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Parent Coping and Sibling Relationship Quality in Pediatric Cancer: The Moderating Effects of Parental Emotion Socialization Beliefs

Esther Davila
University of South Florida

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by

Esther Davila

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Major Professor: Vicky Phares, Ph.D.
Melissa Faith, Ph.D.
Michael Brannick, Ph.D.
Judith Bryant, Ph.D.

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Dedication

I would like to dedicate this thesis to Adrian Carlin, Edner Guadarrama, and their respective families. Their experiences with pediatric cancer exposed to me the emotional and practical difficulties, and sometimes tragedies, experienced by patients and families, and inspired me to pursue a career in helping families like their own. May you continue resting in peace with the Lord in heaven, Adrian and Edner.

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Abstract

This study examined relations between parent coping and parent-, patient-, and sibling-reported perceptions of sibling relationship quality (SRQ), as well as potential moderating effects of parent emotion socialization (ES) beliefs in the context of pediatric oncology. Questionnaires were completed by 155 parents of pediatric oncology patients, 103 pediatric oncology patients, and 104 healthy siblings of pediatric oncology patients. Parent coping and ES beliefs predicted parent-perceived sibling warmth and dominance disparity. For parents low in emotion-dismissive ES beliefs, parent adaptive coping negatively predicted parent-perceived sibling dominance disparity. For parents low in emotion-coaching ES beliefs, parent adaptive coping positively predicted patient-perceived sibling conflict. Neither parent coping nor parent ES beliefs significantly predicted sibling SRQ perceptions. Findings begin to elucidate family processes affecting SRQ in families of pediatric oncology patients.

Parent Coping and Sibling Relationship Quality in Pediatric Cancer: The Moderating Effects of Parental Emotion Socialization Beliefs

According to family systems theory, interactions between family members and family members' psychosocial adjustment impact all members of the family unit (Steinglass, 1987). Unsurprisingly, then, sibling relationship quality (SRQ) can have a significant positive or negative impact on children's social development and psychological adjustment. Depending on the family context, siblings may develop a positive, constructive relationship (generally associated with positive outcomes) (Kim, McHale, Crouter, & Osgood, 2007; Recchia & Howe, 2009; Richmond, Stocker, & Rienks, 2005), or a negative, destructive relationship (generally associated with the poorer outcomes) (Kim et al., 2007; Pike, McGuire, Hetherington, Reiss, & Plomin, 1996).

A child's cancer diagnosis and subsequent treatment process often disrupts family roles, family routines, and patient, parent, and sibling psychosocial adjustment (Alderfer et al., 2009; Kazak et al., 2001). However, the impact of pediatric cancer diagnosis and treatment on SRQ remains unexplored. Further, although extant literature clearly demonstrates links between parent psychological distress and patient/sibling adjustment outcomes (Mavrides & Pao, 2014; Robinson, Gerhardt, Vannatta, & Noll, 2007; Pierce, Hocking, Schwartz, Alderfer, Kazak, & Bakarat, 2017), research has yet to evaluate the extent to which parent coping is associated with positive or negative SRQ for ill patients and healthy siblings. A primary aim of this study is to evaluate links between parent coping and patient, parent, and sibling perceptions of SRQ.

Emotion socialization (ES), or the process by which parents provide children implicit and explicit messages about the value, appropriateness, acceptability, display rules, and danger of positive and negative emotion (Eisenberg, Cumberland, & Spinrad, 1998), is an important parenting domain that has been vastly understudied in pediatric cancer. Although researchers have clearly shown that parents' ES beliefs and practices influence healthy children's and adolescents' psychological adjustment (Katz, Maliken, & Stetler, 2012), researchers have yet to evaluate the role of ES in SRQ during pediatric cancer. Thus, a secondary aim of this study is to evaluate whether parents' ES beliefs predict patient, parent, and sibling perceptions of SRQ during pediatric cancer or whether parents' ES beliefs moderate potential relations between parent coping and perceptions of SRQ. This study has provided a first step toward filling gaps in our knowledge about parents' ES beliefs and patient/sibling SRQ during pediatric cancer.

The Role of Siblings

Established by Albert Bandura, social learning theory posits that children's social behaviors are learned by attending to the behaviors modeled by others, such as parents, peers, or siblings (Killen & Coplan, 2011). Sibling interactions are often characterized by frequent conflict and siblings' strong emotional investment, making these interactions a particularly salient arena in which to learn interpersonal and emotion regulation skills (Dunn, 2007). One reason that sibling relationships may be so important is because each child adopts and practices a role and associated engagement rules across development, such as playmate or rival (Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Minuchin, 1974), which may then generalize to other contexts (Faith et al., 2015). For example, a child who victimizes his or her sibling is more likely to engage in peer bullying behaviors and to be victimized by peers; similarly, a child who is victimized by a sibling is more likely to experience peer victimization (Tippet & Wolke, 2015;

Tucker, Finkelhor, Turner, & Shattuck, 2014), highlighting one of the many ways in which sibling interactions and sibling relationship quality (SRQ) can influence peer adjustment.

Links between sibling interactions and children's socio-emotional adjustment is also supported by family systems theory. Family systems theory posits that family members form emotionally interconnected "subsystems" (e.g. parent-child, parent-parent, sibling-sibling, etc.; Steinglass, 1987). Because of their interconnectivity, the actions and interactions in one family member subsystem affects the emotions and behaviors of other subsystems and individuals within the family (Martin, 1987; Steinglass, 1987).

In addition to social learning and family systems theoretical links between SRQ and peer adjustment, some scholars have suggested two specific mechanisms to explain how sibling interactions shape children's broader social and emotion-related behaviors: the spillover and crossover hypotheses. The spillover hypothesis posits that an affect or behavior transfers, or "spills," from one setting to another. For example, a sibling who bullies his or her sister may feel reinforced for bullying behaviors and begin bullying peers as well. The crossover hypothesis, in contrast, posits that emotions may be transferred between people (Nelson, O'Brien, Blankson, Calkins, & Keane, 2010). For example, a child experiencing elation at receiving good grades may induce similar feelings in the child's parents. Further, a child who observes his or her sibling being angry and/or despondent may also come to feel irritable and/or disengaged. Unfortunately, when a family system is not doing well, negative socio-emotional effects on a child are not limited to the home and family setting, but may impact a child's social adjustment at school and in other peer settings (Du Rocher Schudlich, Shamir, & Cummings, 2004, as cited in Cummings & Schatz, 2012; Kinsfogel & Grych, 2004). Thus, further understanding the

domains and correlates of SRQ presents important scientific inquiry that remains only partially explored by extant literature.

