dyadic coping appraisals predict and explain relationship satisfaction at the time of assessment when controlling for statistically and theoretically relevant demographic characteristics?
2. To what extent does the use of congruent dyadic coping predict and explain relationship satisfaction at the time of assessment when controlling for relevant demographic characteristics?

3. To what extent does parent role affect the relationship between the use of dyadic coping appraisals and relationship satisfaction at the time of assessment when controlling for relevant demographic characteristics?
4. How does relationship satisfaction change during four different time points of the cancer experience when controlling for relevant demographic characteristics?

The statistically and theoretically relevant demographic characteristics are specified in Chapter 3.

Potential Importance

The current work is important for a number of reasons. First, the work is significant because of the societal relevance of research on psychosocial wellbeing to support the wellbeing of parental dyads. The cancer treatment journey is a time of extreme tumult and difficulty on both psychosocial and physiological levels (Jemal, Siegel, Xu, & Ward, 2010), and research has indicated that the rates of psychological disorders in parents of children with cancer are higher than in the general population (Kazak, et al., 2005; Pai et al., 2007). Thus, a deeper understanding of individuals' experiences during this difficult stage is key to improving functioning in family and interpersonal relationships (Iobst et al., 2009; Kazak et al., 2005; Norberg, Lindblad, & Boman, 2005). Because it examined the dyadic coping mechanisms of parents whose child has cancer, the current study might help to expand the understanding of an often-ignored subset of population needing mental health services.

Second, the current study helps fill a gap in the literature. As noted above, no research on dyadic coping mechanisms of parents of children with cancer exists. The

current study combined research on dyadic coping mechanisms of couples coping with the chronic illness of one of the partners with research about the pediatric cancer treatment journey, thus addressing a notable gap in existing research. Third, the current study provides additional information about the mechanisms through which dyadic coping can impact relationship satisfaction. The research on dyadic coping and its mechanisms within the population of individuals coping with chronic illness is sparse and highly inconsistent (Milkulincer & Shaver et al., 2007). Because the study included as its basis the Systemic Transactional Model incorporated under the umbrella of the Developmental Conceptual Model, it aimed to provide much needed clarification on the means through which dyadic coping mechanisms are affected by the factors specific to the environment within which they function (Berg and Upchurch, 2007).

Summary of Methodology

In the current study secondary data collected by the National Cancer Institute funded protocol entitled “Understanding the perceived influence of childhood cancer on the parents’ marital/partner relationship” was used. This study used a cross-sectional, multi-center, exploratory design to better understand parents’ perceptions of how their child’s cancer diagnosis impacts the marital relationship/partnership. A questionnaire was designed specifically for this study and administered to consenting participants. The designers of the original study developed this tool, as no validated survey tool exploring the specific challenges of parents throughout the course of their child’s treatment was available. The self-administered questionnaire contained tools designed to assess relationship satisfaction, dyadic coping appraisals, congruent dyadic coping, the

participants' parent role, and the state of their relationship at various time points during treatment. Data were collected and compiled by NCI staff.

Following the data collection, the author made transformations to the raw data, including reversing variables when required by the instruments' directions, computing subscales by summing individual items, creating dummy variables, and conducting three types of data analyses for the two overarching research questions. First, the author conducted multiple step-wise regression analysis to determine the relationship between dyadic coping appraisals and relationship satisfaction. Second, the author calculated concordance scores in order to create a measure of congruent dyadic coping and then use those scores to conduct multiple step-wise regression analysis to determine the relationship between congruent dyadic coping and relationship satisfaction. Third, to test any potential interaction effects between dyadic coping appraisals and relationship satisfaction the author conducted a four-level step-wise multiple regression analysis. Fourth, the author carried out a moderation analysis in order to test whether parent role moderates the relationship between dyadic coping appraisals and relationship satisfaction when controlling for relevant demographic factors. Finally, the author measured changes in relationship satisfaction at four different time points by comparing mean-level differences between relationship satisfaction scores at each of the four time points. Detailed explanations of reasons for selecting each statistical method and its appropriateness for each hypothesis can be found in Chapter 3.

Definition of Key Terms

Definitions of key terms are provided in order to decrease confusion and

facilitate clarity. Relationship satisfaction is the primary outcome measure of the current study. Dyadic coping appraisals and congruent dyadic coping are the independent variables of interest. Parent role is a mediator hypothesized to impact the relationship between dyadic coping appraisals and relationship satisfaction. Finally, time points are assessments of participants' rating of their relationship at different intervals of their cancer journey.

Relationship Satisfaction

Relationship satisfaction, defined as the degree of satisfaction people experience in their intimate relationship, is the primary outcome measure of the current study. Research on dyadic coping has predominately focused on relationship satisfaction (Revenson, 2003). For example, a meta-analysis by Bodenmann and colleagues found that positive dyadic coping was significantly associated with higher relationship satisfaction (Bodenmann, 2000; Bodenmann, 2005; Bodenmann et al., 2001). Dyadic coping has been shown to be associated with relationship satisfaction by two mechanisms: first by alleviating the negative impact of stress on marriage (moderator function of dyadic coping) and second by strengthening the feeling of “wellness,” mutual trust and intimacy, and the cognitive representation of the relationship as helpful and supportive (Bodenmann, 2005).

Furthermore, relationship satisfaction is a clearly articulated and comprehensively validated experiential construct that has been extensively used as an outcome measure in studies of dyadic coping outside of the pediatric cancer literature (Manne & Badr, 2007). For this reason, relationship satisfaction served as the dependent variable in this study. For the purposes of this study relationship satisfaction

was measured via the participants' total score on the Revised Dyadic Adjustment Scale.

Although relationship satisfaction is well researched in some other groups of couples, it is not well understood in the field of pediatric psycho-oncology. Thus, determining the processes that promote and maintain each parent's satisfaction in the relationship with the other parent in the context of childhood cancer can assist efforts to identify and intervene in at-risk relationships.

Dyadic Coping Appraisals

As defined by Bodenmann (2005), dyadic coping appraisals are the perceptions of one partner of the dyadic coping efforts put forward by the other partner. As defined by the STM, dyadic coping can be expressed through activities such as empathetic understanding, helping the partner to reframe the situation, communicating a belief in the partner's capabilities, or expressing solidarity with the partner. Positive problem-focused dyadic coping activities include help with daily tasks and providing practical advice. Positive dyadic coping is also defined by support that is sincere - for example based on a partner's report that his or her partner asks questions about the partner's feelings and listens attentively. For the purposes of this study the concept of dyadic coping appraisals was defined using Bodenmann's (2005) parameters and was measured via a scale created by amalgamating two multi-element items from Gottman-17, a 15-item clinical marriage screening tool designed by Gottman et al., (1999) and included in the self-administered questionnaire. This measure has not been validated in the population of parents dealing with their child's cancer.

Nothing is known about whether dyadic coping appraisals predict relationship

satisfaction (Baider et al. 2008; Ben-Zur et al. 2001; Folkman & Moskowitz, 2004; Roesch et al. 2005; Wooten, et al., 2007) in this population. Thus, it is hoped that this study clarifies the reciprocal influence of dyadic coping appraisals used by one member of the dyad on the other member during adjustment to their child's cancer.

Congruent Dyadic Coping

First proposed by Revenson (2003), coping congruence is defined in the literature as a mathematical measure of *agreement* among partners about behavioral transactions that occur between them (Revenson, 2003) performed by comparing the patterns of responses of one member of the couple to that of his or her partner. Thus, coping congruence may be another important variable for deepening our understanding of dyadic processes (Bodenmann, 1995).

Theoretically, coping congruence is thought to be an important component of satisfying and enduring relationships (Antonucci & Israel, 1986) and possibly necessary for a behavior to be helpful in coping with a stressful event. Methodologically, coping congruence provides an additional measure of the validity of self-report based social support instruments (Vinokour, Schnur, & Caplan, 1987). For the purposes of this study the concept of dyadic coping appraisals was defined using Revenson's (2003) definition above and was measured by calculating a mathematical measure of *agreement* among partners using participants' responses on the Gottman-17 measure (1999).

While a handful of studies have examined aspects of coping congruence among couples where one partner is diagnosed with cancer (e.g. Kraemer et al., 2011), no studies to date have examined coping congruence in the population of parents coping with their child's cancer diagnosis.

Parent Role

Parent role, defined as the state of being a mother or father and typically used with reference to social and cultural differences rather than biological ones (Oxford English Dictionary, 1973), is another key construct of the current study. While defining parent role using traditional heteronormative parent role expressions can be problematic (see Laurie & Stark, 2012), the chronic illness literature has mostly focused on traditional roles, values, and role expectations, which are changing (Revenson, et al., 2016). Because of the limitations of primary study construction, this work did not explore these changes and their impact systematically. Thus, a heteronormative construction of parent role is implied.

In this study, parent role was measured using the participants' reported role of being the mother or the father of the ailing child. Researchers have shown that mothers and fathers experience and cope with the stress of having an ill child differently. For example, mothers have been shown to be more likely to share their thoughts and emotional states, whereas fathers have been shown to talk less about issues they view as a violation of the family's privacy. Studies have also shown that fathers tend to feel a need to be strong providers for their family (Raley, Bianchi, & Wang, 2012). What remains unknown (and what this study addressed) is the *extent* to which parent role differences between mothers and fathers affect dyadic coping appraisals and relationship satisfaction in this population. Such understanding could inform our comprehension of dyadic processes that occur in this population and may, in turn, improve long-term psychosocial and clinical outcomes.

Dyadic Coping Mechanisms at Different Time Points of Diagnosis

According to Revenson (2003), who echoes Lazarus' (1984) foundational stress and coping paradigm, dyadic coping is a dynamic process where one partner's stress appraisals and coping responses are constantly influencing the other partner, which in turn influences the stressed partner. Thus, in order to accommodate the reciprocal nature of this construct, partners' coping efforts must be analyzed at different time points. Specifically, changes in self-reported relationship status were examined at four different time points: before the child's cancer diagnosis (T1); after the child's cancer diagnosis (T2); at the start of treatment (T3); and at the completion of treatment (T4). While some research exists in this field (Bodenmann et al., 2007; Brown et al., 1992; Lavee, 2005; Lavee & Mey-Dan, 2003), nothing is known about ways in which couples cope together during different stages of their child's illness.

CHAPTER II: Literature Review

Cancer in children is the leading cause of death by disease past infancy in the United States (National Cancer Institute [NCI], 2014). Between the years 2004-2010, more than 80 percent of people diagnosed with leukemia/lymphoma before age 20 survived at least 5 years (NCI, 2014). Because children diagnosed with cancer are living longer, survival alone is no longer an adequate measure of the lived illness experience. It is therefore necessary to increase the focus on helping families with children who have long-term health care needs.

When a child is diagnosed with cancer, his or her parents experience various types of stress related to coping with and treating the child's disease. Although few studies on the effects of childhood cancer on parents' relationship are available (e.g., da Silva, 2010) some evidence exists that the impact of the childhood cancer experience on the parents' relationship is significant, detrimental, and frequently prevents a return to pre-cancer functioning (Chesler & Parry, 2001; da Silva, Jacob, & Nascimento, 2010; Schulz, Cowan, Cowan, & Brennan, 2004). Dyadic coping – an approach that defines stress and coping by including the role of interpersonal processes – is frequently and reliably used to understand the experience of couples coping with chronic illness (Revenson, 1993). The purpose of the current study was to gain a deeper understanding of factors contributing to the relationship satisfaction of parents whose child was diagnosed with cancer

To meet the aims of this study, the objective of this chapter was to provide a synthesis of the literature on the effect of cancer as a dyadic stressor, to explore the origin of the construct of dyadic coping and relevant theoretical frameworks in the

context of coping with chronic illness, and to provide empirical support for the constructs relevant to this effort. The author also described the existing gaps in knowledge in these domains and ways in which this study aims to fill them.

Cancer as a Dyadic Stressor

The following section reviews various aspects of childhood cancer as a dyadic stressor for parents. Included in this review is the epidemiology of pediatric cancer, the effect of pediatric cancer as a dyadic stressor, and a summary of existent research in the field of dyadic coping when one of the partners is diagnosed with cancer.

Epidemiology of Pediatric Cancer in the United States

It is estimated that in 2014, 15,780 children and adolescents will be diagnosed with cancer and 1,960 will die of the disease in the United States (Ward et al., 2014). As of 2010, there were approximately 380,000 survivors of childhood and adolescent cancer in the United States (Ward et al., 2014). The number of survivors will continue to increase, given that the incidence of childhood cancer has been rising slightly in recent decades and that survival rates overall are improving (Howlader et al., 2014). Indeed, the National Cancer Institute (NCI) reports that the overall outlook for children with cancer has improved greatly over the last half-century (2014). In 1975, just over 50 percent of people diagnosed with cancer before age 20 survived at least 5 years (Ries, et al., 1999). Between the years 2004-2010, more than 80 percent of people diagnosed with cancer before age 20 survived at least 5 years (Howlader et al., 2014).

According to NCI, the most common type of childhood cancer is acute lymphoblastic leukemia (ALL) (NCI, 2014). Currently, over 90% of children

diagnosed with ALL become long-term survivors (Hunget et al., 2012). The duration of treatment is 2-3 years, involving frequent clinic visits, unanticipated hospitalizations, and other therapy-related complications. Children suffer fatigue, nausea, prolonged absence from school, and behavioral changes as side effects of chemotherapy. As a result, families may experience many financial, psychosocial, and family-management burdens, which have not yet been well quantified (Patterson, Holm, & Gurney, 2004). These additional stressors, in combination with caring for non-ill family members and maintaining other relationships, can be extremely difficult and are rarely if ever mentioned after a pediatric cancer diagnosis is given. The specific effects of cancer as a dyadic stressor are discussed below.

Pediatric Cancer as a Dyadic Stressor

When a child is diagnosed with cancer, his or her parents experience various types of stress related to coping with and treating the child's disease. For example, parents are often faced with changing caregiver or spousal roles (Chesler & Parry, 2001; da Silva, Jacob, & Nascimento, 2010; Schulz, Cowan, Cowan, & Brennan, 2004) and new financial burdens because of time away from work in order to attend to their child's medical needs (Corden, Sloper, & Sainsbury, 2002). Parental burdens may also include disruption of social roles and changes in daily activities. Thus, a cancer diagnosis in a child may affect the family's overall functioning and the quality of the parents' relationship, as demonstrated by reports of higher levels of family conflicts and marital distress (Conger, 2010). It is worth noting that studies of childhood cancer's impact on the parents' marriage have yielded conflicting results, with both increased and decreased divorce/separation rates than the population norms

(Barbarin, 1985; Dahlquist et al., 1993; Grant et al., 2012; Lähteenmäki et al., 2004; Syse, Loge & Lyngstad, 2010; Thoma et al., 1993).

da Silva et al. (2010) conducted a recent literature search of published studies and concluded that few studies on the effects of childhood cancer on the parents' relationship were available. The studies that have been conducted were noted to be limited by absent demographic information (e.g., biological parents, step-parents, blended families), the absence of specific factors that affect marital relationships, limited fathers' and mothers' perspectives, and a lack of information about the kind of interventions parents report would be useful, helpful, feasible and/or acceptable following their child's cancer diagnosis (Lavee & May-Dan (2003), Silva et al. (2009), Kars et al. (2008)). Moreover, major weakness of all the studies conducted were the small sample sizes and poor retention rate limiting generalizability, as well as a lack of theoretical development that could be used to increase a knowledge base about parental stress, coping, and communications during a child's illness. Finally, the authors recommend that future research be conducted in order to develop and test interventions that "increase parents' potentials and strengthen relationships during the challenging trajectory of their children's cancer and treatment" (Da Silva et al., 2010).

Interestingly, while it may be assumed that a specific type of cancer or poorer prognosis is an important factor that can impact a relationship outcome, the results of this review provide no empirical data to support this. However, several recent studies have documented that once you take parents' psychological status into account, a child's objective prognosis does not predict parental distress (Litzelman, 2011; Norberg, 2012).

At present, there are no studies regarding the effects of childhood cancer on the dyadic coping processes of his or her caregivers. However, these processes are better understood in couples coping with the cancer diagnosis of one of the partners. To that end, a review of the relevant conclusions extracted from that literature follows.

Couples Coping with the Cancer Diagnosis of One of the Partners

Theoretical work in the areas of external stress and communication outside of the childhood cancer literature may provide some insight into how a couple copes with the diagnosis of cancer. There is a growing awareness that a cancer diagnosis and its subsequent treatment not only affect the patient but also the partner as external stress. Stress originating from outside the relationship (e.g., stress at the workplace, with children, or family illness) is significantly associated with poor marital quality ratings (Neff & Karney, 2004). For example, patients with cancer and their partners experience great levels of psychosocial distress (McClure, Nezu, Nezu, O’Hea, & McMahan, 2012), which is higher than the levels of psychosocial distress in the general population (Dumont et al., 2006; Hinnen et al., 2008; Nakaya et al., 2010; Zenger et al., 2010).

Unfortunately, couples facing cancer must learn to cope with the psychological, practical, and relational consequences of living with a terminal illness and the expectation of a future characterized by additional treatments, progressive physical disability, and death (Butler et al., 2003; Cella & Tross, 1986). So it is not surprising that cross-sectional and longitudinal studies show that both women with metastatic breast cancer and their partners experience clinically significant levels of depression, anxiety, and/or traumatic stress symptoms (Baider, Perez, & DeNour,

1989; Butler, Koopman, Classen, & Spiegel, 1999; Carter & Carter, 1994; Cella, Mahon, & Donovan, 1990). The psychological interdependence between patients and partners is further supported by a meta-analysis indicating a significant intercorrelation between the psychological distress of patients and partners (Hagedoorn et al., 2008). Furthermore, studies focusing on illness-related psychosocial consequences found that both patients and partners showed higher levels of uncertainty (Grootenhuis & Last, 1998; Van Dongen-Melman, et al., 1995), loneliness (Van Dongen-Melman, et al., 1995), and concerns about the ailing partners' future, health, and relapse (Leventhal-Belfer, Bakker, & Russo, 1993).