SRQ can be broadly characterized as positive or negative depending on outcomes associated with each broad category. Positive and negative SRQ are comprised of multiple relational domains, including warmth, conflict, and dominance. Generally, scholars have characterized positive SRQ as including high levels of warmth, modest to moderate levels of conflict, and relatively equal dominance between siblings, whereas negative SRQ is characterized by low levels of warmth, high levels of conflict, and a disparate power hierarchy (Buist & Vermande, 2014; Sheehan, Darlington, Noller, & Feeney, 2004; Sherman, Lansford, & Volling, 2006). Based on these characterizations, multiple studies have documented associations between positive SRQ and children's positive socio-emotional adjustment, including increased trust, increased social competence (Kim et al, 2007; Richmond, Stocker, & Rienks, 2005), more positive features in friendships (Bekkhus, Brendgen, Czajkowski, Vitaro, Dionne, & Boivin, 2016), increased use of prosocial conflict resolution skills (Recchia & Howe, 2009), more effective emotion regulation (Kennedy & Kramer, 2008), and fewer behavioral and emotional problems (Buist, Dekoviç, & Prinzie, 2013; Hetherington, 1988; Richmond, Stocker, & Rienks, 2005); however, it is notable that most of these studies have placed greater emphasis on sibling warmth than on the other domains comprising positive SRQ. Unsurprisingly, negative SRQ has been associated with internalizing and externalizing problems, such as depression (Kim et al., 2007; Pike et al., 1996), antisocial behaviors, and delinquency (Aguilar, O'Brien, August, Aoun, & Hektner, 2001; Buist, 2010).

Conflict in sibling relationships. Interestingly, sibling conflict has historically been characterized as solely detrimental and has been described as antagonistic, competitive (Furman

& Buhrmester, 1985), coercive, and aggressive (Dunn, 2007). However, research on the effects of sibling conflict has yielded mixed findings. Some studies have found associations between sibling conflict and poor child adjustment (Kim, McHale, Crouter, & Osgood, 2007), whereas other studies have found associations between sibling conflict and more positive child outcomes (Recchia & Howe, 2009). One explanation for disparate findings could be the nature of conflict that is assessed in each study. For example, some studies have conceptualized and analyzed sibling conflict as an independent domain (Buist, Dekovic, & Prinzie, 2013; Richmond, Stocker, & Rienks, 2005). However, some literature has defined sibling conflict as nuanced, and functioning in combination with other domains of SRQ (e.g. warmth) to contribute to the overall socio-emotional development of a child (Howe, Rindaldi, Jennings, & Petrakos, 2002; Howe, Ross, & Rechia, 2011).

In recent literature, the operational definition of sibling conflict has evolved to distinguish between destructive and constructive sibling conflict based on associations with negative and positive outcomes. Destructive conflict can be defined as conflict with no resolution, and/or conflict entailing outcomes with clear winners and losers (Howe et al., 2002). This type of conflict typically involves strategies such as physical and/or verbal threats and coercion and may escalate to issues beyond the presenting problem (Rinaldi & Howe, 2003; Howe et al., 2002). These strategies are more frequently observed when a power imbalance exists in the sibling relationship, with older children typically employing coercive strategies to prevail (Abuhatoum & Howe, 2013). Further, dominant children in a sibling dyad tend to employ coercive strategies more frequently over the course of development compared to their more subordinate counterparts. Children engaging in destructive sibling conflict are at increased risk of developing conduct problems (Buist and Vermande, 2014; Garcia, Shaw, Winslow, & Yaggi,

2000), internalizing problems (Hetherington, 1988; Richmond, Stocker, & Reinks, 2005), lower levels of perceived academic competence and global self-worth (Buist & Vermande, 2014), and poorer social outcomes (Kim et al, 2007).

Conversely, constructive sibling conflict can be defined as "negotiating, collaborating or brainstorming" between siblings to arrive at a mutually acceptable resolution to a problem (Rinaldi & Howe, 2003). Constructive conflict is typically focused on one issue and is less emotionally charged than destructive conflict. Engaging in constructive sibling conflict provides children with the opportunity to learn and practice positive social skills, such as negotiation, perspective-taking, planning, compromise (Howe et al., 2011). Learning such skills may not only lead to decreased re-occurrence or prevention of the problem, but may also enhance the positive aspects of the sibling relationship (Howe et al., 2002), as well as contribute to a more harmonious household (Howe et al., 2011).

Warmth in sibling relationships. Sibling warmth is characterized by displays of affection and a sense of love and respect (Laible & Thompson, 2007, ch 7), providing numerous protective benefits. For example, in a study of 4-17 year-old sibling dyads, the experience of stressful life events was associated with fewer internalizing symptoms in the presence of sibling affection, regardless of maternal parent-child relationship quality (Gass, Jenkins & Dunn, 2007). Sibling warmth is important not only for children's coping with stressful events, but also because warm, affectionate relationships in the home may translate to the development of similar relationships outside of the home. Extant literature supports this notion, as several studies have documented positive associations between sibling warmth and positive social adjustment (Buist & Vermande, 2014; Floyd, Purcell, Richardson, & Kupersmidt, 2009; Sherman et al, 2006).

Despite strong associations between sibling warmth and positive child outcomes in most studies, some studies have found risks associated with sibling warmth under specific parameters. For example, one research group has demonstrated that warm relationships between male-male sibling dyads are associated with high aggression and/or delinquency when one of the siblings exhibits clinical levels of aggression and/or delinquency (Rende, Slomkowski, Lloyd-Richardson, & Niaura, 2005; Slomkowski, Rende, Conger, Simons, & Conger, 2001). Criss & Shaw (2005) also found that, among low-income male-male sibling dyads characterized by high warmth, one sibling's antisocial behavior was associated with the other sibling's increased affiliation with anti-social peers. Despite these links, researchers generally concede that sibling warmth is beneficial in the absence of sibling coercion training that can come from one child demonstrating significant externalizing/oppositional behaviors.

Dominance in sibling relationships. Sibling dominance can be characterized as the overall pattern of power distribution or control in sibling dyads. Specifically, sibling dominance refers to the level of control exerted by one sibling over interactions and outcomes from those interactions (Faith, Elledge, Newgent & Cavell, 2015). This dynamic can exist as one of three main patterns: earlier-born dominant, equal dominance, and later-born dominant (Furman and Buhrmester, 1990). In earlier-born dominant dyads, the older sibling exerts more power or control over the younger sibling during interactions, often either because of parental conferral of power, or because the older sibling is more cognitively and physically developed. Subsequently, the later-born child takes on a submissive role in the relationship, exerting less power during interactions. This dominance pattern is more common, and the relationship typically becomes more symmetric as children age and developmental differences diminish (Dunn, 2002; Buhrmester, 1992; Jenkins, Tucker & Updegraff, 2010). Although less common in early to mid-

childhood, in later-born dominant dyads, the younger sibling exerts more power over the older sibling (Furman and Buhrmester, 1990; Jenkins et al., 2010), whereas the older sibling is more submissive. This dominance pattern may be develop if the earlier-born child cannot or is unwilling to assert dominance over the later-born child, or if the later-born child is particularly assertive (Jenkins et al., 2010). Finally, sibling dyads characterized by equal dominance are more balanced in nature, exhibiting a relatively equal distribution of power between siblings and a relatively balanced sum of interactions (e.g., each sibling prevails in some conflict). This dominance pattern is most commonly observed in dyads where siblings are similar in age (Bigner, 1974; Buhrmester & Furman, 1990; Furman & Buhrmester, 1985).

Interestingly, literature suggests that patterns of sibling dominance may be influenced by the combination of age and gender, not solely age. Firstborn dominant patterns are most commonly observed in sister-sister dyads in comparison to other dyads with older/younger siblings (Stoneman, Brody, McKinnon, 1986), whereas opposite-sex dyads are more likely to exhibit a second-born dominant dyad (Cicirelli, 1976.). However, there are few extant studies regarding gender composition and sibling power dynamics, and findings have been inconsistent (Stoneman, Brod, & MacKinnon, 1986; Jenkins et al., 2010), with some finding limited effect of gender composition on sibling power dynamics (Buhrmester & Furman, 1985; Furman & Buhrmester, 1990).

Scholars have posited that sibling dominance hierarchies shape children's social and emotional adjustment for the same reasons sibling warmth and conflict impact social and emotional development. That is, children may learn patterns of interpersonal interaction through experiences with siblings that are carried over into peer interactions; children may then use their sibling interaction experiences to build schemas about other people and emotions (Dunn, 2007).

For example, sibling relationships exhibiting asymmetric power dynamics may result in a pattern of victimization of the submissive child, which may affect the child's ability to exert appropriate assertiveness in the peer context and form supportive peer relationships. Conversely, siblings who are extremely dominant over their sibling may learn to settle interpersonal conflicts via coercion or intimidation instead of by compromising and valuing the other person's perspective, thereby adopting skills that may not provide for optimal interpersonal skills with peers.

Despite theoretical links between sibling dominance hierarchies and children's peer adjustment, few empirical studies have evaluated these links. However, at least one study has found differential effects of sibling conflict for children depending nature of the relationship's dominance hierarchy. Faith and colleagues (2015) reported that sibling conflict predicted increased peer victimization for children who were very high or low in sibling dominance, but predicted decreased peer victimization for siblings in dyads characterized by balanced dominance. Similar to warmth and conflict, the nature of the dominance may have positive or negative effects depending on the nature and quality of the relationship. Faith and colleagues (2015) suggested that perhaps dyads with balanced dominance provide children with an arena in which to learn, develop, and practice effective conflict resolution and emotion regulation skills, whereas practicing conflict resolution in unbalanced dominance hierarchies could contribute to developing skills that are ineffective with peers. Of course, additional research is needed to clarify the role of sibling dominance in children's peer adjustment and in the lessons children learn from sibling conflict and other sibling interactions.

Pediatric Cancer

Five-year pediatric cancer survivorship rates in children ages 0-19yrs have increased from 58% in the 1970s, to approximately 83% during the period from 2007-2013 (Howlander et

al., 2016), with rates varying according to diagnosis (National Cancer Institute, 2018). In response to increasing survivorship, many researchers' focus has shifted toward long-term quality of life of pediatric patients, their siblings, and their caregivers (Gardner et al., 2017). Although pediatric cancer survivorship has increased, the well-being and adjustment of patients and their families remain threatened by stressors cancer-related stressors, including disruption of daily activities (Woodgate, Degnar, & Yanofsky, 2003) and social and family roles (Kazak, Simms & Rourke, 2002), medical side effects (Bryant, 2003), the need to adhere to complex treatment regimens (Chris & Kunn, 1991), and potential death (Pai, Greenley, Lewandowski, Drotar, Youngstrom, & Peterson, 2007). Unfortunately, these stressors remain threats because, despite improvements, treatment remains a painful and disruptive process for the patient, and therefore, the family.

Cancer treatment can include range of modalities, including pharmacology (e.g. chemotherapy), surgery, bone marrow/hematopoietic stem cell transplantation, radiation, and more recently, immunotherapy or Metaiodobenzylguanidine (MIBG) therapy (Pizzo & Poplack, 2016). Patients' treatment plans rarely consist of a single treatment modality. Instead, treatment typically consists of a multimodal therapy approach to allow for improved prognosis. For example, acute leukemia is the most commonly diagnosed form of pediatric cancer, accounting for approximately 25% of all newly diagnosed cases, with acute lymphoblastic leukemia (ALL) accounting for approximately 75% of leukemia cases, occurring primarily between the ages of 2-5 years (Hastings, Torkildson & Agrawal, 2012a, pg. 144). ALL is one of the most treatable forms of pediatric cancer; approximately 85% of patients are expected to achieve permanent remission. Treatment for ALL lasts approximately 2.5 years for girls and 3.5 years for boys and consists of several phases of chemotherapy, prophylactic radiation, and, potentially, cranial or

full body radiation. Despite the treatability of ALL, complications may still arise as a result of treatment (Hastings et al., 2012a, pg. 150). For example, most patients require blood transfusions and frequent hospitalizations, some chemotherapies are associated with cardiotoxicity, neurotoxicity, or necrosis of bone tissue, and radiation may lead to the development of a secondary tumor.