Additionally, studies of couples coping with cancer that focused on how the coping strategies used by one partner affect the other partner's adjustment to the stress of the illness are replete with evidence of coping as an interpersonal process. For example, wives' adjustment to breast cancer has been associated with their husbands' use of more problem-focused coping (Ptacek, Ptacek, & Dodge, 1994) and husbands' use of active engagement coping strategies (Kuijer et al., 2000). Cancer patients were more likely to feel distressed when their husbands used wishful thinking (Ptacek, et al., 1994) and were overprotective toward them (Kuijer et al., 2000). In a similar vein, Hannum et al. (1991) found that wives' use of optimism as a way to cope was negatively related to their husbands' distress. Ptacek et al., 1994, found that husbands reported more relationship satisfaction and better mental health when their wives reported using more problem-focused coping and less avoidance.

These studies illustrate the significant crossover associations between the coping reported by one spouse and the other spouse's adjustment outcomes. Thus a

solely individualistic view, where patient and partner experience cancer separately and deal with it in a role-related perspective (as patient and caregiver), does not appear to be an adequate means of describing the multidimensional nature of coping. Instead, cancer may be best considered as stressors concerning both partners *simultaneously*. Defining cancer as a “we-disease” (Acitelli & Badr, 2005; Kayser, Watson, & Andrade, 2007) may lend researchers additional tools for understanding the effect of an external stressor such as cancer on internal dyadic coping mechanisms. Thus, theoretical frameworks of dyadic coping are reviewed below.

Summary and Gap Analysis

Theoretical works in the areas of external stress and communication outside of the childhood cancer literature provide some insight on how couples cope with the diagnosis of cancer. However, these processes are not well understood in couples coping with the cancer diagnosis of their child. To that end, the application of a dyadic framework to the experience of parents’ coping with their child’s cancer may help fill a significant gap in the literature.

Theoretical Frameworks of Dyadic Coping

As described in greater detail below, dyadic coping is an interpersonal stress management strategy aimed at neutralizing the effect of a stressor that is external to the couple (e.g., a chronic illness, loss of a job). Both partners are involved; however, each person's involvement is confined to helping the other manage his or her own stress. The origins of dyadic coping lie in the stress and coping models that include the influence of interpersonal processes. The following section reviews the theoretical origins of dyadic coping as well as the available theories of dyadic coping.

Origins of Dyadic Coping

Prior to the 1980s the relationship between stress and coping was traditionally examined and understood from an individual perspective (Lazarus & Folkman, 1984), and it was not until the 1990s that a number of conceptual frameworks appeared that expanded on the stress and coping model by including the role of interpersonal processes. These frameworks fall under the umbrella term “dyadic coping” – the interaction between the stress signals of one partner and the coping reactions of the other (Lazarus & DeLongis, 1983; Lazarus & Folkman, 1984). Specifically, dyadic coping refers to cognitive and behavioral efforts to manage and sustain social relationships during stressful episodes (Bodenmann, 1997). In this model, “successful coping involves not only solving the problem and managing negative emotions managed by stress, but also maintaining relationships during stressful periods” (O’Brien et al., 2009, p.18). A foundational concept for the idea of dyadic coping is that maintaining relationships with others is a fundamental individual need and that the maintenance of these relationships serves to protect an individual from the effects of stressful episodes (Badr et al., 2007).

Following the recognition that major life stressors affect not only individuals but also the lives of their family members, various models that fall under the umbrella of dyadic coping have been advanced. Beginning with the Transactional Stress Theory developed by Lazarus and Folkman (1975), succeeding theoretical approaches such as relationship-focused coping (Coyne & Fiske, 1992), coping congruence (Revenson, 1994; 2003), communal coping (Lyons, Mickelson, Sullivan & Coyne, 1998), and systemic transactional coping (Bodenmann, 1995, 1997, 2005) have been posited and empirically tested to various degrees. These are reviewed below.

Transactional Stress Theory

Conceptually, the notion of dyadic coping stems from the transactional stress theory put forward by Lazarus and Folkman in 1984. In this theory, stress is viewed as a dynamic, constantly unfolding interaction between demands on a person and their individual social resources. This theory further states that an individual's experience of stress is dependent on their cognitive and affective appraisals of the event (rather than the event itself). It also states that coping is dependent on both personal resources and situational determinants. Within this paradigm, coping strategies are described as problem-focused and emotion-focused. Problem-focused strategies are conceptualized as those aimed at eliminating the source of stress. Emotion-focused strategies are defined as those directed toward managing emotional distress arising as a consequence of stress appraisals. In Lazarus' work (1984), supportive relationships were conceptualized as available resources that could aid the individual's coping by providing problem- and emotion-focused assistance. Thus, this model conceptualizes social support as coping assistance. It should also be recognized that coping is a temporary and situation-specific process (e.g. Aldwin, Yancura, & Boeninger, 2007). Consequently coping is defined by Lazarus and Folkman (1984) as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of a person" (p. 141). While the transactional stress theory goes a long way toward defining coping as a dynamic construct that is shaped by both internal and external resources, its limitation is that coping is ultimately conceptualized as an individual process that neglects the effect of relational variables. Thus, Lazarus' theory was expanded upon and the term

“dyadic coping” was developed. What follows is an abbreviated review of each of the dominant paradigms of dyadic coping as described in *The Oxford Handbook of Stress, Health, and Coping* (Revenson & DeLongis, 2011).

Communal Coping

According to Lyons et al. (1998), communal coping occurs when one or more individuals perceive a stressor as “our problem” as opposed to “my problem”. The term “communal coping” suggests that the stressor is experienced by two or more individuals. Thus communal coping is characterized by a shared appraisal of the stress and shared actions toward managing the stressor. Three key factors comprise this construct: communal coping orientation, communication about the stressor, and cooperative action. Communal coping orientation implies that at least one of the persons must hold the belief that joining together to deal with the stressor is “beneficial, necessary, and expected” (Lyons et al., 1998). Communication about the stressor is necessary because in order for communal coping to occur there must be a sharing about the details of the stressor. Language identifying the issue as “our problem” vs. “my problem” is also a key descriptor of this condition. Finally, cooperative action implies that in the process of communal coping individuals collaborate to develop strategies aimed at reducing the negative effects of the stressor. For example, family members may join together to discuss coping strategies that may reduce the burden of caring for a child living with cancer on one member of the family by spreading it more evenly among the rest of the family members.

While the communal coping paradigm makes an effort to define coping as a relational construct, it is incomplete because it does not specify the dimensions of the

stressors that it considers. Furthermore, the authors of this construct do not propose clear boundaries that differentiate communal coping from social support nor do they elaborate on situational, contextual, and individual factors that may mediate or moderate its effects (Gottlieb & Wagner, 1991). Finally, this construct has not been well validated in clinical scenarios (Coyne & Smith, 1991; Hobfoll et al., 1994). Therefore it is presented in this chapter for the purposes of contrasting existing models of communal coping with the model ultimately selected as the foundation of this investigation.

Relationship-Focused Coping

As part of the effort to reform the stress and coping paradigm, Coyne and Fiske (1992) described a new aspect of dyadic stress management: relationship-focused coping. Relationship-focused coping involves an individual's efforts to respond to the partner's needs while maintaining the integrity of the relationship in the face of an external stressor (such as a chronic illness). The key feature of relationship-focused coping is trying to maintain a balance between self and other with the goal of maintaining the integrity of the relationship above individual needs (Coyne & Fiske, 1992). This conceptualization of human coping relies on the assumption that maintaining relationships with others is a fundamental individual need. The maintenance of these relationships serves to protect an individual from the effects of stressful episodes (Badr et al., 2007).

Empathic responding has been described as the primary mechanism of relationship-focused coping. Within this theory, empathic responding is defined as the effort to understand one's partner and behaviorally respond to him or her in a

supportive and caring manner in order to diffuse the stressful situation and restore relationship functioning (O'Brien et al., 2009). While the idea of using empathy as a means of managing stress within a relationship is not new (see, e.g., Lazarus & Folkman, 1984), relationship-focused coping specifies that in empathic responding it is the person who copes who engages in empathic processes and who provides the caring gestures to the other person; it postulates empathic responding as an actual means of stress management.

Studies have supported the assertion that empathic responding can be a useful stress management tool. Studies in laboratory settings have found that marital conflict and tension is lessened when partners convey empathy during interactions (Gottman, 1998). For example, O'Brien et al., (2009) examined 82 couples living in a step-family context over the course of one week. They sought to examine how stress and coping processes unfolded over the course of a day and across seven days. Their results link greater marital satisfaction with higher empathic responding for both husbands and wives. They also found that higher levels of empathic responding were associated with lower levels of next day marital tension (O'Brien et al., 2009).

According to Coyne and Fiske (1992) empathic responding may occur across both cognitive and emotional levels – their definition of empathic responding does not differentiate between the types of empathic responses provided by the partner, rather it highlights the need to respond empathically. Furthermore, Haan (1997) identified empathy as a mode of coping that implies an attempt by one partner to understand the other partner's feelings and thoughts. Moreover, empathic coping has been documented to serve a myriad of purposes such as preventing conflicts, and

maintaining emotional intimacy (Davis, 1994; Gottman, 1998; O'Brien & DeLongis, 1997). While this model of coping highlights empathic responding as an important mediator of coping, it does not differentiate emotion-focused responses from cognitive-focused responses.

Coping Congruence

Based on person-environment fit theories, coping congruence (Revenson, 1994, 2003) emphasizes the congruence between partners' coping responses. The better the "fit" between a couple's coping style, the better they cope as a couple. Fit, or congruence, is described in two ways – similarity and complementarity. Partners who use similar coping styles mutually reinforce each other's efforts to reach a desired goal. Similar coping styles are congruent between the two partners (e.g., both partners use "approach" coping). Alternatively, complementary coping methods can be congruent or incongruent in that two partners still work together to reach the same goal; however, they may be using different strategies (e.g., approach and avoidance) to reach that goal (Revenson, 1994, 2003). As an aside, avoidance coping, is generally considered to be a maladaptive coping mechanism (Zeidner & Endler, 1995) characterized by the effort to avoid dealing with a stressor. An alternative to avoidance coping is approach coping which is defined by approaching the stressor directly via modifying or eliminating the conditions that gave rise to the problem and changing the perception of an experience in a way that neutralizes the problem (Pearlin & Schooler, 1978).

Empirically the concept of coping congruence has been widely tested in studies of chronic illness patients and their partners. Research in the area of coping congruence has found that similarity in coping may be adaptive, with strategies aimed

at minimizing a specific problem (Suls & Fletcher, 1985). However, complementary coping styles may be more effective for strategies characterized by emotional expression (Berghuis & Stanton, 2002). For example, if both partners avoid making a treatment decision and then engage in negative emotional expression, distress may be exacerbated. A review of the literature of coping congruence reveals that the jury is still out on whether similar or complementary coping is a better means of coping with external stressors. What may be important is that partners' coping modes do not cancel each other out and instead complement each other, producing a wider repertoire of coping options (Revenson, 2003). Despite unanswered questions, a focus on examining coping congruence remains a popular tool for measuring dyadic processes primarily because of its adaptability for quantitative research purposes (Revenson, 2003).

Systemic Transactional Model of Dyadic Coping

The systemic transactional theory (STM) proposed by Bodenmann (1995) poses that coping is a stress management process where partners either ignore or react to each other's stress signals to maintain a high level of stability in the relationship on the individual and dyadic level (Bodenmann, 2005). Bodenmann first introduced the term dyadic stress in 1995. Dyadic stress is theorized to trigger dyadic coping, a type of coping that takes into account that one partner's appraisal of stress and is then communicated to the other partner who perceives, interprets, and decodes these signals and responds with some form of positive or supportive coping. Depending on the perceived severity and longevity of the stressor, both partners will make an effort to maintain or restore a state of homeostasis as individuals and as a couple. Dyadic stress

and coping are best understood from a systemic perspective; each partner's stress and coping mechanisms are interrelated and in turn affect the marriage system. For example, the cancer diagnosis of the couple's child concerns both partners simultaneously, but they may experience it and cope very differently. The STM can best be understood when applied across three coping levels: the individual coping level, the dyadic coping level, and the common dyadic coping level, as described below.

The individual level refers to the degree to which both partners communicate their own stress to each other. At this level, stress appraisals are shaped by individual needs and concerns. Based on these appraisals, a stress communication process is triggered whereby each partner communicates his or her own stress to the other in hopes of receiving support and coping feedback.

The dyadic level refers to the degree to which both partners appraise and respond to each other's stress. *Supportive* responses include providing advice and practical help with daily tasks, showing empathy and concern, expressing solidarity, and helping one's partner relax and engage in positive reframing. Supportive positive elements of dyadic coping often foster feelings of trust, commitment, reliability and the perception that the relationship is a supportive resource in difficult circumstances (Bodenmann, 2001). Thus it reduces risk factors for marital dysfunction and it fosters the coping resources for both partners (Bodenmann et al., 2002). Effective types of dyadic coping not only reduce levels of emotional distress, but also enhance marital adjustment, satisfaction and well-being, and strengthen a feeling of unity between partners (Wunderer & Schneewind, 2008). *Unsupportive* responses include showing

disinterest, providing support that is accompanied by criticism, distancing, sarcasm, and minimization of the severity of the stressor. This coping is considered “dyadic” because both partners are involved; however, each person's involvement is confined to helping the other manage his or her own stress. The absence of dyadic coping often causes emotional distress, impairment in relational functioning, marital dissatisfaction and ultimately dissolution (Bolger et al., 1996).

The dyadic coping category is further subdivided into *problem-focused* and *emotion-focused dyadic coping*. Problem-focused dyadic coping activities include help with daily tasks and providing practical advice. Emotion-focused dyadic coping activities include empathetic understanding, helping the partner reframe the situation, and communicating a belief in the partner’s abilities.

The common dyadic coping level refers to the degree to which both partners work together to manage dyadic stress and restore a sense of balance in their relationship (i.e., common positive or negative dyadic coping). At this level, relational well-being is affected by the couple's ability to work as a team to manage aspects of the dyadic stressor that affect both of them. This coordinated effort also has both positive and negative forms. *Common positive dyadic coping* involves joint problem solving, coordinating everyday demands, and relaxing together, as well as mutual calming, sharing, and expressions of solidarity. *Common negative dyadic coping* involves mutual avoidance (e.g., when both partners are stressed they physically avoid each other) and withdrawal (e.g., when both partners are stressed they psychologically withdraw from the relationship).

While the exchange of social support is a central concept in most definitions of

dyadic coping (Bodenmann, 2001), this construct goes beyond it. In dyadic coping the members of the couple negotiate the emotional aspects of their shared experience or engage in collaborative coping efforts (Berg & Upchurch, 2007). Thus the concept of dyadic coping acknowledges that within a couple each partner implicitly and explicitly influences the other partner's appraisals, emotions, and behaviors. Ideally, dyadic coping involves "taking a 'we' approach whereby both persons maintain a couples identity and work together to maintain the quality of their relationship while they jointly manage their shared stress" (Bodenmann, 1993). In summary, dyadic coping is conceptualized as a stress communication process that initiates both partners' coping appraisals and responses (Bodenmann, 2005). This phenomenon is activated when one partner's appraisal of stress is communicated to his or her partner. This partner then perceives and appraises the stress signal emitted and responds with either positive or negative coping strategies in an attempt to assuage his or her partner's feelings of stress (Bodenmann, 2005).

A wealth of studies attests to the impact of dyadic coping on relationship satisfaction (e.g., Bodenmann, 2005; Bodenmann et al., 2006; Bodenmann, Charvoz, Cina, & Widmer, 2001; Bodenmann & Cina, 2006; Papp & Witt, 2010; Wunderer & Schneewind, 2008). Findings from a meta-analysis conducted by Bodenmann (2000) provide convincing evidence for the positive relationship between dyadic coping and satisfaction among both community-based and clinical populations. Notably, Bodenmann and Cina (2006) found greater use of dyadic coping strategies among couples higher in relationship satisfaction than distressed couples that reported more frequent use of non-dyadic coping strategies.

As demonstrated above, the STM has been widely used to understand the impact of dyadic coping on relationship satisfaction. It is therefore likely that this model can be used to reliably assess the impact of dyadic coping on relationship satisfaction in parents coping with a child's cancer.

While theoretically robust, this model is not without limitations. One limitation of this model is its failure to take into account the fact that the care that a child receives is a function of the demographic, social, and economic features of the family as a unit (Andersen, 1995). Furthermore, methodologically, the study of individual appraisals of dyadic functioning is based on individual self-reports, treating one member of the couple as the focal person and examining how the spouse is involved in the patient's stressful events and how this involvement relates to dyadic adjustment to a chronic stressor (e.g., cancer) (Revenson, 1993). While this is important, this method only allows researchers to examine the appraisal of coping strategies enacted by one partner, and not the dyad. Furthermore, this approach provides a one-dimensional understanding of dyadic processes rather than examining the couple as a unit, which allows for the identification of dyadic configurations of coping (e.g., in which the person views the spouse as uninvolved but the spouse reports providing support).

Therefore, a developmental-contextual model that considers dyadic coping mechanisms defined by Bodenmann within a broader context is described below.