Central nervous system (CNS) tumors are the second most commonly diagnosed form of pediatric cancer, accounting for approximately 20% of all newly diagnosed cases (Hastings, Torkildson & Agrawal, 2012b, pg. 157). CNS tumors are typically treated with a combination of neurosurgery, radiation therapy and chemotherapy, depending on histology, surgical resectability, and prognosis of the tumor (Hastings et al., 2012b, pg. 160). Treatment duration can vary depending on location and pathology of the CNS tumor as well as patients' cytogenetic characteristics. Unfortunately, treatment can have detrimental effects on the patient. For example, photon cranial radiation therapy for CNS tumors can result in cognitive deficits (Brown, 2006, pg. 9), and can be associated with inability to live independently in adulthood, particularly in those receiving high dose photon radiation therapy younger than 6 years-of-age (Hastings et al., 2012b, pg. 161). The effects of diagnosis and treatment of pediatric cancer are difficult for patients, and, unfortunately, can extend beyond the treatment phase, as well as affect the entire family unit. Thus, evaluating the impact of pediatric cancer on parents and healthy siblings is a growing research field.

Effects of pediatric cancer on the patient. Children with chronic illness have been found to experience a wide range of socio-emotional problems, in addition to the comorbid health problems induced by the primary illness. Children with cancer are no exception. Cancer's effects on the patient are global (e.g., emotional, academic) and can have a long-lasting, adverse

impact. Approximately one-fourth to one-third of children and families who are coping with pediatric cancer experience profoundly negative socio-emotional outcomes (Alderfer et al., 2009; Kazak et al., 2001; Kupst & Bingen, 2006; Pai et al., 2008; Van Schoors, Caes, Verhofstadt, Goubert, & Alderfer, 2015). Fortunately, approximately 50-60% of patients experience no significant socio-emotional problems (Kazak et al., 2001), whereas approximately 25% of patients experience post-traumatic growth (Howard Sharp, Willard, Barnes, Tillery, Long, & Phipps, 2017; Tillery, Howard Sharp, Okado, Long, & Phipps, 2016). In addition, at least one study has found that pediatric cancer patients do not experience increased post-traumatic stress symptoms or post-traumatic stress disorder in comparison to children without cancer who had also experienced a traumatic event (Phipps et al, 2014).

Physical side effects are an aspect of cancer treatment that can contribute to the development of socio-emotional problems. Depending on the type of treatment, treatment for cancer can provoke a wide range of physical side effects, including pain, fatigue, immunosuppression, weight gain or weight loss, stunted growth, nausea, hair loss, and even organ failure (Hastings, Torkildson & Agrawal, 2012c). Some patients may also exhibit concurrent and later cognitive impairments, including problems with attention, working memory, and visual-motor deficits (Brown, 2006) due to type of cancer or as a result of treatment. For example, intrathecal methotrexate chemotherapy, which is a component of treatment for acute lymphoblastic leukemia, has been linked to decline in patients' intelligence, increased memory problems, and, rarely, leukoencephalopathy (a reduction in CNS white matter associated with problems in motor skills and cognitive functioning; Hastings et al., 2012c; Hill, Ciesielski, Sethre-Hofstad, Duncan, & Lorenzi, 1997; Montour-Proulx et al., 2005).

Children receiving a cancer diagnosis and subsequent treatment usually experience an abrupt, radical change in daily life. Trips to the doctor and hospital typically become the new normal, which can entail multiple trips within a week depending on the type of treatment or severity of the illness (Kupst & Bingen, 2006). Oftentimes, this entails one parent becoming the primary caretaker in charge of taking the child to and from appointments and monitoring health status. Younger children usually adjust more easily to the new normal since they have had less time to become accustomed to routines at home, whereas older children and adolescents may experience more difficulty as physical ability and social activities become more limited (Brown, 2006). Unfortunately, for some families, this may also limit the time that a child spends with siblings, the other parent, and other family members. Sibling relationships may also become strained when family roles change.

The dramatic changes wrought by the treatment process are not limited to home life, but can extend to school life, as well. Attendance and participation in activities with peers are often disrupted, which can negatively impact academic and/or social life. For example, frequent healthcare visits or compromised immune systems can lead to social isolation, thereby affecting the development and maintenance of friendships and social skills (Kupst & Bingen, 2006). Yet, not all children are negatively impacted. Some children's friendships may strengthen, while other children may experience a "fading away" of meaningful social relationships. Grades may also suffer because of frequent absences from the classroom, leading some parents to homeschool their ill child. Attention to the family and social effects of pediatric cancer are warranted because positive relationships may have a positive impact on the course of illness; in fact, the functioning of the endocrine and immune systems may be enhanced as a result of positive peer relationships (Fuemmeler, Mullins, & Carpentier, 2006).

Unfortunately, the combination of dealing with a significant disruption of daily life along with demanding and aversive treatment regimens may contribute to many patients' experience of internalizing and/or externalizing problems during and following the treatment process. Issues with depression, anxiety, confusion, fear, and sadness are not uncommon for patients (Kupst & Bingen, 2006; Marvides & Pao, 2014). In older children and adolescents, body image problems may become an issue due to aforementioned physical changes, such as hair loss or weight gain or loss. In addition, the stress of treatment and changes in routines may also lead to behavioral issues (Carpentieri, Mulhern, Douglas, Hanna & Fairclough, 1993).

Effects of pediatric cancer on siblings. Upon diagnosis of pediatric chronic illness within a family, siblings of ill children also often undergo a radical change in daily life, and also experience internalizing or externalizing problems. For example, siblings may exhibit increased behavioral problems such as aggression, shyness, or withdrawal (Sharpe & Rossiter, 2002; Tritt & Esses, 1988), worry (Menke, 1987), decreased psychological functioning (Sharpe and Rossiter, 2002) reduced engagement in activities with peers, and worsened cognitive development (Sharpe & Rossiter, 2002). Historically, little attention has been focused on the experiences of siblings of children with cancer. However, in recent years, more focus has been extended to the socio-emotional risks and needs of siblings. Siblings have been found to experience feelings of loss, loss of self, and sadness (Woodgate, 2006; Wilkins & Woodgagte, 2005), loneliness (Houtzager et al, 2004), loss of support (Sloper & While, 1996), jealousy and guilt (Packman et al, 1997), post-traumatic stress (Kaplan, Kaal, Bradley, & Alderfer, 2013; Alderfer, Labay, & Kazak, 2003; Packman et al., 1997), and externalizing problems (Alderfer et al., 2010). Potential reasons may include that siblings have been found to take on new responsibilities, lose time with their ill-sibling, and perceive marginalization and less parental

attention compared to ill-siblings (Yang et al, 2016; Powell and Ogle, 2006; Wilkins & Woodgate, 2005). However, sibling reactions to the experience of having a sibling with cancer are not confined to the home environment. Well-siblings may also experience poor academic performance and decreased engagement in school-related activities (Alderfer et al., 2010).

Despite increased emotional, social, and academic distress documented by most studies, the impact of pediatric cancer on healthy siblings may not be entirely bleak. For example, some research has found that well-siblings exhibit elevated levels of psychological distress, but these levels are not clinical, nor significantly different from that of their peers (Long, Lehman, Gerhardt, Carpenter, Marsland, & Alderfer, 2018). Some studies have also found that siblings' psychosocial impairment typically exists only in the short term (1 month post-diagnosis; Houtzager et al., 2004), whereas conflicting research has found that one-third of well-siblings exhibit moderate to severe symptoms of post-traumatic stress years after diagnosis (Alderfer, Labay, & Kazak, 2003; Packman et al., 1997). In addition, recent research demonstrates that social functioning of school-age siblings is similar to peers, despite absenteeism and decreased academic performance (Alderfer et al., 2015). Importantly, work continues to be needed to clarify healthy siblings' psychosocial and academic risks both during the ill-child's cancer treatment and long into the future.

Effects of pediatric cancer on parents. Although pediatric cancer treatment places significant strain on the family system, the majority of studies have indicated that parents generally adjust well to their child's diagnosis and treatment. For example, some parents of children with cancer show no difference in levels of depression or distress when compared to normative and healthy samples (Radcliffe, Bennet, Kazak, Foley, & Phillips, 1996; Speechley

and Noh, 1992). Further, many parents deny marital distress or even report marital improvements during their child's cancer treatment (Brody & Simmons, 2007; Jones and Neil-Urban, 2003).

Although most parents generally adjust well during the treatment process, most parents do experience transient emotional distress early in and throughout the treatment process. In a meta-analysis, Pai and colleagues (2007) found that, compared to parents of healthy children, parents of children with cancer reported more distress, with mothers reporting more distress than fathers up to one year following diagnosis. However, families also tended to experience a decline in distress in the 12 months following diagnosis, similar to previous findings (Hoekstra-Weebers, Jaspers, Kamps, & Klip, 2001). Unfortunately, a subset of approximately 25%-33% of parents experience significant, prolonged psychological distress following diagnosis and during the cancer treatment process (Gilland et al., 2013).

Parents responding poorly to their child's treatment process have been found to experience negative mental health effects, including increased levels of global distress, internalizing symptoms (Dahlquist et al., 1993; Kazak et al., 1997; Sawyer, Antoniou, Toogood, Rice, & Baghurst, 1993), marital dissatisfaction (Hoekstra-Weebers, Jaspers, Kamps, & Klip, 1998; Jones & Neil-Urban, 2003), and symptoms of post-traumatic stress (Dunn et al, 2005; Norberg & Boman, 2008). Distress levels often depend on the child's type of cancer diagnosis. Parents of children with CNS tumors have been found to experience increased levels of distress (Kier, Guill, Carter, Boole, Gonzales, & Friedman, 2006), possibly because they must manage a combination of neurological and oncological sequelae (Sherwood et al., 2006). In addition, although distress levels are lower after children have completed treatment as compared to while children remain on-treatment, it is notable that parents of children with CNS tumors continue to

exhibit elevated levels of distress long after treatment has concluded (Hutchison, Willard, Hardy & Bonner, 2009).

Further adding to parental cancer burden, many families also experience financial strain because of income loss resulting from reduced work hours or termination from work, necessary travel for treatment, and inability to access assistance programs to replace lost income (Eiser & Upton, 2007; Fletcher, 2010; Miedema, Easley, Fortin, Hamilton & Mathews, 2008; Warner, Kirchhoff, Nam, & Fluchel, 2015). Unsurprisingly, depression and poorer health-related quality of life have been directly associated with financial strain in parents of children with cancer (Creswell, Wisk, Litzelman, Allchin, & Witt, 2014; Klassen et al, 2011).

Classification of Coping

Before describing coping and strategies among pediatric cancer patients, their parents, and their siblings, it is first imperative to operationalize coping, including various characterizations in the literature. Coping is defined as the, "cognitive and/or behavioral efforts of an individual to manage internal or external demands appraised as exceeding or taxing an individual's resources" (Lazarus & Folkman, 1984, p. 141). Over four-hundred subtypes of coping responses and numerous categories have been identified in research, complicating the classification of coping (Skinner, Edge, Altman, & Sherwood, 2003). Consequently, many frameworks have been developed to facilitate classification and research of coping. These frameworks include, but are not limited to, emotion-focused versus problem-focused coping, passive versus active coping, and approach versus avoidance coping (Compas, Jaser, Dunn, & Rodriguez, 2012), among others, reflecting the lack of consensus on coping response classification.

The emotion-focused versus problem-focused framework defines emotion-focused coping as the effort to reduce or manage emotional distress associated with a situation, and is most often employed when a stressor is perceived as something that must be endured because it is unalterable (Carver, Sheier, & Weintraub, 1989, Folkman & Lazarus, 1980). Problem-focused coping is defined as the effort to solve a problem or take action to alter the source of stress, and is most often employed when it is perceived that constructive action can be taken (Carver, Sheier & Weintraub, 1989; Folkman & Lazarus, 1980). Most stressors elicit both types of coping; however, one type tends to predominate over the other (Folkman & Lazurus, 1980).

Another way in which researchers have categorized coping is approach coping versus avoidant coping. Approach coping entails action toward the stressful situation by engaging in behavioral, cognitive or emotional strategies (e.g. problem-solving and support-seeking) to alter the stressful situation (Herbert, Daspe, & Cyr, 2018; Skinner et al., 2003). Avoidant coping entails withdrawal from the stressful situation through disengagement strategies to avoid or distance oneself from the stressor, and manage its emotional impact (Herbert, Daspe, & Cyr, 2018). Approach strategies are generally viewed as positive coping strategies because they have generally been associated with positive outcomes in healthy samples (Boxer & Sloan-Power, 2013; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001). Conversely, avoidant coping strategies, such as distraction, are generally viewed as negative coping strategies because they are generally associated with negative outcomes in healthy samples (Boxer & Sloan-Power, 2013; Compas et al., 2001) such as poorer psychological and physical well-being (Streisand, Mackey & Herge, 2010).