Developmental Contextual Model of Couples Coping With Chronic Illness Across the Adult Life Span

According to the dyadic perspective, when couples face a stressor, the stress management resources of both partners are activated to maintain or restore a state of

homeostasis in the individual and within the relationship (Bodenmann, 2005).

Furthermore, as described by Bodenmann (2005), “one cannot examine one partner’s stress appraisals or coping efforts without considering the effects on the other partner and the marriage” (p. 36). Thus, implicit in Bodenmann’s definition of dyadic coping is the existence of dyadic coping appraisals. To explore the relationship between congruent dyadic coping and dyadic coping appraisals, Berg and Upchurch (2007) proposed the Developmental-Contextual Model (DCM) (Figure 1) of couples coping with chronic illness across the adult life span. It is worth noting that because the DCM exclusively considers the effects of medical stressors on the dyad, the term “patient” (or one who is under medical treatment) (Oxford English Dictionary, 1973) is used as the operative term, rather than client (terminology used by the wellness model of mental health) (Hattie, Myers, & Sweeney, 2004).

Consistent with Bodenmann (1997), the term “dyadic coping” is used in the DCM to refer to the coping strategies enacted by one partner and viewed in relation to those enacted by the other partner and vice versa (Berg & Upchurch, 2007). According to the DCM, the examination of partners’ appraisals of each other’s behaviors in relation to each other underlies the process of dyadic coping.

The DCM delineates a conceptual separation between dyadic appraisals and dyadic coping. Essentially, a dyadic appraisal involves a partner’s answer to the question, “Whose stressor is this?” (Berg et al., 1998; Bodenmann, 1997; Lyons et al., 1998). According to the DCM, appraising the problem as a shared problem may be the starting point for collaborative coping and may activate congruent dyadic coping (Berg et al., 2007). For example, although the child’s primary caregiver may initially appraise the

child's illness as "my primary concern" repeated daily discussions with the spouse regarding stressors and a sense of sharing these stressors may be associated with changes toward a more shared view of illness ownership and a more similar view of what the illness entails. Thus, according to the DCM, the extent to which patient and spouse share a similar perspective of the event may contribute to employment of positive forms of dyadic coping and mutual engagement (Berg & Upchurch, 2007).

Furthermore, the DCM defines dyadic coping as a developmental process (see also Bodenmann, 2005; Revenson, 2003) that occurs across time and under the influence of relevant contextual characteristics. According to the DCM, the relation between dyadic coping and relationship satisfaction is a transactional one in which dyadic coping affects relationship satisfaction (the focus of most empirical studies) and is in turn affected by relationship satisfaction. The originators of the DCM, Berg and Upchurch (2007), recommend focusing on measuring response concordance (Revenson, 2003) as one methodology that may more reliably assess congruent dyadic coping than separate dyadic appraisals.

As conceptualized by Revenson (1994), coping congruence is a statistical (rather than perceived) interaction between partners' coping strategies. Congruence in coping (e.g., both spouses using problem-focused coping or emotion-focused coping) has been posited to be associated with less distress than incongruence. However, results of a meta-analysis of studies of dyadic coping with chronic illness (Berg & Upchurch, 2007) indicate that adjustment may not depend on congruence alone but rather on whether the dyad is able to provide a fit between what is needed in the context and what is need at a particular temporal point in dealing with the illness (see

Badr, 2004; Giunta & Compas, 1993).

To rectify these differences, the DCM of couples coping with chronic illness across the adult life span aims to explicate the relationship between dyadic appraisal, dyadic coping, and relationship satisfaction over time. In addition, it acknowledges that couples engaged in dyadic coping are affected by broad sociocultural factors as well as more proximal contextual factors (quality of the marital relationship and the specific demands of the chronic illness). In summary, this model outlines four major components affecting couples' ability to cope with chronic illness. These are dyadic appraisals, dyadic coping, the temporal process of coping with chronic illness, and contextual characteristics.

In the current study, the focus is on dyadic appraisals, dyadic coping, participants' parent role, the temporal process of coping with a child's chronic illness, and contextual characteristics (e.g. the type of pediatric cancer). While frequently used in dyadic studies investigating coping of couples where one partner is ill, this model has never been applied to the understanding of the experience of parents of children with cancer. Thus, while this model provides a framework for the variables of interest to this study, its application to this population is novel.

Summary and Gap Analysis

The literature reviewed above described the known psychosocial impact of cancer (pediatric and adult) on dyadic coping processes. The origins of dyadic coping were reviewed and the Systemic Transactional Model was identified as the conceptual framework by which to best understand dyadic coping. Furthermore, the Developmental-Contextual Model of couples coping with chronic illness was identified as the second

model upon which the present study was based. Keystone studies in the field of dyadic coping with chronic illness that identify the marital relationship as a resource for both partners to draw from in dealing with the cancer (e.g. Manne and Badr, 2007) were presented. Dyadic coping was identified as a relational construct that refers to the process of providing and receiving support in times of stress and, thus, to the quality of the exchange between partners (Revenson, Kayser, & Bodenmann, 2005). Most importantly, the lack of research pertaining to the understanding of dyadic coping processes of parents of children with cancer was identified as a significant gap in the research. Therefore, the remainder of this chapter will focus on identifying and supporting the importance of understanding the effect of key constructs investigated in this study. The proposed constructs are elaborated upon below.

Key Constructs

As described above, a sizable literature has accumulated on a variety of forms of dyadic coping, primarily exploring dyadic processes within couples coping with an illness of one of the partners. This literature includes an array of chronic illness conditions. However, what is missing from the literature is an understanding of ways in which dyadic processes vary in couples coping with their child's cancer diagnosis. To that end, variables relevant to the examination of markers of dyadic processes in couple's coping with their child's cancer will be described.

Dyadic Coping Appraisals

As defined by Bodenmann (2005), dyadic coping appraisals are one partner's perceptions of the dyadic coping efforts put forward by the other partner. In fact, much of what is considered coping involves the appraisals of actions of the other (Lazarus, 1999).

It is noteworthy that a coping appraisal is simply an individual's appraisal of the dyadic coping efforts of his or her partner. It is not a behavior (nor a measure of an observed behavior) and should not be construed as such. The STM of dyadic coping posits a significant relationship between appraisals and dyadic coping. Specifically, it depicts appraisal processes as temporally prior to congruent dyadic coping (Bodenmann, 2005). However, still unexplored is the question of whether holding similar appraisals of the illness and specific stressors increases dyadic behaviors. For example, the mismatch between appraisal and problem-focused dyadic behaviors (e.g., a patient appraises a stressor such as dealing with finances regarding the illness as shared while the patient views the spouse as uninvolved in coping efforts) has been shown to be negatively correlated with dyadic adjustment (Berg & Upchurch, 2007). Furthermore, even less is understood about the link between emotion-focused dyadic coping appraisals and dyadic behaviors.

Bodenmann (2005) differentiates between problem-focused and emotion-focused positive dyadic coping. In the STM, positive emotion-focused dyadic coping can be expressed through activities such as empathetic understanding, helping the partner to reframe the situation, communicating a belief in the partner's capabilities, or expressing solidarity with the partner. Positive problem-focused dyadic coping activities include help with daily tasks and providing practical advice. Positive dyadic coping is also defined by support that is sincere, for example based on a partner's report that his or her partner asks questions about the partner's feelings and listens attentively.

Little consensus exists on whether dyadic coping appraisals predict relationship satisfaction. Baider et al. (2008) found that cancer patients were less distressed if they

perceived less stress from their spouses. In another study, spouses were found to be more likely to focus on problem solving while the patients reported using more emotion-focused coping, such as seeking support (Folkman & Moskowitz, 2004). A meta-analysis by Roesch et al. (2005) found that in a sample of men with prostate cancer emotion-focused dyadic coping appraisals were associated with less pain, depression, or physical and emotional limitations. Yet other studies found opposite results; in a study of patients with metastatic breast cancer, positive problem- and emotion-focused coping appraisals were positively associated with greater mood disturbance of both the patient and his or her partner (Wooten, et al., 2007). Furthermore, a study by Ben-Zur et al. (2001) found that dyadic emotion-focused coping measures were highly associated with an increase in patients' distress.

The results of this review underline the fact that it is necessary to further investigate the effect of individual partner's appraisals of dyadic coping on relationship satisfaction. In particular, no studies to date have examined the role of emotion-focused positive dyadic coping appraisals on relationship satisfaction for couples coping with their child's cancer. It is hoped that this study will clarify the reciprocal influence of dyadic coping appraisals used by one member of the dyad on the other member during adjustment to their child's cancer.

Congruent Dyadic Coping

As stipulated in the DCM, another potential construct that may affect relationship satisfaction is congruent dyadic coping (as opposed to an individual partner's appraisals of the other partner's dyadic coping), best measured by the assessment of coping congruence (Berg & Upchurch, 2007). First proposed by Revenson (2003), coping

congruence is defined in the dyadic coping literature as a mathematical measure of agreement among partners about behavioral transactions that occur between them (Revenson, 2003), performed by comparing the patterns of responses of one member of the couple to that of his or her partner. Thus, coping congruence of dyadic appraisals may be another important variable for deepening our understanding of dyadic processes (Bodenmann, 1995).

The extent to which members of a dyad have similar perceptions of their relationship status has both theoretical and methodological importance (Coriell & Cohen, 1995). Theoretically, measuring congruent dyadic coping via coping congruence is thought to be an important component of satisfying and enduring relationships (Antonucci & Israel, 1986) and possibly necessary for a behavior to be helpful in coping with a stressful event.

Methodologically, coping congruence provides an additional measure of validity of self-report based social support instruments (Vinokour, Schnur, & Caplan, 1987). Critics have contended that the use of individual self-report instruments fails to capture the dynamic nature of the coping process (e.g., Tennen, Affleck, Armeli, & Carney, 2000). Since coping involves a *change* in cognitive, emotional, and behavioral efforts to manage stress, a between-person design cannot be used to reliably measure such a process (Tennen et al., 2000). As prior research has demonstrated discrepancies in couples' ratings of each other's behavior (e.g., Christensen & Nies, 1980; Elwood & Jacobson, 1982; Jacobson & Moore, 1981), using single assessments to examine coping *between* individuals inherently misses the within-couple nature of this process.

It is worth noting that research using dyad scores is not without limitations that may affect the results of this investigation. Social science research has been plagued by

criticisms of the validity of self-report measures, e.g., their distortion by personality characteristics, memory or social perception biases (Heller, Swindle, & Dusenbury, 1986; Sarason, Sarason, & Shearin 1986). For example, participants were less likely to be honest about measures relating to sexual behavior than they were about caffeine consumption (Austin et al., 1998). Additionally, reports of past coping responses have been shown to be especially vulnerable to memory and personality distortions. A study by Ptachek et al. (1994) examined the differences in daily vs. retrospective responses of coping in two different studies. They found that individual retrospective reports were poorly correlated with daily reports with only 26%-37% of shared variance. Given the plentiful documentations of self-report bias in other fields (e.g., Hyman & Loftus, 1998) it is not surprising that the same problems are present (even magnified) in the field of dyadic coping. Thus, a better understanding of the extent of agreement between partners may help to clarify the results obtained by studies that rely on self-report measurement strategies.

Although the degree to which parents of children with cancer have congruent views of the state of their dyadic coping strategies has not been described, several studies have examined other aspects of coping congruence. For example, research that focused on couples dealing with medical stressors demonstrated moderate rates of coping congruence, specifically among couples coping with infertility (Abbey, Andrews, & Halman, 1995) and smoking cessation during pregnancy (Pollak et al., 2001). Two additional studies examined coping congruence among couples coping with cancer and found low agreement between malignant melanoma patients and their partners (Lichtenthal, Cruess, Schuchter, & Ming, 2003) but moderate agreement between spouses

dealing with a recent breast cancer diagnosis (Vinokur & Vinokur-Kaplan, 1990). Among the studies focusing on couples in the midst of a medical stressor, coping congruence was generally greater for unsupportive than supportive behaviors (Abbey et al., 1995; Lichtenthal et al., 2003; Pollak et al., 2001) – i.e., couples did a better job agreeing about things they *wished* their partner would be doing rather than what they *were* doing.

Furthermore, a growing literature has examined whether agreement of stressor appraisals among partners predicts adjustment to chronic disease. In general, greater patient-partner agreement on disease-related appraisals has been associated with better adjustment (Merz et al., 2011). Coping congruence of pain appraisals has been associated with less caregiver stress and better emotional support among osteoarthritis patients and their partners (Cremeans-Smith et al., 2003; Martire et al., 2006). However, agreement of optimistic appraisals may be conceptually different from agreement of pessimistic appraisals. In myocardial infarction (Figueiras & Weinman, 2003) and rheumatoid arthritis (Sterba et al., 2008), dyads with concordant optimistic appraisals reported better physical functioning and psychological adjustment over time, whereas dyads with concordant pessimistic appraisals did not.

Dissimilar appraisals have been associated with worse caregiver and patient coping and adjustment in individuals with chronic pain (Cano, Johansen, & Geisser, 2004) and myocardial infarction (Figueiras & Weinman, 2003). Patients with chronic fatigue syndrome and Addison's disease and their partners who have greater levels of dissimilarity also report more maladaptive outcomes (Heijmans, de Ridder, & Bensing, 1999).

Although this component of the broader investigation attempts to measure congruent dyadic appraisals via a difference score, this methodology is not without limitations. Specifically, it has been argued that calculating a difference score does not fully get at the complexities that make up a dyadic system (e.g., Cohen & Cohen, 1983; Zimmerman, 1997) for a variety of mathematical reasons discussed later in this effort. Nonetheless, it is possible that comparing the appraisals of the two members of a couple can be a “check and balance” against the validity and reliability problems of self-report data.

Dyadic Coping Appraisals vs. Congruent Dyadic Coping: A Summary

Numerous researchers in the field of dyadic coping have highlighted the importance of distinguishing between congruent support behaviors displayed by partners and how partners *perceive* support behaviors (e.g., Sarason, Pierce, & Sarason, 1990; Schwarzer & Knoll, 2007; Wethington & Kessler, 1986). To date, little research has been done on understanding both partners’ perceptions of dyadic coping and about how these interpersonal perceptions are related to each other (Berg & Upchurch, 2007). A number of studies have examined both how a partner perceives the spouse’s involvement and how the spouse perceives his or her own involvement in the context of marriage and chronic illness (Hagedoorn, Buunk, Kuijer, Wobbes, & Sanderman, 2000; Schulz & Schwarzer, 2004). However, reports from those studies are disparate. For example, research on support exchange has shown that perceived support was a stronger predictor of relationship satisfaction than the congruent support behaviors displayed by partners (e.g., Sarason, Pierce, & Sarason, 1990; Schwarzer & Knoll, 2007; Wethington & Kessler, 1986). In contrast, a longitudinal study of couples whose coping styles were

demonstrated to be more congruent (i.e., showed higher mathematical agreement) showed less of a decrease in their levels of couple satisfaction than those couples with lower mathematical agreement (Bodenmann, Pihet, & Kayser, 2006). Since no research to date has compared the perceptions of both partners with congruent support behaviors displayed by partners in the face of pediatric cancer, it is the focal point of this endeavor. To facilitate the readers' understanding of the differences and similarities between the constructs of congruent dyadic coping and dyadic coping appraisals see Table 1.

Table 1: *Differentiating Between Dyadic Coping Appraisals and Congruent Dyadic Coping*

Main Constructs	Definition	Empirical Support	Measurement Strategy	Measurement Items	Part of the Sample Used to Test the Hypothesis
Dyadic Coping Appraisals	One partner's perceptions of the dyadic coping efforts put forward by the other partner.	Baider et al., Baider et al. (2008); Folkman & Moskowitz (2004); Berg et al. (2008).	Measured by an individual's self-report on the 14-item scale used to measure dyadic coping appraisals.	14-item scale used to measure dyadic coping appraisals.	The total sample (N=184).
Congruent Dyadic Coping	A mathematical measure of agreement within a dyad about behavioral transactions that occur between them.	Revenson (2003); Berg & Upchurch (2007)	Measured by calculating the difference between partners' answers on the 14-item scale used to measure dyadic coping appraisals and changing it to an absolute value.	14-item scale used to measure dyadic coping appraisals.	Of the total sample, there were 49 couples (98 individual participants).

Parent Role

No studies of parents' coping with their child's cancer have examined the effect of parent role (mother/female parent role or father/male parent role) on partners' use of dyadic coping appraisals, congruent dyadic coping, and relationship satisfaction. Although some studies (e.g., Bennett Murphy et al., 2008; Patistea, 2005) have compared the ways that mothers and fathers cope with a child's cancer, these studies analyzed mean-level differences between mothers' and fathers' outcome scores (e.g., quality of life, relationship satisfaction) rather than associations between mothers' and fathers' use of dyadic coping appraisals, congruent dyadic coping, and relationship satisfaction. Two studies that reported analyses of couples (Dahlquist et al., 1993; Hoekstra-Weebers, Jaspers, Kamps, & Klip, 1998) found trends toward increased distress, more emotion-focused coping and greater social support seeking in mothers than in fathers. Furthermore, Golbeck (2001) found that mothers reported more frequent and more effective coping than fathers but that mothers and fathers did not differ in their ratings of overall relationship satisfaction. Hoekstra-Weebers et al. (1998), investigating differences in psychological distress and coping styles between fathers and mothers of pediatric cancer patients over a 1-year time period, found that fathers used more active-problem focusing at diagnosis and a less palliative reaction pattern at 12 months than mothers. They also found that discrepancies in coping in couples were positively related to distress in fathers at diagnosis. However, 12 months later, the more discrepant the couples were in their coping preferences the more distress the mothers indicated.