Although avoidant coping is generally associated with negative outcomes, there are exceptions. For example, within the pediatric cancer literature, avoidant coping have not always

been found to be associated with negative outcomes, but have also been found to be adaptive when stressors are expected, time limited, and predictable (Hildenbrand, Alderfer, Deatrick, FAAN, & Marsec, 2014). These exceptions further exemplify difficulties in labeling coping. In addition, the approach and avoidance framework has received criticism. For instance, Skinner and colleagues (2003) discuss that current definitions of approach and avoidance are ambiguous, allowing for strategies to be subsumed under either category, and exclude several types of coping behaviors (e.g. observation, aggression, etc).

Development of a classification framework of coping is beyond the scope of this study; therefore, in this study, I have classified coping simply as adaptive or maladaptive. Adaptive coping referred to coping behaviors associated and expected to be associated with positive outcomes in the pediatric cancer population, and maladaptive coping referred to coping behaviors associated and expected to be associated with negative outcomes in the pediatric cancer population. Because, in pediatric cancer, avoidant coping can yield both positive and negative outcomes based on the nature of the stressor, I considered avoidant coping separately from adaptive and maladaptive coping in planned analyses.

Patient, Parent, and Sibling Coping during Pediatric Cancer

Parents and child coping with pediatric chronic illness is difficult because of the aforementioned upending effects that diagnosis and treatment may have on parents, patients, and well-siblings. In general, extant literature on pediatric chronic illness has found that coping and strategies are associated with adjustment and well-being in all members of the family. Adaptive coping strategies, such as social support seeking, problem-solving, and cognitive reappraisal, can be an asset for families of children with pediatric cancer because these coping strategies have generally been associated with less caregiver strain and distress, higher quality of life, fewer

internalizing and externalizing problems in children, better parental adjustment, and better illness prognosis for the patient (Greening & Stoppelbein, 2007; Norberg, Lindblad, & Bowman, 2005). Maladaptive coping strategies, such as negative self-blame, have generally been associated with more negative outcomes (Greening & Stoppelbein, 2007). Concerning parents of chronically ill children, maladaptive coping strategies have been associated with increased levels of post-traumatic symptoms, even when controlling for child health status (Franck et al., 2015), higher levels of distress (Sloper, 2000), and decreased physical well-being and higher psychological distress (Streisand, Mackey, & Herge, 2010). Although less well-researched, similar findings have been identified within families of children with cancer (Hoekstra-Weebers et al., 2001; Klassen et al., 2011). The effects of a parent's coping extend beyond themselves, and may affect the ill-child and other children within the family, which is supported theoretically and through extant literature.

At present, the relationship between parental coping (maladaptive or adaptive) and sibling relationship quality (SRQ) during or outside the context of pediatric cancer is not well understood and insufficiently researched. However, the relationship between parental psychological state and individual child outcomes during pediatric cancer is robust; extant literature evidences the negative impact of parental psychopathology and poor coping on their children during pediatric cancer (Stoppelbein et al., 2013). In combination with family systems theory, the crossover hypothesis, and the spillover hypothesis, it is possible that parental coping may influence the sibling relationship due to emotional interconnectivity between the family members. For example, if a parent is coping well with the pediatric cancer experience, they may be modelling adaptive coping strategies, appropriately dividing their time and attention between the ill-child and well-sibling, and demonstrating fewer symptoms of distress, depression, anxiety,

or post-traumatic stress. Thus, parent coping may have a direct effect on patient and sibling stress and distress as well as on patients' and siblings' perceptions of parental favoritism (e.g., with time division between siblings), thus impacting SRQ.

Emotion Socialization

When considering how parental coping impacts SRQ, a potentially important aspect is the role of parental beliefs about children's emotions and about parents' role in children's emotional development (i.e., emotion socialization). Emotion socialization (ES) is the process by which an individual is taught culturally accepted patterns of behavior, expression, regulation and beliefs regarding emotion to competently function within the given culture (Eisenberg, Cumberland, & Spinrad, 1998). ES provides individuals with a means of understanding emotion within themselves, as well as others, and can significantly influence social and academic outcomes (Denham & Brown, 2010).

Adults who have a more significant and consistent presence within a child's life (e.g. parents, teachers, older siblings, peers, significant others) tend to have more influence on children through the ES process (Kuczynski & Parkin, 2007). Unsurprisingly, parents present are one of the most significant emotion socializers for their children because of the amount of time many parents spend with their children and because parents are the most important figure of authority for most children (Grusec & Davidov, 2007).

ES is a lifelong process beginning in early childhood and is acquired via four primary modes of interpersonal interactions: explicit discussion, modeling, regulating the child's exposure to emotion-laden stimuli, and reaction to children's emotions (Eisenberg et al., 1998). For example, through parental modeling, children may learn that when another person is hurt, it is appropriate to feel sadness for the other individual, and that laughter or happiness would be

inappropriate. Similarly, a child may learn to share in another's happiness, such as a birthday celebration, and a combination of modeling and discussion may teach children how to regulate potential feelings of jealousy.

Parental beliefs about emotion socialization (PBES) entail parental philosophies and feelings about the way in which they should educate their children regarding emotion. Research has illustrated that PBES predict parental ES behaviors (Dix, 1993; Eisenberg et al., 1998). For example, parents who are accepting of children's negative emotion displays tend to express more supportive behavior when faced with their child's distress compared to parents who are less accepting of children's negative emotions (Wong, McElwain, & Halberstadt, 2009).

A widely accepted theory within this field is Gottman's 2-factor theory of ES, known as parental meta-emotion philosophy. This theory focuses on parents' cognitions and feelings regarding their own emotions and their children's emotions (Gottman, Katz, & Hooven, 1996; Lunkenheimer, Shields, & Cortina, 2007). This theory posits that there are two broad dimensions of PBES: emotion-coaching meta-emotion philosophy and emotion-dismissing meta-emotion philosophy (Gottman et al., 1996). Parents ascribing to an emotion-coaching philosophy exhibit insight and awareness of their own emotions (particularly negative emotions) and are able to differentiate the nuances between emotions and work through them. More importantly, they are also aware of such emotions in their children and act as an emotion coach for their children. Emotion-coaching parents view difficult emotions, such anger or sadness, as beneficial or as opportunities to teach or become closer with their children. These parents usually validate and assist their children in coping with such emotions. Subsequently, extant literature supports the positive impact of an emotion-coaching approach. In healthy samples, children of these parents tend to develop better emotion regulation skills (Gottman et al., 1996; Gottman, Katz, Hooven,

1997), social competence, and peer relations (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Katz & Windecker-Nelson, 2004), fewer internalizing symptoms in adolescents (Hurrell, Houwing, & Hudson, 2017; Katz & Hunter, 2007), and fewer externalizing behaviors in children and adolescents (Katz & Hunter, 2007; Katz & Windecker-Nelson, 2004).

The benefits of an emotion-coaching approach for healthy children have been evidenced through interventions improving parents' emotion coaching skills. Havighurst and colleagues (2013) reported that 6 months after an intervention that increased parents' emotion coaching philosophies and behaviors, parents of children with behavior problems reported less emotion-dismissiveness and greater empathy toward child emotions, as well as reduced behavior problems in the target child. Children reported greater emotional knowledge and teacher-reported behavior problems were reduced. Further, emotion coaching has also been found to buffer iatrogenic effects of some negative experiences. For example, within families exhibiting inter-partner violence, children of parents exhibiting higher levels of emotion-coaching were more likely to employ appropriate diffusion strategies, such as laughter, when provoked by a peer (e.g. teasing; Katz, Hunter, & Klowden, 2008). In contrast, children exposed to inter-partner violence whose parents engaged in fewer emotion-coaching behaviors were more likely to respond inappropriately (e.g. verbal aggression) to peer provocation. Similarly, in young African-American girls' exposure to community violence and crime, those with exposure to emotion coaching and a better understanding of their emotions exhibited more adaptive social skills (Cunningham, Kliewer, & Garner, 2009).

In contrast, parents ascribing to an emotion-dismissing philosophy view negative emotions, such as anger or sadness, as toxic or potentially harmful to children (Gottman et al., 1996). As opposed to emotion-coaching parents, emotion-dismissive parents exhibit less insight

into their own and their children's experience of negative emotions. They seek to change the experience of negative emotions as soon as possible rather than coping with them, signaling to the child that such emotions are transient and unimportant; something to be endured with as little pain as possible, and not to be dwelled upon. In this endeavor, emotion-dismissive parents ignore, deny or distract from children's negative feelings with the hope that the emotions will disappear quickly. Consequently, these children lose the opportunity to learn how to work through difficult emotions. This lack of opportunity then negatively impacts the emotional development and socialization of the child. In healthy samples, children of emotion-dismissive parents tend to develop poorer emotion regulation skills (Gottman et al. 1996; Gottman et al., 1997), increased externalizing behaviors (Katz & Windecker-Nelson, 2004), increased depressive symptoms (Katz & Hunter, 2007), increased symptoms of anxiety in clinically anxious children and adolescents (Hurrell et al., 2017), and risk of major depressive disorder in adolescents (Schwartz et al., 2018). Further, children exhibiting higher levels of callous-unemotional traits were more likely to have mothers with an affective attitude less accepting of emotion, and more likely to be dismissive of child emotion (Pasalich, Waschbusch, Dadds, & Hawes, 2014).

Importantly, most early research about emotion socialization was based on primarily Caucasian, European or European-American families (Bowie, Carrère, Cooke, Valdivia, McAllister, & Doohan, 2013; Labella, 2018). Increasingly, studies have evaluated the role of race and ethnicity in parents' emotion socialization beliefs and behaviors as well as the role of race and ethnicity on outcomes associated with parents' ES beliefs and behaviors. Evaluation of different races and ethnicities has yielded support for previous research regarding ES, as well as cultural differences regarding ES. For example, studies have found that when African-American

(AA) and European-American (EA) parents displayed positive emotion expression and emotion regulation skills, parents and children from both groups reported similar benefits: fewer internalizing symptoms (AA/EU mother and father reports: Bowie et al., 2013; AA mother reports: Kliewer et al., 2004), fewer psychopathology symptoms (AA/EU adult child report; Morelen, Jacob, Suveg, Jones, & Thomassin, 2013), increased use of constructive coping strategies and decreased use of non-constructive coping strategies during peer conflict at school (majority AA mothers; Garner & Spears, 2000), and increased sibling caretaking behaviors (majority AA mothers; Garner, Carlson Jones, & Miner, 1994). In contrast, some studies have found that, although AA mothers tend to endorse emotion-coaching and positive expression, many tend to minimize or dismiss children's' negative emotion expression (e.g. anger, sadness, frustration, etc.), particularly for sons (Nelson, et al 2012; Smith & Walden, 2001). AA mothers explain that they do so to avoid perception of their children as violent or aggressive, and to prepare children for life stressors (Dow, 2016).

Research supports many AA parents' perspective that a dismissive approach to children's negative emotions may be beneficial to AA children. At least one study found that parenting behaviors that dismiss children's negative emotions were associated with less aggression in AA children (pre-school teacher report; Smith & Walden, 2012), whereas encouraging emotional expression in peer settings has been associated with less competence in socio-emotional interactions for AA children (e.g., less awareness of the impact of their behavior on other children; Nelson et al., 2013). Research strongly demonstrates the relationship between parental coping on outcomes for children and families: adaptive coping is generally associated with positive socio-emotional outcomes, whereas maladaptive coping is generally associated with

negative outcomes. However, a remaining question entails the impact of parental beliefs of ES on the relationship between parental coping and SRQ.

Study Aims and Hypothesis

Given links between parent, patient, and sibling adjustment during pediatric cancer, the importance of sibling relationship quality in children's socio-emotional development, and the role of parents' emotion socialization beliefs and practices in children's adjustment, a remaining question is whether parents' coping and emotion socialization beliefs may also impact sibling relationship quality during pediatric cancer. Thus, the current study has the following aims and hypotheses:

Aim 1: To explore relations between parent coping and parent-, patient-, and sibling-perceived SRQ for pediatric oncology patients and their nearest age sibling who lives in the home.

H_1: Parents' maladaptive coping will positively predict parent-, patient-, and sibling-reported sibling conflict, positively predict parent-, patient-, and sibling-reported sibling dominance disparity, and negatively predict parent-, patient-, and sibling-reported sibling warmth.