The female parent role is among the risk factors mentioned in the literature (Dongen-Melman et al., 1995) for psychiatric sequelae such as anxiety and depression.

For example, mothers have been found to react with more depression (Kupst and Schulman, 1980; Sawyer et al., 1993), more physical complaints, and more anxiety, sadness (Marky, 1982) or psychiatric difficulties (Brown et al., 1993) persisting over time following the diagnosis of their child. Furthermore, mothers reported more fear of being unable to cope, as well as more helplessness and social isolation (Cook, 1984).

The coping strategies parents use to adapt to living with a child with cancer have been shown to be mediated by their parent role. However, according to Van Nieuwenhuizen and de Ridder (1994) the literature is inconclusive concerning coping and parent role differences. For example, Verbrugge (1985) concluded that men were found to prefer more active, problem-solving and tension-reducing coping behaviors, while women preferred to use social support and emotion-focused coping styles. However, another study (Porter & Stone, 1995) on individual coping with daily stressors showed no parent role differences in coping styles. Chesler and Barbarin (1987) observed that fathers of pediatric cancer patients tended to use more denial than mothers and mothers more religion and information seeking than fathers. Larson et al. (1994) found that mothers used engaged (meaning activity oriented) coping more than fathers did.

A more recent study by Norberg, Lindblad, and Boman (2005) examined the dyadic coping strategies used by 395 parents (224 mothers and 171 fathers) of children with cancer in Sweden and found no differences in the frequency of use of dyadic coping strategies between the study group and the reference group. Neither did the use of dyadic coping strategies differ among parents of children with various types of cancer, nor among parents at various points in time after the child's cancer diagnosis.

Some studies have found that mothers and fathers experience and cope with the stress of having an ill child differently (Dahlquist, Czyzewski, & Jones, 1996; Vollrath et al., 2005). Mothers have been found to experience overall higher levels of psychological distress than fathers (Lavee, 2005). Additionally, divergent coping styles have been associated with increased marital dissatisfaction (Yeh, 2002). Despite these expressive differences, many of the fathers in Chesler and Parry's (2001) study reported interest in increasing their communication skills with both their families and with professionals regarding how they were coping with having a child with an illness. These fathers perceived many clinicians and hospital staff to be unsupportive – limiting their perception of the male spouse as being stoic and having to miss work, while regarding the mother acted as the primary caretaker for the ill child (Chesler & Parry, 2001). What remains unknown (and what this study addresses) is the *extent* to which parent role differences between mothers and fathers affect coping congruence, dyadic coping appraisals, and relationship satisfaction in this population. Such understanding could inform our comprehension of dyadic processes that occur in this population and may, in turn, improve long-term psychosocial and clinical outcomes.

Dyadic Coping Mechanisms at Different Time Points of Diagnosis

A second key aspect of the DCM is the temporal process of dyadic coping, which according to Revenson (2003) is “one of the most understudied in research” (p. 534), possibly because, in practice, research with dyads is more difficult than research with individuals, and research with dyads living with a chronic stressor (such as cancer) is even more difficult. The addition of a longitudinal component like time points can make dyadic processes especially burdensome to measure. However, it is

possible that the relationship of individual and dyadic coping appraisals with relationship satisfaction does vary across different phases of coping with cancer.

Relevant Time Points of the Childhood Cancer Experience

Little is known about dyadic coping mechanisms at different stages of childhood cancer. However, some research analyzing critical points during the childhood cancer experience exists. Past studies have shown that increased marital dissatisfaction has been reported after a child's cancer diagnosis (Dahlquist et al., 1993; Yeh, 2002), a period that includes diagnosis, treatment, and prolonged hospitalizations (Lavee & Mey-Dan, 2003). This is a time when parents may be in an acute state of anxiety related to the child's health and prognosis and normal patterns of functioning may be greatly disrupted (Chesler & Parry, 2001). Tension in the relationship from the child's cancer diagnosis can have significant long-term negative consequences for the household's functioning. One of the earliest examples of the negative effects of marital tension on the household came from a study of 80 women diagnosed with breast cancer, their 8-12 year old children, and their spouses (Lewis, 1993). Lewis (1993) found heightened marital tension negatively affected the quality of parent-child relationships, the family member's coping behavior, and the overall functioning of the household. Other studies have also identified marital dissatisfaction during the first year after a child is diagnosed with an illness, with dissatisfaction increasing when a child moves into a long-term illness (4 or more years), particularly when plagued with relapses and continued therapy (Lavee, 2005; Lavee & May-Dan, 2003). Longer periods of illness have been associated with depletion of parental resources (Lavee, 2005) and decreased social supports (Bodenmann et al., 2007;

Lavee, 2005). Relationship satisfaction has been reported to increase as the child enters a remission period (Brown et al., 1992; Lavee & Mey-Dan, 2003). Together, these studies suggest that there may be a number of critical points during the childhood cancer experience when parents and families may be at a heightened risk of maladaptive coping.

In instances where the child dies from his or her illness, the parents' relationship may suffer greatly. Parental grief has been recognized as more intense and longer lasting than other forms of grief (Kreicbergs et al., 2007). In a study conducted by Buchi et al. (2009), mothers and fathers were found to process grief differently. A majority of parents continued to have high bereavement scores 2 to 6 years after the death of their child, and mothers were found to have greater anxiety and stress than fathers. The authors concluded that marital dissatisfaction might be related to discordant grief within a couple. Other studies have similarly found that mothers and fathers who were unable to get further along in their grieving process 4 to 9 years post-loss were more likely to report higher levels of anxiety and depression and also have decreased quality of life compared with other bereaved parents (Kreicbergs, Lannen, Onelov, & Wolfe, 2007; Lannen, Wolfe, Prigerson, Onelov, & Kreicbergs, 2008).

Finally, it is important to emphasize that coping at one time point can predict changes at a later time point. In a keystone study of 108 cancer patients and their partners, Schulz and Schwarzer (2004) examined changes in relationship satisfaction following tumor surgery. Their analysis was conducted over the course of four time points. In this study they found that levels of received support were substantially related to the degree of support provided at an earlier time period. While this study

illustrates the inter-relatedness of past and future experiences, it did not measure changes in the different aspects of dyadic coping and their relationship with relationship satisfaction.

The current study addresses this gap in the existing research by examining changes in coping congruence and emotion-focused positive dyadic coping strategies before the child's cancer diagnosis (T1), after the child's cancer diagnosis (T2), at the start of treatment (T3), and at the completion of treatment (T4). While no literature exists to support the selection of these times points, they were chosen by the research team of experienced psycho-oncologists (that designed the primary study) based on their understanding of their relevance to this specific population. This effort builds on their work.

Contextual Factors

According to Revenson (2003), "A plea for including context has a long history in psychology from Lewin (1943, 1997) and Murray (1938) and Bronfenbrenner (1977, 1986)." More recent literature suggests that not enough effort has been made to examine dyadic coping within its original ecological "real-world" context (Moghaddam, Walker, & Harre, 2003), a phenomenon referred to as decontextualization (Viruel-Fuentes, 2007). Thus, a focus on contextualizing dyadic processes as a means of exposing the interconnections that influence couples' coping has been promoted by dyadic coping researchers (Badr et al., 2007).

According to the DCM, couples that cope with chronic illness are affected by contextual factors that affect dyadic processes in dealing with the constraints of the specific illness. These factors may be reflected in appraisal processes that affect the

frequency and function of dyadic coping. In the DCM, these factors include parent role differences (described in a separate section) and the quality of the marital relationship.

The quality of marital relationship is a key contextual factor considered by the DCM. The quality of the marital relationship is important because the experience of chronic illness is often associated with reduced marital satisfaction (Hafstrom & Schram, 1984). Furthermore, the literature on spousal involvement in chronic illness indicates that criticism and negative affect expressed during interaction are detrimental to working together, whereas warmth, love, and positive validation are key to improved dyadic functioning (Cutrona, 1996). Marital interaction characterized by high negativity, low warmth, and high control may characterize critical spousal involvement and poorer coping responses (Manne, Alfieri, Taylor, & Dougherty, 1999; Manne & Zautra, 1989, 1990) and be indicative of overprotectiveness (Hagedoorn, et al., 2000; Kuijer et al., 2000). Thus, the quality of the marital relationship is an important contextual factor for understanding dyadic coping processes. While a significant body of research exists investigating the relationship between the quality of the marital relationship and relationship satisfaction no literature has yet investigated the effect of these variables in the population of parents coping with their child's chronic illness.

In summary, consistent with recommendations to investigate factors that mediate the impact of childhood cancer on couples proposed by Berg and Upchurch (2007), a goal of this study was to examine the role of contextual factors (parent role and the quality of marital relationship) in dyadic coping processes within couples coping with their child's cancer diagnosis.

Relationship Satisfaction and Dyadic Coping

Although early studies of parents of children with chronic illnesses consistently reported greater marital distress and higher rates of divorce than groups of control parents (Tew, Payne, & Laurence, 1974), more recent studies have yielded conflicting results. Some studies have reported lower marital satisfaction in couples caring for a child with versus without a chronic illness (Quittner, et al., 1992; Walker, Garber, & Greene, 1993), whereas others have reported no differences or even positive effects, such as greater closeness (Barbarin, Hughes, & Chester, 1985; Holmbeck et al., 1997). These findings underscore the need for a more in-depth understanding of couples' use of dyadic coping mechanisms when living with acute or chronic stressors.

Poor coping is one of the most common contributors to relationship dissatisfaction, and a lack of effective coping skills further increases stress within a relationship and contributes to dissatisfaction (Schulz et al., 2004). Studies have found that couples often lose their coping skills during stressful times (Bodenmann & Shantinath, 2004). Couples who were not skilled in effective coping have also been found to bring negative attitudes and behaviors from external stress home and into their relationships (Schulz et al., 2004) and thus, as a result, have negative interactions with their partners. Partners who have high levels of individual chronic stress are more likely to exhibit problematic personality traits to their significant others and create additional stress in their relationships (Bodenmann, 2007).

Research on dyadic coping has predominately focused on relationship satisfaction. For example, in a meta-analysis, Bodenmann et al. (2002) collected data from 1200 couples examining dyadic coping and its role in marital functioning. The

studies ranged from observational-correlational and intervention based, to cross-sectional and longitudinal studies employing multiple methods of data collection. All 13 studies found that positive dyadic coping was significantly associated with higher relationship satisfaction (Bodenmann, 2000; Bodenmann, 2005; Bodenmann et al., 2001). Furthermore, a number of cross-sectional studies have addressed the question of how dyadic coping in couples co-varies with relationship satisfaction and well-being in community samples. In general, these studies indicate that dyadic coping or social support provided by the partner was significantly associated with higher relationship satisfaction, lower stress experience, and better psychological and physical well-being in self-report measures (e.g., Badr, 2004; Bodenmann, 2000; Burke & Weir, 1975; Dehle, Larsen, & Landers, 2001; Walen & Lachman, 2000).

Dyadic coping has been shown to be positively associated with relationship satisfaction (Bodenmann, 2005). For example, lack of effective coping has been shown to increase stress and reduce relationship satisfaction (Neff & Karney, 2004). Furthermore, in a study by Bodenmann and Shantinath (2004), couples who underwent Couples Coping Enhancement Training (CCET), an intervention designed to improve couples' stress coping strategies, reported improved relationship satisfaction and individual and dyadic coping. Couples in CCET increased their functional coping strategies and also decreased their dysfunctional coping strategies, such as blaming and rumination, in both individual and dyadic situations (Bodenmann, 2000).

Summary and Gap Analysis

The literature reviewed above has provided substantial evidence supporting the need for the current study. It has illustrated the dearth of research that explores changes

in dyadic coping interactions over time, relationship satisfaction, and relevant contextual factors. To date, no study has investigated the dyadic coping processes within this population.

CHAPTER III: Methods

Brief Problem Introduction

Parents face numerous stressors when their child is diagnosed with cancer, each of which can strain the relationship. However, relationship dynamics are often not assessed or addressed when providing health care for children with cancer. The current study used secondary data to explore parents' use of dyadic coping strategies following their child's cancer diagnosis in order to gain a deeper understanding of factors contributing to dyadic coping processes of parents whose child has been diagnosed with cancer.

Specifically, the current study examined the relationships among the following independent variables: dyadic coping appraisals, congruent dyadic coping, parent role, and their effect on relationship satisfaction. This study also aimed to understand how relationship satisfaction appears during different time points of the child's treatment. Lastly, the contribution to relationship satisfaction of various relevant demographic characteristics identified in the literature was considered. This study is a secondary data analysis of a primary study described below.

Overview of the Original Research Study

The original research study collected data for the National Institute of Cancer funded protocol #12-C-0206, a cross-sectional, multi-center, exploratory study that used a convenience sample to explore parents' perceptions of how a child's cancer diagnosis impacted the marital relationship/partnership. The study was entitled "Understanding the perceived influence of childhood cancer on the parents' marital/partner relationship."

The overall goal of the original study was to develop an effective intervention to improve communication and coping skills in the relationship of parents whose child had been diagnosed with cancer. A semi-structured self-administered questionnaire was designed specifically for this study and pre-tested.

After a parent enrolled in the study, one of the investigators contacted the participants' spouse/partner within a 2-week period of time and invited him/her to participate in the study. If he or she agreed to participate, verbal consent was obtained and they were provided the online link to complete the questionnaire. In cases when both parents agreed to participate, they completed the questionnaire in no more than a 3-month time interval from each other.

The primary purpose of the original study was to gather data to aid in the creation of a couples-based intervention, whereas the current study focused specifically on understanding dyadic coping mechanisms in parents of children with cancer. The current study attempted to fill gaps in the literature described in Chapter 2 by answering the questions described below.

Research Questions and Hypotheses

The current study proposed to examine five research questions described in this section.

Research Questions

1. To what extent did the use of dyadic coping appraisals predict and explain relationship satisfaction at the time of assessment when controlling for relevant demographic characteristics?

2. To what extent did the use of congruent dyadic coping predict and explain relationship satisfaction at the time of assessment when controlling for relevant demographic characteristics?
3. To what extent did parent role moderate the relationship between the use of dyadic coping appraisals and relationship satisfaction at the time of assessment when controlling for relevant demographic characteristics? Put another way, is the relationship between dyadic coping appraisals and relationship satisfaction stronger for mothers versus fathers?
4. How did relationship satisfaction change during four different time points of the cancer experience when controlling for relevant demographic characteristics?

Derived from the aforementioned research questions, the following hypotheses were intended to explore and fill a gap in the research.

Hypotheses

It was hypothesized that there was a direct relationship between dyadic coping appraisals, congruent dyadic coping, parent role, and relationship satisfaction.

Additionally, this study explored changes in relationship satisfaction during four different time points of the cancer experience (Figure 1).

Hypothesis One

It was predicted that dyadic coping appraisals would be positively related to relationship satisfaction when controlling for demographic factors. Specifically, a higher self-reported frequency of dyadic coping appraisals was predicted to be related to greater relationship satisfaction (Figure 1). No studies to date have examined the role of dyadic coping appraisals on relationship satisfaction for couples coping with their child's cancer.

However, studies by Roesch et al., (2005) and Baider et al., (2008) have indicated a positive correlation between dyadic appraisals and relationship satisfaction.

Hypothesis Two

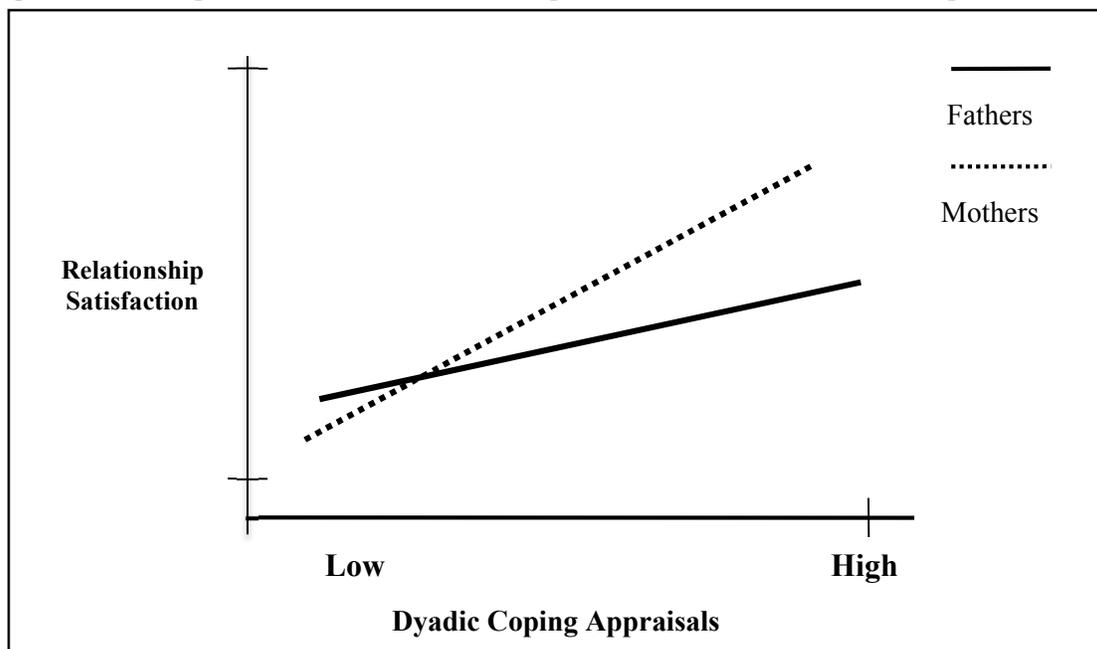
It was predicted that congruent dyadic coping would be positively related to relationship satisfaction when controlling for demographic factors. Specifically, a higher frequency of congruent dyadic coping was predicted to be related to greater relationship satisfaction (Figure 1). No studies to date have examined the role of congruent dyadic coping on relationship satisfaction for couples coping with their child's cancer. However, a handful of studies have examined aspects of congruent dyadic coping among couples where one partner is diagnosed with a chronic illness (Cremeans-Smith et al., 2003; Figueiras & Weinman, 2003; Martire et al., 2006; Merz et al., 2011; Sterba et al., 2008) and reported positive correlations between congruent dyadic coping and measures of relationship satisfaction. Thus, it was expected that in this study similar effects of congruent dyadic coping (calculated by measuring coping congruence) will be observed on relationship satisfaction for couples coping with their child's cancer

Hypothesis Three

It was predicted that the relationship between dyadic coping appraisals and relationship satisfaction would be moderated by parent role, with mothers reporting a greater use of dyadic coping appraisals and thus higher relationship satisfaction when controlling for demographic factors (Figure 1). Although no studies to date have examined the role of dyadic coping appraisals and relationship satisfaction as moderated by parent role in this population, existing literature in psycho-oncology points to the fact that mothers are more likely to share their thoughts and emotional states (Chesler &

Parry, 2001). Additionally, fathers have been noted to abide by traditional parent role roles, i.e., of being stoic, while the mother acted as the primary caretaker for the ill child (Chessler & Parry, 2001; Quittner et al., 1998; Quittner, Oipari, Regoli, Jacobsen, & Eigen, 1992). While the findings described above provide the justification for this hypothesis, the effect of parent role on dyadic coping appraisals and congruent dyadic coping in this population is not well understood.

Figure 1: Conceptual Models of Relationship of Variables with Relationship Satisfaction



Hypothesis Four

The original study included questions that assessed participants' rating of their relationship at different time points. Specifically, participants were asked to rate the quality of their marriage (using the anchors *excellent*, *good*, *fair*, *poor*) at each of the following time points: before the child's cancer diagnosis (T1), after the child's cancer diagnosis (T2), during treatment (T3), and at the completion of treatment (T4). However, the questionnaire was not given to the participants *while* they were located within that

specific time point, but retroactively. Thus, in this case the time variable is not a true linear variable. Nonetheless, it provided us with some understanding of the participants' experiences within a specific time point as remembered retroactively. To that end, an exploratory analysis was conducted conceptualizing the time variable as a descriptor of the change of relationship status at different time points. Since an exploratory analysis was conducted using this variable, no hypothesis regarding the effects of time on the relationship between dyadic coping appraisals, congruent dyadic coping, and relationship satisfaction was advanced.

Research Procedures

The following descriptions of relevant research procedures were directly taken from the original study, protocol #12-C-0206, "Understanding the perceived influence of childhood cancer on the parents' marital/partner relationship," with the approval of the primary investigator, Dr. Lori Wiener.

Recruitment Strategies

Participants were recruited through the Pediatric Oncology Branch of the National Cancer Institute, the Dana Farber Cancer Institute, and Alberta Children's Hospital. Parents who had a child diagnosed with cancer and were either enrolled on a clinical trial within the POB or returning for follow-up after completing treatment within the past 3 years were approached for participation in this study at the time of their regularly scheduled appointment, after first after having checked with the attending physician or primary protocol PI that this was an appropriate time to invite the parents to participate. All eligible participants regardless of cancer diagnoses or treatment protocol were included.

Eligibility Criteria for the Original Study

- Participants must have been in a partnership at the time the child was diagnosed with cancer.
- At least one participant must have been the biological/legal parent of the child; the partner might or might not have been a biological/legal parent. Divorced parents who separated or divorced during or after the child's treatment could participate in this study.
- The participant's child must have been between 1-21 years of age at the time of the study.
- Participants must have been 18 years of age or older at the time of the study.
- Participants must have been fluent in the English language.
- The participant's child must have been diagnosed with cancer at least 3 months prior to enrollment in this study and be currently receiving treatment or have completed treatment at age 21 or younger (without evidence of disease) within the previous 3 years.
- Participants must have verbalized willingness to discuss the impact of their child's cancer diagnosis on their relationship.
- Participants must have been able to understand and willing to sign the informed consent document.

Participants

The total sample included 184 participants. Of those, there were forty-nine couples (98 individual participants). The results from the couples' sub-sample were used

to measure the congruent dyadic coping variable. Other relevant descriptive characteristics were analyzed and reported in Chapter 4.

Original Study Design and Procedure

The overall goal of the original study was to obtain information necessary to inform the development of an effective intervention to improve communication and coping skills in the relationship of parents whose child has been diagnosed with cancer. Thus, a semi-structured self-administered questionnaire was designed specifically for this study and pre-tested. Once consensus was reached that the self-administered questionnaire was acceptable, couples were enrolled in the study.

Potential participants were approached during their routine visit. If they were interested, and signed consent, the research team scheduled a time during their visit to complete the interview (in person via paper and pencil or online. After a parent enrolled in the study, one of the investigators contacted the participants' spouse/partner within a 2-week period of time and invited him/her to participate in the study. If he or she agreed to participate, verbal consent was obtained and the participant was provided with the online link to complete the questionnaire. One of the study investigators contacted the participants every two weeks to determine whether they had any questions and to determine whether they were still interested in participating in the study. If after three calls (made at a minimum 1 week apart), the participant did not complete the questionnaire (or return the questionnaire) or did not return messages left on voice mail, they were withdrawn from the study. If both parents agreed to participate, they were required to complete the questionnaire in no more than a 3-month time interval from each other.

After participants completed the self-administered questionnaire, which included the Revised Dyadic Adjustment Scale (RDAS), those who scored one standard deviation above and below the mean on the RDAS were invited to participate in a qualitative interview. As the data collected during the qualitative portion of the protocol did not fall within the scope of this dissertation, the qualitative interview procedures were not described in this chapter. However, the psychometric portions of the self-administered questionnaire relevant to the current study are discussed below.

Measures

The section below describes a selection of the measures used in the original study.

Semi-Structured Self-Administered Questionnaire

A self-administered self-report questionnaire was designed to generate data to meet the objectives of the original study. The investigators developed this tool, as no validated survey tool exploring the specific challenges throughout the course of treatment was available. The semi-structured self-administered questionnaire took approximately 20 minutes to complete and was made available to all modern web browsers. If the participant did not have access to a computer, a pencil and paper version was provided to them. Among other items relevant to the primary study, the questionnaire required participants to provide demographic and personal history information and included questions that assessed time points since the child's diagnosis that were perceived to have been of greatest stress for each parent. The questionnaire also included items from the Revised Dyadic Adjustment Scale and the Gottman-17 measure of marital distress, described in detail below.

Measures Relevant to the Current Research Study

The section below describes a selection of the measures used in the original study and their relevance to the current study.

Revised Dyadic Adjustment Scale (RDAS)

The Revised Dyadic Adjustment Scale (RDAS) was chosen to measure relationship satisfaction because it evaluates factors within marital adjustment that are challenged when a couple is dealing with a seriously ill child. These factors include consensus (e.g., decision making), cohesion (e.g., working together, discussion) and satisfaction with the marriage (e.g., frequency of quarrels, considering separation). The prompt for the first six questions of the measure stated: “Most persons have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item on the following list.” The list included religious matters, demonstrations of affection, making decisions, sex relations, conventionality, and career decisions. Participants were asked to reply using a Likert-based scale with 6 anchors (from always agree to always disagree). The next four questions asked: “How often do you discuss or have you considered divorce, separation, or terminating your relationship; how often do you and your partner quarrel; do you ever regret that you married (or lived together); and how often do you and your mate ‘get on each other’s nerves’?” Participants were asked to reply using a Likert-based scale with 6 anchors (from all the time to never). The prompt for the last four questions of the measure stated: “How often would you say the following events occur between you and your spouse/partner?” The questions asked about engaging in outside interests together, having a stimulating exchange of ideas, working together on a project, or calmly

discussing something. Participants were asked to reply using a Likert-based scale with 6 anchors (from never to more often than once a day).

The RDAS is a 14-item revised version of the 32-item Dyadic Adjustment Scale (DAS; Spanier, 1976). The RDAS is designed to distinguish between distressed and non-distressed parents, which was important for our patient population and study goals. The RDAS has demonstrated construct validity with the DAS and the Marital Adjustment Test (MAT) proving that it is an excellent representation of the DAS with 16 fewer items and is as highly correlated with the MAT as the DAS: correlation coefficient RDAS-MAT: 0.68 ($p < .01$); DAS-MAT: 0.66 ($p < .01$); and RDAS-DAS 0.97 ($p < .01$) (Busby et al., 1995). The RDAS has good internal consistency (Cronbach's $\alpha = 0.90$) and excellent split-half reliability (Spearman-Brown split half = .95) with estimates larger than the DAS (Busby et al., 1995). In a study of 135 married patients on hemodialysis, the RDAS demonstrated adequate internal consistency overall (Assari et al., 2009). Cronbach's alpha for the current sample was .865 (See Appendix II for the full scale).

Dyadic Coping Appraisals Scale (Gottman-17)

To measure dyadic coping appraisals the designers of the semi-structured self-administered questionnaire used in the primary study adapted two multi-element variables from Gottman-17, a clinical, 15-item marriage screening tool designed by Gottman et al. (1999). This is a widely validated and extensively used measure of marital functioning and distress (Gottman, 1999) that has been used to reliably predict marriage dissolution

For the purposes of this project, a single latent construct consisting of two variables – perceived degree of emotional connectedness and stress management

appraisal – was created. This construct was based upon previously described components of stress and coping theory and research in couples (e.g., Gottman et al., 1998; Lazarus & Folkman, 1984; Bodenmann, 2005).

Emotional connectedness appraisals were assessed using the following items. The first item on the scale was the question, “Are you and your spouse/partner emotionally connected?” The participants responded to that item using a three-point Likert scale (*yes, completely; yes, somewhat; no*). The participants were then prompted to rate how problematic the use of six specific dyadic coping appraisals was for them: just simply talking to each other; staying emotionally in touch with each other; feeling taken for granted; feel like my spouse/partner knows me very well right now; partner is emotionally disengaged; and spending time together. The participants responded to these items using a three-point Likert scale (*not a problem, sometimes a problem, often a problem*). Respondents were instructed to select only one response.

Stress management appraisals were assessed using the following items. The first item on the scale was the question, “Are you and your partner handling stress effectively?” The participants responded to that item using a three-point Likert scale (*yes, completely; yes, somewhat; no*). The participants were then prompted to rate how problematic the use of six specific dyadic coping appraisals were for them: helping each other reduce daily stresses; talking about these stresses together; talking together about stress in a helpful manner; my spouse/partner listening with understanding about my stresses and worries; partner takes job or other stresses out on the children or others in our life. The participants responded to the items using a three-point Likert scale (*not a problem, sometimes a problem, often a problem*). This scale correlates strongly with

other measures of relationship functioning, such as the Dyadic Coping Inventory ($r = .72$; Ledermann et al., 2010). A total score created by combining answers to this scale was used as the final measure of dyadic coping appraisals. Cronbach's alpha for the current sample was .92.

Congruent Dyadic Coping

As described in Chapter 2, coping congruence is defined in the dyadic coping literature as a mathematical measure of agreement among partners about behavioral transactions that occur between them (Revenson, 2003), performed by comparing the patterns of responses of one member of the couple to that of his or her partner. Thus, participants' responses to the construct created from the items drawn from the Gottman-17 measure described above were used. The statistical methodology used to measure coping congruence is described in the data analyses sections of this chapter. It is worth re-stating that the Gottman-17 scale was not designed nor previously tested for its ability to measure *dyadic* reports of marriage functioning. Thus, while this effort is novel, the scale from which the values are extracted is not a measure of dyadic congruence in and of itself. Rather, it is a scale measuring individual reports of marital functioning. Nonetheless, this effort responds to the need for measuring dyadic data in way that may lend greater validity to the measurement of this construct.

Parent Role

The semi-structured self-administered questionnaire included a question about whether the participant was the mother or the father of the child with cancer. Subjects of both parent roles were determined to be eligible for this study if they met the inclusion criteria. A reasonable effort was made to include parents of both parent roles.

Time Points

Questions that assessed participants' rating of their relationship at different time points were included in the semi-structured self-administered questionnaire. Specifically, participants were asked to rate the quality of their marriage (using the anchors *excellent, good, fair, poor*) at each of the following time points: before the child's cancer diagnosis (T1), after the child's cancer diagnosis (T2), during treatment (T3), and at the completion of treatment (T4).

Demographics

Participants in the study were asked to provide demographic and personal history information. Specifically, participants were asked to report their age, level of education, marital status, age and parent role of their child with cancer, whether or not they have other children (including the number of other children), and their ethnicity as well as their partner's ethnicity. Participants were also asked to report the type of cancer that their child has. The author examined the demographic and descriptive statistics and assessed the correlations between the demographic variables and the outcome variables. The demographic characteristics that were found to be significantly correlated with the outcome variables were used as control variables in the current study and were included in the analyses.

Data Handling and Analysis

The research questions for the current study were correlative in nature, intended to determine possible relationships between variables. The current study is quantitative, and therefore data were coded and analyzed from a positivist, quantitative perspective (Guba & Lincoln, 1994).

Preliminary Data Handling

The data received from the NCI included a range of information in its raw form, and a variety of edits and transformations were required to allow for an appropriate analysis of the data collected from the self-administered questionnaire. First, the author reverse coded certain items on the supportive dyadic appraisals and behaviors. Second, the author summed the items to create a total score for each subscale representing each independent variable. Finally, the author calculated discrepancy scores to use for measuring congruent dyadic coping.

Statistical Data Analysis

This author used the Statistical Package for Social Sciences (SPSS) v. 18 (2009) to analyze the data for trends to assess distributions of the dependent and moderator variables in the study. It was assumed that some variables would demonstrate non-normal distributions, as is often the case in similar data. In considering normality and homoscedasticity, the author analyzed measures of skewness and kurtosis. Whenever issues with normalcy were discovered, the author used appropriate transformations within SPSS to make the data useable for analysis.

Various other preliminary tests were conducted. The author assessed demographics and descriptive statistics, measured Cronbach's alpha for each scale in order to determine internal consistency, and assessed the correlations between the outcome variables and relevant demographic variables.

Hypothesis Testing

The author used hierarchical multiple regressions to answer the first and second research questions and their associated sub-questions. A relationship satisfaction score

was computed based on the participants' mean responses to the RDAS items and used as a dependent variable.

Hypothesis 1 was analyzed using the Statistical Package for the Social Sciences (SPSS, Inc., 2009). It used hierarchical linear regression to consider the relationship between the continuous dyadic coping appraisals variable and relationship satisfaction computed via the RDAS. To test this hypothesis, the continuous dyadic coping appraisals variable and relationship satisfaction variables were centered by subtracting the mean score from each participant's total in order to address issues with multicollinearity. Each model also included significantly correlated covariates for participant demographics collected in the original study and described above. To test for statistically significant relationships between dyadic coping appraisals and relationship satisfaction a two-level model was created, where the first block included statistically relevant demographic covariates and the second level included the centered independent variable.

Hypothesis 2 was analyzed using the Statistical Package for the Social Sciences (SPSS, Inc., 2009). To test this hypothesis, only responses of those participants where both members of the dyad completed the questionnaire were used. Concordance was measured by analyzing discrepancies or differences between partners' perceptions of dyadic coping appraisals by calculating the difference between partners' answers and changing it to an absolute value. The resulting discrepancy scores ranged from 0 to 1, where a score of one indicated perfect agreement.

It is worth noting that within the dyadic coping literature there exists a number of methodologies for calculating compound couples' scores- couple mean scores, maximized couple scores, couple discrepancy scores, positive couple agreement scores,

and couple distance scores (Draper & Marcos, 1990). However, couple discrepancy scores, used to measure the degree of difference between mothers' and fathers' perception, are argued to provide the best methodological fit for this particularly study, which is focused on the degree of difference. In addition, absolute value difference scores only range from 0 to 1, indicating the difference between spouses' appraisal of a particular attribute (Luo & Klohnen, 2005). The traditional recommendation of family and couples' researchers for calculating couple discrepancy scores is to subtract the mothers' score from the fathers' (or vice versa) and change it to an absolute value. An analysis of the five different types of couples' scores from the ENRICH inventory – a commonly used, multidimensional marital inventory – revealed that changing the scores to an absolute value provides the most reliable and easily accessible way of calculating couple discrepancy scores (Olson, Olson-Sigg, & Larson, 2008). Therefore, this technique was used in the current study.

After the absolute value difference scores were calculated, this analysis again employed a hierarchical linear regression to test this hypothesis. To test for statistically significant relationships between congruent dyadic coping and relationship satisfaction a two-level model was created, where the first level included statistically relevant demographic covariates and the second level included the independent variable.

To test for any potential interaction effects between dyadic coping appraisals, congruent dyadic coping, and relationship satisfaction, a four-level model was created, where the first level included statistically relevant demographic covariates, the second level included the independent variable dyadic coping appraisals, the third level added the independent variable congruent dyadic coping, and the fourth level added an

interaction variable created by multiplying the two independent variables. Effect size was calculated with sr^2 for the individual interaction term and R^2 change for the model change. An effect size of around 0.1 was expected based on relevant research. Again, alpha levels of $\alpha = .05$ were used.

Hypothesis 3 was also analyzed using the Statistical Package for the Social Sciences (SPSS, Inc., 2007). This hypothesis predicted that dyadic coping appraisals would be directly related to relationship satisfaction through parent role as the moderating variable when controlling for relevant demographic factors. This was examined with an analysis of moderation. The moderator effect was examined using regression analysis procedures described by Baron and Kenny (1986). The regression model analyzed dyadic coping appraisals, parent role, and their interaction effect on the dependent variable, relationship satisfaction. As stated by Baron and Kenny, a moderator variable was considered to effect if the interaction term explained a statistically significant amount of variance of the criterion variable.

Finally, Hypothesis 4 measured changes in relationship satisfaction at four different time points was analyzed by plotting the mean relationship satisfaction scores at each of the four time points on a bar graph.

Human Subjects Review and Ethical Considerations

The section below describes the human subjects review and ethical considerations relevant to the original study and extrapolated to the current study.

Data Collection (Original Study)

Data relevant to this dissertation was included in and extracted from the self-administered questionnaire. The self-administered questionnaires that were completed on

the web were through an NCI site that complies with all applicable federal and NIH security guidelines and policies. The PI maintained a record of parent identification numbers with the parents' personally identifiable information in a locked file in the principal investigator's office, with access limited to members of the research team. All data were kept on a secure password protected and made accessible to investigators via a formal request to the NCI data management team.

Data Maintenance (Current Study)

In the current study secondary data were used, which precluded many of the possible ethical concerns associated with data collection and working with human participants. While the program's participants were parents of children with cancer, within the data there were no markers through which one could connect the data to their identities, and organizational research staff retained the key. Furthermore, the participants recruited for the study were informed about the voluntary and confidential basis of participation, and their consent to complete the self-administered questionnaires was solicited and received. The organization's staff made every effort to collect the data in a conscientious and ethical manner, collecting and maintaining participant confidentiality, receiving consent, providing support to parents if they were distressed by any of the questions, and providing options should they be inclined to not complete the survey.

For data security purposes, the de-identified database was transferred to and stored on an encrypted USB drive equipped with a keypad, with the PIN known only to this researcher. Prior to data analysis, this research was submitted for review to the George Washington University's Institutional Review Board.

CHAPTER IV: Results

Data Screening

Data were screened to ensure that the sample included only fully completed surveys. Table 2 contains sample size, means, and standard deviations for the key independent variables (dyadic coping appraisals and congruent dyadic coping) and dependent variable (RDAS score).

Table 2: *Means, Standard Deviations, and Sample Size for Outcome Variables*

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Range</i>
RDAS	184	33.18	8.96	13-66
Dyadic Coping Appraisals	184	26.67	7.43	15-44
Congruent Dyadic Coping	98	0.63	0.37	0-1

Demographics

The total sample included 184 participants, adults aged 18 years or older, who were recruited during their medical care visits at three major pediatric oncology research centers. Of those, 98 participants were in dyads (49 dyads in total).

The mean age of the participants was 40.5 (SD = 8.2); 36% of the participants were fathers; 85% of the participants self-identified as “White”. A majority of participants (66.4 %) reported “some college/college graduate” as their highest level of education. The majority of the sample (85.9%) had other children.

Furthermore, 61.4% of the participants reported that their relationship status one year before the child was diagnosed was “very good” or “excellent” and 45 percent of participants reported “very good” or “excellent” as their relationship status at the time of assessment. In addition, 41.9% of participants reported that the cancer diagnosis rendered

their relationship “challenged but still strong”, with 57.1% reporting that the status of their marriage would be “the same” if the child was not diagnosed with cancer. Finally, 76.1% of participants answered “no” when asked if they considered separation before their child became ill.

Table 3 offers a basic summary of this sample’s demographic properties. Table 4 offers other relevant descriptive characteristics of the study sample. Table 5 offers a list of the pediatric cancer types reported in this study.

Table 3: *Demographic Characteristics of Study Sample*

Item	N	Valid %	Mean	SD	Range
Age of Respondent	184	–	40.5	8.2	19-62
Respondent is Mother or Father	184				
Mother	117	63.5			
Father	67	36.5			
Relationship Status	184				
Married/Domestic Partner	177	96.3			
Separated/Divorced	6	3.2			
Widowed	1	.5			
Ethnicity	184				
Hispanic/Latino	17	9.3			
Not Hispanic/Latino	164	89.1			
Not reported	3	1.6			
Race	184				
White	157	85.3			
Black/African American	8	4.3			
American Indian or Alaskan Native	6	3.4			
Asian	5	2.7			
Other	8	4.3			
Education	184				
High School or less	31	16.8			
Some College/ College	122	66.4			
Grad/Post-grad Degree	31	16.8			
Child's Age	184		13	6.3	1-25
Child's Gender	184				
Boy	100	54.3			
Girl	84	45.7			
Other Children	184				
Yes	158	85.9			
No	26	14.1			
Time Spent Apart During Tx	184				
Never	43	23.4			
1-2 days per month	46	25.0			
1-2 weeks per month	29	15.8			
1-3 months per year	36	19.6			
More than 3 months/year	30	16.3			

Table 4: *Descriptive Characteristics of Study Sample*

Item	N	Valid %	
Relationship status one year before child was diagnosed	184		
Poor		4	2.2
Fair		19	10.3
Good		48	26.1
Very Good		72	39.1
Excellent		41	22.3
Relationship Status At Time of Response	184		
Poor		17	9.2
Fair		22	12.0
Good		62	33.7
Very Good		52	28.3
Excellent		31	16.8
Effect of Child's Cancer Diagnosis on Relationship	184		
No Change		26	14.1
Stronger		49	26.6
Challenged But Still Strong		77	41.9
Challenged and Considering Separation/Separated		32	17.4
How Marriage Would Be If Child Wasn't Diagnosed	184		
Same		105	57.1
Better		56	30.4
Worse		23	12.5
Considered Separation Before Child Became Ill	184		
Yes		44	23.9
No		140	76.1
Considered Separation Since Child Became Ill	184		
Yes		37	20.1
No		147	79.9

Table 5: *Pediatric Cancer Types*

Type of Cancer	N
Medullary Thyroid Cancer/	23
Ewing's Sarcoma	20
Neuroblastoma	10
Acute Myeloid Leukemia	9
Rhabdomyosarcoma	8
Clear Cell Sarcoma Kidney	4
Glioblastoma/Glioma	3
Juvenile pilocystic astrocytoma	3
Astrocytoma	3
Anaplastic Ependymoma	2
Diffuse Intrinsic Pontine Glioma	2
Gastrointestinal Stromal Tumor	2
Hodgkin's Lymphoma	2
Mesothelioma	2
Alveolar Soft Part Sarcoma	1
Atypical Teratoid Rhabdoid Tumor	1
Atypical Melanoma	1
Chronic Myelogenous Leukemia	1
Desmoplastic Blue Round Cell Carcinoma	1
Lymphomatoid Granulomatosis	1
Nasopharyngeal Papillary Adenocarcinoma	1
Neurofibromatosis Type 1	1
Osteosarcoma	1
Subcutaneous Pinniculitis Like T-Cell Lymphoma	1
Synovial Sarcoma	1
T-Cell Lymphoblastic Lymphoma	1
Tectal Glioma	1
Wilms' Tumor	1

Missing Data

All of the questionnaires were fully completed, thus none of the participants had missing data. Because of the nature of the research questions, hypotheses two and three were analyzed using only responses of those participants where both members of the dyad completed the questionnaire (N = 98, or 49 couples). Of those 98, none had any missing responses.

Assumptions Testing

A range of assumptions needed to be tested before data analysis could be undertaken. First, the author ascertained that there was independence of observations, both within and across groups. This study did not employ random sampling or random assignment. Furthermore, the participants were not self-selected but were selected by the study's researchers – a technique that may have improved the independence of resulting observations. To check for the effect of data dependence (in dyads) the author performed the regression analyses both with and without a variable representing the presence of dyads and did not note a change in the overall effects of the IVs on the DV. Second, the author ascertained that each variable was normally distributed and met parametric assumptions. Both the relatively large sample size and scatterplot of the dependent variables supported the notion that each variable was normally distributed. The author also tested each variable for homogeneity of variance. Using an alpha level of .05 to evaluate homogeneity assumptions, Levene's homogeneity of variance test was not statistically significant for all eight DVs at the $p = .001$ level, indicating that the assumption of homogeneity of variance was not violated. The author also ascertained that the different variables were fit for the proposed regression equations, by determining that the dependent variable was continuous and that there was a linear relationship between the independent (in this case, a mean centered and continuous variable in the regressions) and the dependent variable. The author considered the graphs of the residuals to test for homoscedasticity and that the residuals were normally distributed. Skewness and kurtosis were all considered acceptable, with skew between -2

and 2 and kurtosis between -7 and 7 (Kim, 2013). Finally, significantly correlated covariates were analyzed to make sure that they met parametric testing assumptions.

Scale Reliability

Also provided below are psychometric descriptors of each scale including measures of central tendency and spread (Table 5), as well as inter-item correlation matrices for each scale and their statistical significance (See Appendix for Tables 8 and 9). The central tendency measures considered were the mean and the median and the mode. The variability measures examined were SD and ranges. The scores for both scales approximate a normal distribution, since their mean is equal to, or almost equal to the median. Furthermore, the majority of the items had high inter-item correlations, which may suggest that these scales are well constructed.

Table 6: Measures of Central Tendency and Spread

Item	N	Mean	Median	SD	Range
RDAS	184	33.17	31.0	8.96	13-66
Dyadic Coping Appraisals	184	26.67	26.0	7.43	15-44

Pre-Test Correlations

The author tested correlations between the independent variables dyadic coping appraisals, congruent dyadic coping, and RDAS. Results indicated that only the RDAS and dyadic coping appraisals were significantly correlated. The author also tested bivariate correlation values between demographic characteristics and the dependent variable RDAS. Of the demographic and descriptive characteristics assessed in this study, two were found to be significantly correlated with the dependent variable – parents’ relationship status and race. See Tables 6 and 7 for a summary of significant

relationships. Race and relationship status were included in tests of relevant hypotheses.

Table 7: *Bivariate Correlation Values Between Dependent Variables*

	RDAS	DCA	CDC
RDAS	1.00		
DCA	.688**	1.00	
CDC	-.176	-.003	1.00

Note.

DCA = Dyadic Coping Appraisals

CDC = Congruent Dyadic Coping

RDAS = Revised Dyadic Adjustment Scale

N_{DCA} = 184, N_{CDC} = 49

** Correlation is significant at the 0.01 level

Table 8: *Bivariate Correlation Values Between Covariates and Dependent Variables*

	Parents ' Age	Mother or Father	Relationship Status	Ethnicity	Race	Child's Age	Parent Role	Other Children	Time Apart
RDAS	.08	-.08	.39**	.02	.15*	.13	-.06	.12	-.01

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

Current relationship status (2 levels: poor-fair, good-excellent) was significantly associated with the participants' score on RDAS ($F(1, 183) = 95.39, p < .001, B = .706$). The result indicated that those who rated their relationship status to be poor or fair were more likely to have lower RDAS scores than those who rated their relationship to be good, very good, or excellent.

Finally, bivariate correlation values between dyad members on the RDAS scale were assessed and are reported in Table 9.

Table 9: *Bivariate Correlation Values Between Dyad Members on the RDAS scale*

	Dyad Member 1	Dyad Member 2
Dyad Member 1	1.00	
Dyad Member 2	.713**	1.00

** Correlation is significant at the 0.01 level

Hypothesis Testing

Hypothesis One

It was predicted that dyadic coping appraisals would be positively related to relationship satisfaction when controlling for demographic factors. Specifically, a higher self-reported frequency of use of dyadic coping appraisals should be related to greater relationship satisfaction (Figure 1). To test this hypothesis, the continuous dyadic coping appraisals variable and relationship satisfaction variables were centered by subtracting the mean score from each participant's total in order to address potential issues with multicollinearity. To test for statistically significant relationships between dyadic coping appraisals and relationship satisfaction a three-level step-wise model was created. The first level included statistically relevant demographic covariates (race and relationship status), and the second level included the centered independent variable. It is important to note that out of the N= 184 responses used to test Hypothesis One, 98 were couples. Thus, issues of within-subject dependence may have been affecting the outcome of the regression equation. In order to account for within-subject effects, a variable representing whether a participant was or was not a member of a couple was created and included in

the first set of regression equations. A second set of regression equations omitting the couple variable was performed to test whether the couple variable had a significant effect on the test of this hypothesis.

Three step-wise models were created to consider this hypothesis: step 1 included the variable indicating whether or not a participant was a member of a couple; step 2 also included the control block of variables, race and relationship status; step 3 included the continuous independent variable, dyadic coping appraisals. Results of the model comparison demonstrated that step 1, containing only the couple variable, accounted for a significant amount of the overall variance in the RDAS score, $F(1, 183) = 8.57, p = .004, R^2 = .04$. Those who were a member of a couple (shared the same child ID number) indicated a higher RDAS score ($\beta = .212; p = .004$) than those who were single (single, divorced, separated, or widowed). Step 2 contained the couple variable, and also included a control block of variables found to be significantly correlated with the dependent variable, race and relationship status. These accounted for a significant amount of the overall variance in the RDAS score, $F(3, 181) = 10.41, p < .001, R^2 = .15$. Those who were married had a higher RDAS score ($\beta = .289; p = .004$). The race variable did not account for a significant change in the RDAS score ($p = .065$). Step 3 containing the couple variable, race and relationship status, and the independent variable, dyadic coping appraisals, also accounted for a significant amount of the overall variance in the RDAS score, $F(4, 180) = 70.13, p < .001, R^2 = .61$. Those who had a higher score on the dyadic coping appraisals scale were more likely to have a higher RDAS score ($\beta = .726; p < .001$).

In order to compare the results of this analysis with an analysis that did not

contain a couples variable, two step-wise models were run to consider this hypothesis: step 1 included a control block of variables found to be significantly correlated with the dependent variable, race and relationship status; step 2 also included the continuous independent variable, dyadic coping appraisals. Results of the model comparison demonstrated that step 1, containing race and relationship status, was significantly correlated with the dependent variable. These accounted for a significant amount of the overall variance in the RDAS score, $F(2, 182) = 12.22, p < .001, R^2 = .12$. Those who were married indicated a higher RDAS score ($\beta = .31; p < .001$]. The race variable did not account for a significant change in the RDAS score ($p = .065$). Step 2 containing race and relationship status and the independent variable, dyadic coping appraisals, also accounted for a significant amount of the overall variance in the RDAS score, $F(3, 181) = 92.93, p < .001, R^2 = .61$. Those who had a higher score on the dyadic coping appraisals scale were more likely to have a higher RDAS score ($\beta = .735; p < .001$). Overall, Hypothesis One was fully supported. Please see Tables 9 and 10 for the comparison of the summary of the model effects.

Table 10: *Model Summary of Regression Analysis With Couple Variable*

Outcome	Model	R	R ²	R ² change	Sig. F change	β	p
RDAS	1	.21	.05	.05	8.57*	.21	.004
	2	.38	.15	.10	10.88**	.29	< .001
	3	.78	.61	.46	212.54 **	.73	< .001

Note. Step 1 contained the couple variable; step 2 contained the couple variable, relationship status and race; step 3 contained the couple variable, relationship status and race, and the independent variable, dyadic coping appraisals.

*Significant at the .05 level (one-tailed), **significant at the .01 level (one-tailed).

Table 11: *Model Summary of Regression Analysis Without Couple Variable*

Outcome	Model	<i>R</i>	<i>R</i> ²	<i>R</i> ² change	Sig. <i>F</i> change	β	<i>p</i>
RDAS	1	.35	.12	.12	12.22**	.31	< .001
	2	.78	.61	.49	224.23**	.74	< .001

Note. Step 1 contained relationship status and race; step 2 contained relationship status and race and the independent variable, dyadic coping appraisals.

*Significant at the .05 level (one-tailed), **significant at the .01 level (one-tailed).

Hypothesis Two

It was predicted that congruent dyadic coping would be positively related to relationship satisfaction when controlling for demographic factors. Congruent dyadic coping was measured by calculating the difference between partners' answers to questions on the Dyadic Coping Appraisals Scale and changing them to an absolute value. The resulting discrepancy scores ranged from 0 to 1, with zero indicating perfect agreement. To test this hypothesis, the answers of the dyads where both partners responded to the self-administered questionnaire ($N = 98$ or 49 difference scores) were extracted from the full dataset ($N = 184$) and used for this analysis. The congruent dyadic coping variable was computed by subtracting partners' dyadic coping appraisals scores from each other (score of partner 1 – score of partner 2 = difference score) and changing the resulting scores to an absolute value. This variable as well as the relationship satisfaction variable was centered by subtracting the mean score from each participant's total in order to address issues with multicollinearity. To test for statistically significant relationships between congruent dyadic coping and relationship satisfaction a two-level step-wise model was created. The first level included statistically relevant demographic covariates (race and relationship status), and the second included the centered congruent dyadic coping variable.

Two step-wise models were run to consider this hypothesis: step 1 included a control block of variables, race and relationship status; step 2 included the continuous independent variable, congruent dyadic coping. Results of the model comparison demonstrated that step 1, containing only the congruent dyadic coping variable, did not account for a significant amount of the overall variance in the RDAS score, $F(1, 48) = .302, p = .585, R^2 = .006$. Thus, the congruent dyadic coping variable was not a significant predictor of couples' RDAS scores. Step 2 contained the congruent dyadic coping variable, and also included a control block of variables race and relationship status. These accounted for a significant amount of the overall variance in the RDAS score, $F(3, 46) = 5.220, p = .004, R^2 = .26$. Those who were married indicated a higher RDAS score ($\beta = .34; p = .02$). The race variable did not account for a significant change in the RDAS score ($p = .07$) nor did the congruent dyadic coping variable ($p = .74$).

Table 12: *Model Summary of Regression Analysis for Congruent Dyadic Coping Variable*

Outcome	Step	R	R ²	R ² change	Sig. F change	β	p
RDAS	1	.08	.01	.01	0.59	-.08	.004
	2	.51	.26	.25	.001**	.34	< .001

Note. Step 1 contained the congruent dyadic coping variable; step 2 contained the congruent dyadic coping variable, relationship status and race.

*Significant at the .05 level (one-tailed), **significant at the .01 level (one-tailed).

To test for any potential interaction effects between dyadic coping appraisals, congruent dyadic coping, and relationship satisfaction, a four-level step-wise model was created. The first step included statistically relevant demographic covariates; the second step included the independent variable dyadic coping appraisals; the third step added the independent variable congruent dyadic coping; and the fourth step added an interaction variable created by multiplying the two independent variables.

Four step-wise models were run to test for potential interaction effects: step 1 included a control block of variables race and relationship status; step 2 included the independent variable, dyadic coping appraisals; step 3 included the independent variable, congruent dyadic coping; and step 4 included an interaction variable created by multiplying the two independent variables. Results of the model comparison demonstrated that in step 1 the control block of variables (race and relationship status) was found to be significantly correlated with the dependent variable RDAS and accounted for a significant amount of the overall variance in the RDAS score, $F(2, 47) = 7.93, p < .001, R^2 = .26$. Those who were married indicated a higher RDAS score ($\beta = .343; p = .016$). The race variable did not account for a significant change in the RDAS score ($p = .063$). Step 2 containing the control block variables, race and relationship status, and the independent variable, dyadic coping appraisals, also accounted for a significant amount of the overall variance in the RDAS score, $F(3, 46) = 20.71, p < .001, R^2 = .58$. Those who had a higher score on the dyadic coping appraisals scale were more likely to have a higher RDAS score ($\beta = .612; p < .001$). Step 3 contained the control block variables, race and relationship status, the independent variable, dyadic coping appraisals, and the independent variable, congruent dyadic coping. This step did account for a significant amount of the overall variance in the RDAS score, $F(4, 45) = 16.14, p < .001, R^2 = .60$. However, the congruent dyadic coping variable did not explain a significant amount of additional variance, $\Delta F(4, 45) = 1.60, p = .213, \Delta R^2 = .02$.

Finally, step 4, containing the control block variables race and relationship status, the independent variable, dyadic coping appraisals, the independent variable, congruent dyadic coping, and the interaction variable, did account for a significant amount of the

overall variance in the RDAS score, $F(5, 44) = 13.76$, $p < .001$, $R^2 = .62$. However, the interaction term did not explain any significant additional variance, $\Delta F(5,44) = 2.31$, $p = .14$, $\Delta R^2 = .02$. In summary, Hypothesis Two was not supported.

Table 13: *Model Summary of Regression Analysis for Potential Interaction Effects Between Dyadic Coping Appraisals and Congruent Dyadic Coping*

Outcome	Step	R	R ²	R ² change	Sig. F change	β	p
RDAS	1	.51	.26	.26	7.92**	.31	< .001
	2	.76	.58	.32	34.66**	.74	< .001
	3	.77	.60	.02	1.60	-.12	.213
	4	.78	.62	.02	2.31	.16	.136

Note. Step 1 contained the control block variables, relationship status and race; step 2 contained the control block variables and the independent variable, dyadic coping appraisals; step 3 contained the control block variables, the independent dyadic coping appraisals variable, and the independent variable, congruent dyadic coping. Step 4 contained the control block variables, the independent dyadic coping appraisals variable, the independent congruent dyadic coping variable, and the interaction term created by multiplying the two independent variables.

*Significant at the .05 level (one-tailed), **significant at the .01 level (one-tailed).

Hypothesis Three

It was predicted that the relationship between dyadic coping appraisals and relationship satisfaction (as measured by RDAS) would be moderated by parent role, with participants who were female reporting a greater use of dyadic coping appraisals and thus higher relationship satisfaction when controlling for demographic factors. This hypothesis was examined with an analysis of moderation. The moderator effect was examined using hierarchical linear regression analysis procedures described by Baron and Kenny (1986). A hierarchical linear regression was conducted to examine the association between dyadic coping appraisals, parent role, and their interaction effect on the dependent variable (RDAS) while controlling for demographic information. As stated by Baron and Kenny, a moderator variable was considered in effect if the interaction term explained a statistically significant amount of variance of the criterion variable.

Results of the model comparison demonstrated that in Step 1 the control block variables, race and relationship status, were found to be significantly correlated with the dependent variable RDAS and accounted for a significant amount of the overall variance in the RDAS score, $F(2, 182) = 8.26, p < .001, R^2 = .12$. Those who were married indicated a higher RDAS score ($\beta = .309; p < .001$). The race variable did not account for a significant change in the RDAS score ($p = .056$). Step 2 containing the control block variables, race and relationship status, and the independent variable, parent role, did account for a significant amount of the overall variance in the RDAS score [$F(3,181) = 16.14, p < .001, R^2 = .60$]. However, the variable parent role did not explain a significant amount of additional variance, $\Delta F(3,181) = .43, p = .515, \Delta R^2 = .002$. Step 3 contained the control block variables, race and relationship status, the independent variable, dyadic coping appraisals, and the independent variable, parent role. This model did account for a significant amount of the overall variance in the RDAS score, $F(4, 180) = 69.33, p < .001, R^2 = .61$. Those who had a higher score on the dyadic coping appraisals scale were more likely to have a higher RDAS score ($\beta = .886; p < .001$).

Finally, Step 4 containing the control block variables, race and relationship status, the independent variable, dyadic coping appraisals, the independent variable, parent role, and the interaction variable did account for a significant amount of the overall variance in the RDAS score, $F(5, 179) = 55.35, p < .001, R^2 = .62$. However, the interaction term did not explain any significant additional variance, $\Delta F(5,179) = .369, p = .54, \Delta R^2 = .001$. Overall, Hypothesis Three was not supported.

Table 14: *Model Summary of Regression Analysis For Potential Interaction Effects Between Dyadic Coping Appraisals and Parent role*

Outcome	Step	R	R ²	R ² change	Sig. F change	β	p
RDAS	1	.35	.12	.12	12.22**	.31	< .001
	2	.35	.12	.002	.43	-.05	.515
	3	.78	.61	.49	222.11**	.74	< .001
	4	.78	.61	.001	.37	-.61	.544

Note. Step 1 contained the control block variables, relationship status and race; step 2 contained the control block variables and the independent variable, parent role; step 3 contained the control block variables, the independent variable, parent role, and the independent dyadic coping appraisals variable. Step 4 contained the control block variables, the independent variable, parent role, the independent dyadic coping appraisals variable, and the interaction term created by multiplying the two independent variables.

*Significant at the .05 level (one-tailed), **significant at the .01 level (one-tailed).

Hypothesis Four

In order to gain an understanding of the participants’ experiences within four specific time points (as reported retroactively) changes in participants’ self-reported relationship quality at four different time points were analyzed by plotting the mean relationship satisfaction scores at each of the four time points on a bar graph.

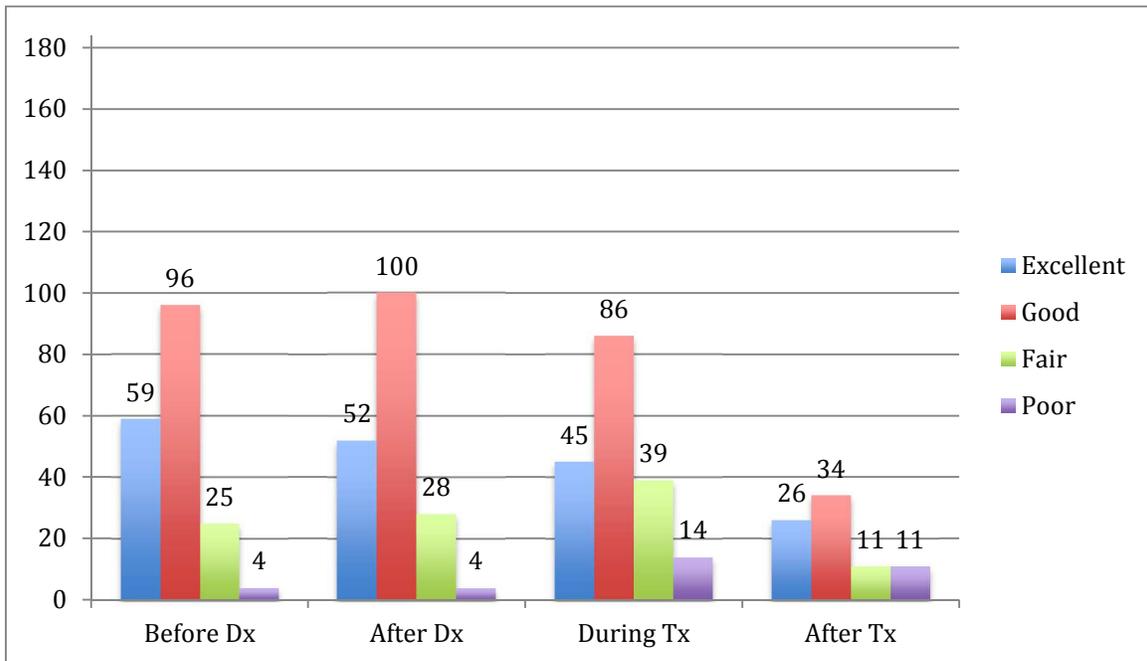
Specifically, participants were asked to rate the quality of their relationship (using the anchors *excellent, good, fair, poor*) at each of the following time points: before the child’s cancer diagnosis (T1), after the child’s cancer diagnosis (T2), during treatment (T3), and at the completion of treatment (T4). The relationship satisfaction scores were analyzed by creating a bar graph, with each of the time points represented on the x-axis. Since this was an exploratory analysis, no hypothesis regarding the effects of time on the relationship between dyadic coping appraisals, congruent dyadic coping, and relationship satisfaction was advanced. Results are displayed below.

The number of participants who rated their relationship as “excellent” appeared to decline across the course of treatment, with 59 participants at T1, 52 at T2, 45 at T3, and 26 at T4. The number of participants who rated their relationship as “good” also appeared

to decline across the course of treatment, with 96 participants at T1, 100 at T2, 86 at T3, and 34 at T4.

It is more difficult to identify a trend among those who rated their relationship as “fair”, with 25 participants at T1, 28 at T2, 29 at T3, and 11 at T4. It appears that the “fair” relationship rating increased across the first three time points and sharply decreased at T4 (after treatment). Finally, only 4 participants reported their relationship status as “poor” at T1, 4 at T2, 14 at T3 and 11 at T4. Thus, it appears that the number of participants that reported their relationship status as “poor” increased over time (Figure 4).

Figure 2: *Changes in Participants’ Self-Reported Relationship Status at Four Different Time Points*



CHAPTER V: Discussion

In this study the author sought to explore if and how dyadic coping processes affect relationship satisfaction. The author also sought to add to the relatively small body of existing research describing dyadic coping among parents of children with cancer.

What follows are interpretations and conclusions regarding the effects of dyadic coping appraisals, congruent dyadic coping, parent role, key time points during treatment, and relevant demographic variables on relationship satisfaction of couples raising a child with cancer. The final section of this chapter outlines specific limitations to the current study, and includes recommendations for both future research and practical programs.

Research Question #1: Dyadic Coping Appraisals and Relationship Satisfaction

The first hypothesis predicted that dyadic coping appraisals would be positively related to relationship satisfaction when controlling for demographic factors. Specifically, a higher self-reported frequency of dyadic coping appraisals may be related to greater relationship satisfaction. This hypothesis was fully supported. This question is made up of two main components: (a) the appraisals have to be positive (rather than negative) and (b) the appraisals have to be individual rather than interpersonal. Although existing evidence suggests that dyadic coping and relationship functioning are linked (Bodenmann, Bradbury, & Pihet, 2009; Bodenmann, Pihet, & Kayser, 2006; Wunderer & Schneewind, 2008), it is unclear whether these associations are unique to dyadic coping among partners or, rather, reflect individual efforts. Furthermore, the jury is still out on the predictive power of positive vs. negative dyadic coping appraisals and their ability to reliably predict relationship satisfaction. Both aspects of this question are hotly debated

in the dyadic coping with chronic illness literature, thus the aim of this study was to add evidence to this debate.

Earlier work has demonstrated linkages between positive coping appraisals and relationship outcomes, with positive dyadic coping strategies showing significant correlations with relationship satisfaction (Bouchard, Sabourin, Lussier, Wright, & Richer, 1998). Moreover, the association between positive dyadic coping and relationship satisfaction is supported by results from a longitudinal study indicating that couples high in marital satisfaction displayed more positive dyadic coping than couples lower in marital satisfaction (Bodenmann & Cina, 2006). Findings from clinical intervention studies also provide support for the role of positive dyadic coping in determining relationship satisfaction (Bodenmann et al., 2001). The results indicated that the positive individual dyadic coping appraisals significantly predicted and explained relationship satisfaction when controlling for race and relationship status. Participants were more likely to report higher relationship satisfaction (measured by RDAS) when their use of positive dyadic coping strategies was less problematic. Thus, the results of this study lend further support to the literature on positive associations between coping and relationship satisfaction. Specifically, it was found that those dyads who are “better” at coping are more satisfied with their relationships despite the difficulties of coping with the strains of treating pediatric cancer. It is well documented that external stress lowers the quality of marital communication by decreasing positivity and increasing verbal and nonverbal negativity (such as criticism, contempt, belligerence and withdrawal) (Bodenmann, 2007). The decline in the amount and quality of communication between partners can be detrimental to a relationship.

On the other hand, communication is one of the most common contributors to marital satisfaction and a lack of effective communication skills further increases stress within a relationship and contributes to dissatisfaction (Schulz et al., 2004). Couples often lose their communication skills during stressful times (Bodenmann & Shantinath, 2004). Those couples not skilled in effective communication often bring negative attitudes and behaviors from external stress into their relationships and thus as a result have negative interactions with their partners (Schulz et al., 2004). These data implicate communication within couples as one potential mechanism that may underpin couples' ability to cope with stress and relationship satisfaction throughout the cancer experience. Further exploration of the relationship between coping and relationship status is warranted.

Still not fully explored is the question of whether individual appraisals of dyadic coping help to minimize distress experienced by cancer diagnosis. Lazarus and Folkman's (1984) stress-appraisal model delineates the essential role of cognitive appraisals in mediating the relationship between a stressor (such as a child's serious illness) and coping behaviors. Although there are very few studies of individual appraisals in dyads facing a child's cancer, one study found that individual appraisals of dyadic coping strongly influence mothers' adjustment to the child's illness (Kershaw et al., 2008). This may underscore the notion that parents' individual appraisals of dyadic coping may be reliable predictors of relationship satisfaction (Kershaw et al., 2008). The results of this study further support the finding of this study, as individual appraisals of positive dyadic coping were demonstrated to be significantly correlated with relationship satisfaction.

In summary, a key finding of this study supports previous research indicating that individual appraisals of dyadic coping efforts predict relationship satisfaction (Baider et al. 2008; Ben-Zur et al. 2001; Folkman & Moskowitz, 2004; Roesch et al. 2005; Wooten, et al., 2007). Hence, interventions that target individual appraisals of dyadic coping more directly could be beneficial in improving or maintaining relationship satisfaction in this population of couples. This finding is novel in that it adds to the literature on couples coping with chronic illness the idea that parents coping with a child's cancer diagnosis face similar issues and draw on similar coping strategies to manage their relationships.

Research Question #2: Congruent Dyadic Coping and Relationship Satisfaction

The second hypothesis was not supported. Congruent dyadic coping (computed by subtracting partners' dyadic coping appraisals scores from each other [score of partner 1 – score of partner 2 = difference score] and changing them to an absolute value) does not significantly predict relationship satisfaction at the time of assessment when controlling for statistically and theoretically relevant demographic characteristics. There are a number of explanations for this result. One possibility is that calculating a difference score does not fully get at the complexities that make up a dyadic system (e.g., Cohen & Cohen, 1983; Zimmerman, 1997). Furthermore, it is possible that using a difference score (a couples-based measure) as the independent variable in a regression equation where the dependent variable, relationship satisfaction, is an individual measure may not have been a reliable way of testing this hypothesis (Griffin, Murray, & Gonzalez, 1999). Implied in this statement is the idea that difference scores are more than a sum of their parts. Specifically, opponents assert that difference scores capture a unique *combination* of the underlying components, rather than the individual contribution of

each component. Thus, conclusions derived from entering individual components *may or may not* translate into conclusions derived from entering difference scores. The fundamental problem here is argued to be that significant difference score correlations are uninformative because they may be composed of a number of underlying models, however, results generated from the use of difference scores do not inform us about which of a number of underlying models are true (Tisak & Smith, 1994; Griffin, Murray, & Gonzalez, 1999).

Yet another reason why this hypothesis was not supported may be that the sample size used to analyze this question (N= 98) was approximately half the size of the original sample, and then was reduced further by needing to subtract one-half of that sample from the other in order to calculate difference scores. It is a well-known statistical phenomenon that lower statistical power (the power calculation is based on sample size) has a reduced chance of detecting a significant effect (Button et al., 2013). Thus, it is reasonable to assume that the necessary attenuation of the sample size may be one reason why this hypothesis was not supported.

Finally, in this sample, most couples reported relatively high-functioning relationships and high concordance of dyadic coping, perhaps reflecting a self-selection bias in which more well-adjusted couples were receptive to enrolling in a study about marriage and coping. Thus, limited variance may have restricted this study's ability to detect relationships between congruent dyadic coping and relationship satisfaction. It is possible that the preponderance of couples with strong marriages was a factor that limited variance, and thus had an effect on the final result.

Nonetheless, since the term “dyadic coping” is conceptualized as the interplay between the stress signals of one partner and the coping reactions of the other (Bodenmann, 1995, 2005; Ledermann et al., 2010), using difference scores is one way to begin to quantify this process. For example, studies by Revenson et al. (1994) have successfully shown statistically significant relationships between congruence and coping and relationship satisfaction. Thus, although this study did not yield significant results regarding the relationship of congruent dyadic coping and relationship satisfaction, the jury is still out as to whether this is a useful method in the field of dyadic coping research. It is possible that a larger sample may have yielded results that are more in line with the current literature.

Research Question #3: Parent Role and Relationship Satisfaction

The third research question was not supported. The relationship between dyadic coping appraisals and relationship satisfaction (as measured by RDAS) was not moderated by parent role. Specifically, no significant moderation effect was found between the interaction term itself (parent role x dyadic coping appraisals) and the relationship satisfaction in either the primary or supplementary analyses. Additionally, the variable parent role did not explain a significant amount of additional variance in the dependent variable relationship satisfaction.

There are a number of explanations for this result. First, the majority of the existing literature in this area has also had difficulty determining whether differences in psychological symptoms between partners can be accounted for by gender or parent role. For example, two studies have found no gender differences in dyadic coping styles among couples coping with their children’s cancer (Keller et al., 1996; Baider et al.,

1998). Furthermore, in a study of 101 couples dealing with cancer, Baider et al. (1996) found no differences in psychological distress between patients and partners. While in yet another study Baider et al. (1997) did find higher scores of psychological distress for female rather than male patients, Fife et al. (1994) showed no gender differences within a similar sample. Thus, it appears that while there have been studies linking parent role with dyadic coping and relationship satisfaction among couples coping with chronic illness, these have not yielded conclusive results. Additionally, to date, no studies (including this one) have found significant correlations between gender or parent role and dyadic coping in the sample of parents coping with their child's cancer (Pasch & Bradbury, 1998).

A final factor that may underlie the lack of statistically significant results in this section is that traditional framings of gender/parent role do not accurately capture the complexities of gender and parental roles in the cohort of contemporary parents that make up this sample. It is possible that less traditional ways of dyadic coping are practiced by the participants of this study (e.g. a greater experience of emotional intensity by the fathers) Yet, these are not assessed by the instruments (and the traditional definition of parent role) used in this study. Therefore, further analyses need to be conducted to more reliably assess the role of parent role in dyadic coping processes.

Research Question #4: Changes in Participants' Self-Reported Relationship Status at Four Different Time Points

An analysis of changes in participants' self-reported relationship quality at four different time points was conducted. Mean relationship satisfaction scores were plotted at each of the four time points on a bar graph and creating a trend line. Results revealed

that the number of participants who rated their relationship as “excellent” and “good” appeared to decline across the course of treatment. Results also revealed that the number of participants who reported their relationship status as “poor” increased over time (Figure 2).

Existing research on changes in couples’ relationship status reveals that a child’s cancer diagnosis can have a significant long-term negative impact on relational functioning. Early evidence of the negative effects of marital tension on the household came from a study of 80 women diagnosed with breast cancer, their 8-12 year old children, and spouses, which found that heightened marital tension negatively affected the quality of parent-child relationships, the family member’s coping behavior and the overall functioning of the household (Lewis, 1993). Other studies have also identified marital dissatisfaction during the first year after a child is diagnosed with an illness with dissatisfaction increasing when a child moves into a long-term illness (4 or more years), particularly when plagued with relapses and continued therapy (Lavee, 2005; Lavee & May-Dan, 2003). Longer periods of illness have also been associated with depletion of parental resources (Lavee, 2005), and weaker social supports (Bodenmann et al., 2007; Lavee, 2005). Interestingly, the results of the current study showed that in this particular sample, ratings of marital satisfaction also declined over time.

Furthermore, a review of existing literature found seven quantitative studies, five cross-sectional and two longitudinal, that reported on marital adjustment in relation to psychological distress or caregiver strain (Clarke et al., 2009; Long & Marsland, 2011). The two longitudinal studies reported an increase in marital dissatisfaction up to 2 years after diagnosis (and no gender differences) (Dahlquist, Czyzewski, Jones, 1996;

Hoekstra-Weebers et al., 1998). As described in the introduction and supported by the literature, one might expect the presence of cancer in children to have a lasting negative impact on their parents' marriage. This finding was confirmed and illustrates the importance of understanding the changes in marital satisfaction over time (as called for by the Developmental Conceptual Model). Future studies should continue to focus on using other types of longitudinal designs in order to further understand how these variables change over time. For example, researchers may consider designing a true longitudinal study where measurements of key variables such as relationship satisfaction and dyadic coping are taken at each relevant time point and analyzed for trends.

Correlated Demographic Variables

Of the demographic and descriptive characteristics assessed in this study, two were found to be significantly correlated with the dependent variable relationship satisfaction. Specifically, the results indicated that married parents who self-described as White were more likely to report higher levels of relationship satisfaction. A key reason for the significance of this finding is that 85.3% of the sample reported their race as White. Additionally, 96.3% of participants from this sample reported their marital status as married. Existing literature supports these findings. A study by the National Cancer Policy Board demonstrated that Caucasian, high income, insured patients are more likely to receive cancer care (National Cancer Policy Board, 1999). This statistic may also be a factor in understanding the reason for the final composition of the sample – rather than being a factor of a skewed recruitment strategy the final sample composition reflects the population more likely to seek specialized pediatric oncology services.

It is also worth noting that outside of the pediatric oncology literature that self-identifying as “white” and being married have been repeatedly shown to predict greater relationship satisfaction. For example, a meta-analysis of 19 studies that examined changes in relationship satisfaction in a sample of couples transitioning to parenthood found that while there exist significant, small, declines in relationship satisfaction for both men and women, this is especially true for participants who do not self-identify as White or married (Mitnick, Heyman, & Slep, 2009). The authors hypothesized that this may be attributed to a lack of resources available to these dyads.

Additionally, the predominant cancer types in this study (Medullary Thyroid Cancer (MTC) (N=23/103) and Ewing’s Sarcoma (N=20/103) were cancers with high 5-year survival rates. For example, the overall 5-year survival rates for MTC is around 83 percent and the 10-year survival rate is 75 percent (Thacker, Temple, & Scully, 2005). Additionally, 5-year survival for Ewing’s sarcoma is 70 to 80 percent when treated with chemotherapy (Barbet et al., 2005). This may imply that the participants’ experience with treatment was longer term and thus their dyadic coping experiences may have been different than those of participants dealing with shorter term pediatric cancers. While existing literatures states that once you take parents’ psychological status into account a child’s objective prognosis does not predict parental distress (Litzelman, 2011; Norberg, 2012), it may nonetheless be worth continued exploration by future researchers.

A final point on sample composition, the assessment of bivariate correlation values between dyad members on the RDAS scale revealed that the total RDAS scores of members of dyads were significantly correlated with each other. This is likely another characteristic of this high-functioning sample where 78.8% of the sample rated their

current relationship status to be good, very good, or excellent. These findings are important in that they describe a specific sub-set of the population of parents seeking treatment in tertiary care centers – partners that have high functioning relationships, self – identify as White, and college educated. While this sample is not representative of the larger population of parents of children with cancer, it is the first step in understanding dyadic coping mechanisms in this area of research.

A growing body of literature indicates that barriers to care, such as lack of education and health insurance, interfere with timely access to diagnosis and treatment once a screening abnormality has been identified (Lannin, Mathews, Mitchell, Swanson, Swanson, Edwards, et al., 1998; Roetzheim, et al. 1999). It is hoped that this study provides additional empirical support for the need to create programs that reduce the barriers to care for underserved populations. It is also reasonable to conclude that interventions to promote relationship satisfaction among non-white, unmarried parents of children with cancer are indicated.

Limitations

The current study had a range of limitations, most of which were connected to the practical difficulties associated with sampling the experience of this vulnerable population, such as selection bias and lack of follow-up over time. There also existed issues related to data collection, such as the use of self-report surveys and the use of a convenience sample.

Current Study Limitations

The current study had a range of strengths but also limitations. Secondary data were analyzed from a cross-sectional, multi-center, exploratory study utilizing a

convenience sample. It employed commonly used statistical analyses, such as hierarchical linear regression, but also novel ones such as the calculation of couple discrepancy scores. The current research study was also limited by the methodological issues of the original study, such as a lack of random selection, the use of a convenience sample, a lack of true longitudinal research design, and a lack of previously validated measures that assess dyadic coping appraisals and behaviors in this specific population. Additionally, limitations of the current research study include the use of statistical analyses based on ordinary least squares methods of statistical estimation. While these were used for practical reasons, various researchers have noted that the use of maximum likelihood estimation offers more advantages, such as accounting for the errors inherent in the measurement of variables, as compared to the use of hierarchical linear regressions. Furthermore, researchers have argued that the use of couple discrepancy scores in regression analyses is plagued by a set of errors that may affect findings (Tisak & Smith, 1994) and may best be addressed by multivariate statistical techniques (Griffin, Murray, & Gonzalez, 1999).

This research study was also limited by the fact that two different sample sizes were used to test the different hypotheses. Hypothesis two, related to couples' scores, was tested using a significantly smaller sample size than the rest of the hypotheses. The drastically reduced sample size may have affected the findings of this study. It also bears repeating that the main sample contained a subset of couples, which may have affected the independence assumption necessary to draw conclusions from this dataset. While care was taken to statistically account for dyadic dependence, this is nonetheless a limitation worth mentioning.

Another subset of limitations is related to the demographic homogeneity of this sample. The majority of this sample was married, self-identified as White, and was mostly college educated. Moreover, while the original study had a subset of participants that were from other European countries, this study did not analyze differences between international v. domestic participants. However, pediatric cancers are disproportionately prevalent among children/families of color and those of Hispanic origin (Bona et al., 2014). Furthermore, pediatric cancer trends vary internationally (Jemal et al., 2010). For example, Hispanic children were reported to have a higher incidence of acute lymphocytic Leukemia (ALL) than non-Hispanic white children (Siegel, Miller, & Jemal, 2015). Thus, while the impact of pediatric cancer on families is significant at all ethnicities and geographic locales, families from a non-dominant culture suffer disproportionate losses (American Cancer Society, 2009). Therefore, ongoing research into the dyadic coping processes of minority and international populations is warranted.

In summary, although this study contributes to the growing literature on couples coping with their child's cancer, it has several limitations. Recruitment of a larger and more diverse sample is needed - despite efforts at recruitment, the sample was predominantly Caucasian and all couples were heterosexual, limiting generalizability. As already noted, the preponderance of couples with strong marriages limited variance as well. All data were cross-sectional, precluding any conclusions about cause-effect relationships. Finally, couples' adjustment to their child's cancer must be followed in a true longitudinal fashion in order to further understand the relationship between appraisals, concordance, parent role, and relationship satisfaction.

Future Research

In the current study the association between dyadic coping appraisals, congruent dyadic coping, parent role, and relationship satisfaction were examined. Participants' relationship satisfaction at different time points of the child's cancer treatment was also examined. The findings illustrate the importance of dyadic coping appraisals in predicting relationship satisfaction. Further studies are needed to examine the importance of congruent dyadic coping and parent role in relationship satisfaction among parents of children with cancer. This research could further benefit from additional studies that investigate changes in dyadic mechanisms over time and their effect on relationship satisfaction. Additionally, future researchers may consider including an observational research component for assessing actual and perceived dyadic transactions between partners to determine whether the current results can be replicated, as appraisals do not always predict behaviors (Sutton, 1998). Finally, the addition of a qualitative component (as intended by the original study) in order to better understand parents' appraisals of marital stress and growth may be useful.

Additional research should also continue to explore the use of couple discrepancy scores in quantifying dyadic adjustment. In the current study, these did not predict relationship satisfaction, however, this result may have been affected by a variety of statistical considerations. Yet another point of interest that may expand the findings of this study is a further exploration of coping patterns between each couple. To that end, an analysis of correlations between RDAS scores between each of the couples may be warranted. Thus, future research should be directed towards establishing a better understanding of congruent dyadic coping on dyadic coping processes with larger couple

samples over a time period calculated by marker events during cancer diagnosis and treatment.

Future researchers may also want to consider exploring dyadic coping mechanisms within a more socioeconomically diverse sample and at specifically delineated time periods in order to gain a better and more generalizable understanding of factors that affect dyadic coping, with additional attention to parent role and its effect on coping efforts.

Looking beyond the scope of this study, suggestions for future research also include an examination of dyadic coping mechanisms at the community level – specifically how support for the dyad on the community-level (e.g. grandparents' contributions to child care) may influence dyadic outcomes. Additionally, there exists a lack of research in psycho-oncology that looks at stress and coping during bereavement (Institute of Medicine Committee on Psychosocial Services to Cancer Patients/Families in a Community Setting, 2008). Thus, research that includes participants coping with end-of-life issues as part of the treatment trajectory is recommended.

Implications for Clinicians

There is a critical gap in the field of pediatric psycho-oncology pertaining to providing interventions to parents that address ways to increase communication, enhance couples' coping, and reduce distress in their relationships. Learning from couples stressed by their child's cancer treatment allowed this author to explore how dyadic mechanisms unfold across time.

Based on the results of this investigation, clinicians may consider individuals' reports of appraisals of positive dyadic coping strategies as reliable predictors of relationship satisfaction as measured by the RDAS. Clinicians must also be mindful of the relationship between dyadic adjustment and relationship satisfaction at different time points during treatment. The current study illustrated that as time goes on, the number of participants who rate their relationship status as "poor" increases while the number of participants who rate their relationship status as "good" decreases. While the results of this study cannot be used to make inferences about specific changes in dyadic mechanisms over time, they do point to the fact that relationship status fluctuates at different time points during treatment. Thus, a focus on changes of relationship satisfaction ratings across the cancer journey is strongly recommended.

Additionally, while the current study did not show a significant relationship between parent role and relationship satisfaction, clinicians may nonetheless want to consider the effect of gender on adjustment to a child's cancer diagnosis, as other studies have shown that mothers and fathers have been shown to communicate and cope differently with the stress of having an ill child (Chesler & Parry, 2001; Lavee, 2005; Yeh, 2002). It is also recommended that clinicians remain mindful of the shifting definition of parent role/gender.

Psychological studies have illustrated the success of the Couples Coping and Enhancement Training (CCET) model's positive impact on interpersonal communication, dyadic coping and relationship quality (Bodenmann et al., 2001; Bodenmann et al., 2004; Ledermann, Bodenmann, & Cina, 2007). Designed by Bodenmann et al. (2004), this evidence-based intervention targets discordant coping mechanisms that hinder

communication between parents during times of high stress, which in turn may lead to increased stress and decreased relationship satisfaction. Support in the development of effective dyadic coping strategies and improved communication has been found to be an important component of couples counseling, which in turn serves to maintain the equilibrium of a family unit (Bodenmann & Shantinath, 2004). These areas are addressed in an evidence based cognitive-behavioral intervention program originally developed for couples experiencing low marital satisfaction and high marital distress, termed “Couples Coping Enhancement Training (CCET; Bodenmann & Shantinath, 2004). The CCET program improves dyadic coping by helping partners develop the ability to clearly communicate stress to each other and to offer dyadic coping based on the partner’s feedback (Bodenmann, 2007). Couples who completed the CCET program report improved marital satisfaction and individual and dyadic coping (Bodenmann & Shantinath, 2004). The authors found 95% of the couples who were trained in CCET rated the training from moderately good, to very good (Bodenmann & Shantinath, 2004). Although effective in other groups of couples, whether this intervention would be useful for parents whose child has cancer is unknown. Consequently, although the CCET intervention exists as an evidence-based intervention for couples without a child with cancer, at present we lack key pieces of information in order to be able to successfully adapt this to the case of parenting a child with cancer. In order to deliver the CCET intervention components to parents at the right time and in a manner which is most useful, it is necessary to continue understanding how factors such as stress, coping, and communication appear in this population.

Lastly, burnout is a significant problem among healthcare professionals working in the pediatric oncology settings (Rasmussen et al., 2015). According to Girgis, Hansen, & Goldstein (2009) this work can be meaningful and provide a high level of career satisfaction, however, factors such as heavy workload and exposure to suffering have been shown to increase risk of burnout. Thus, continued attention to research and care of the medical professionals working with this population is recommended.

Conclusions

In the current study it was found that dyadic coping appraisals can be used to predict relationship satisfaction in parents of children with cancer. This result is consistent with existing literature on dyadic coping with chronic illness – specifically demonstrating its ability to decrease participants’ levels of stress (e.g., Bodenmann et al., 2010) and improve their quality of life over time. The results did not indicate a statistically significant relationship between congruent dyadic coping, parent role, and relationship satisfaction. Thus, no strong conclusions can be drawn about the possibility of using couples’ scores to measure relationship satisfaction. In the current study, changes in relationship satisfaction over time and evidence for a decrease in relationship satisfaction toward the end of the cancer treatment journey was explored and presented. Future researchers should seek to address the limitations of this study and continue to explore the unique needs of this population within a more socioeconomically diverse sample. Ideally, the results of this study will contribute to the development of a couples’ coping program for parents whose child has or had childhood cancer.

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