H_2: Parents' adaptive coping will positively predict parent-, patient-, and sibling-reported sibling warmth, negatively predict parent-, patient-, and sibling-reported sibling conflict, and negatively predict parent-, patient-, and sibling-reported dominance disparity.

Aim 2: To explore potential moderating effects of parent ES beliefs on the relationship between parent coping and parent-, patient-, and sibling-perceived SRQ.

H_3: Relations between parents' maladaptive coping and negative SRQ in H1 will be strongest in the context of parents' strong dismissing ES beliefs.

H_4: Relations between parents' adaptive coping and positive SRQ parameters in H2 will be strongest in the context of parents' ES coaching beliefs.

Because, in pediatric cancer, avoidant coping can yield both positive and negative outcomes based on the nature of the stressor and therefore cannot be objectively classified as adaptive or maladaptive (Cline, Harper, Penner, Peterson, Taub, & Albrecht, 2006; Frank, Blount, & Brown, 1997; Hoekstra-Weebers, Wijnberg-Williams, Jaspers, Kamps, & van de Wiel, 2012; Kupst & Bingen, 2006), I did not include an avoidant coping index in our analyses.

Method

Participants

The study sample consisted of a subsample from a larger study that evaluated relations between parent, patient, and sibling coping, hope, and familial relationships in pediatric cancer, sickle cell disease, and other blood disorders. With appropriate consent/assent, parents, patients, and siblings could choose to participate irrespective of whether their other family members also participated. Parents and patients could also participate even if the patient had no siblings living in the home. Thus, the sample sizes for the parent sample, patient sample, and sibling sample differ. Participants for my study included 155 parents of the pediatric cancer patient (Age *M(SD)*=38.02 (8.09) years, range = 21-65 years; 84.5% females; *M(SD)*=2.82 (1.15) children in home; *M(SD)*=2.05 (0.62) adults in home), 103 pediatric cancer patients (Age *M*(*SD*) = 12.48(3.45) years, range = 7-18 years; 40.8% females; *M(SD)*=2.8 (1.21) children in home; *M(SD)*=1.98 (0.59) adults in home), and 104 of the patients' nearest age sibling who also lived in the home (Age *M*(*SD*) = 12.36(3.75) years, range = 7-18 years; 44.2% females; *M(SD)*=2.95 (1.20) children in home; *M(SD)*=2.02 (0.57) adults in home). Further demographic details for the overall study sample are available in Appendix C, Table 1.

Family eligibility criteria included the patient (1) being 0-18 years of age, (2) receiving cancer treatment in a large, tertiary care, academically-affiliated children's hospital's pediatric oncology unit. Participating patients, parents, and siblings also had to understand spoken or written English or Spanish, and not have a developmental or motor/speech delay that would preclude informed consent/assent and completing study measures. Regarding study measure

completion, 11.9% of parents, 8.7% of patients, and 15.4% of siblings chose to complete study measures in Spanish. Patients and siblings were required to be 7 to 18 years of age to complete self-report measures.

The distribution of patients' oncology diagnoses in the study were fairly representative of national incidence rates, with leukemia representing a higher proportion compared to national incidence rates of 25%: 38.1% leukemia, 24.5% CNS tumor, 12.8% non-CNS solid tumor, 8.9% Lymphoma, 15.7% other. Patient race and ethnicity were representative of the geographic region in which the hospital is located: 53.4% White/Caucasian, 30.1% Hispanic; 14.6% Black/African American, 1.9% Asian, 7.8% Biracial. Of patients in this study, 50.5% had Medicaid as their primary insurance (American Cancer Society, 2018; Ward, Destantis, & Robbins, Kohler, & Jemal, 2014).

Measures

Demographics. Parents completed a demographic survey that included items assessing household income, parent educational attainment, number of children and adults living in the home, patient and sibling school grade, patient and sibling health status, patient treatment history, and patient insurance status (Appendix B). The demographic survey also contained items assessing parent, patient, and sibling age, race, and ethnicity. As part of the demographic survey, researchers asked parents to identify and write the name of the patient's nearest age sibling living in the home. Researchers instructed parents, patients, and siblings, when applicable, to reference the identified sibling when responding to items assessing sibling relationship quality. The research team confirmed patient diagnosis and diagnosis date provided by the parent in the demographic form via medical chart review. Also via medical chart review, the research team recorded number of nights the patient spent in the hospital over the past year and since diagnosis,

number of hospital admissions the patient experienced over the past year and since diagnosis, and family home distance from the hospital.

Parent measures.

Parents' beliefs about children's emotions. The Parents' Beliefs about Children's Emotions Questionnaire (PBACE; Halberstadt et al, 2008) assessed parents' ES beliefs. The instrument contains 11 subscales constructed from 105 items that parents rate using a 6-point Likert-type scale (1=strongly disagree; 6=strongly agree). Researchers developed and validated the PBACE with African-American, European-American, and Lumbee American-Indian groups. Exploratory and confirmatory factor analysis have shown good factor structure and internal reliability when used with these groups (α=0.78-0.86).

In the current, larger study, researchers asked parents to respond to items first while thinking about the patient and then while thinking about the sibling (Faith et al, 2018). Subscale internal consistencies for the current study were sub-adequate to good, ranging from α=0.52-0.88 for patients and α=0.64-0.86 for siblings (Table C2). To reduce the number of scales submitted to primary analyses and because several subscales demonstrated sub-adequate internal consistencies, I submitted the original PBACE subscales to an exploratory principle components analysis (PCA) using Varimax rotation with Kaiser normalization.

PCA yielded a two-factor solution (Emotion Coaching Beliefs, α=0.84 and 0.83, Emotion Dismissing Beliefs, α=0.89 and 0.86 for patients and siblings, respectively) that mapped directly onto Gottman's two-factor emotion socialization theory (Gottman et al., 1996; Tables C3 and C4). The two-factor solution improved upon less than optimal internal consistency found for individual subscales. Therefore, I retained the theory-consistent two-factor solution to reduce the number of scales submitted to subsequent analyses.

Parent perceptions of sibling relationship quality. To assess parent perceptions of sibling relationship quality, parents completed the 48-item Sibling Relationship Questionnaire-Revised—Parent (SRQ-P: Furman & Buhrmester, 1985). The SRQ-P consists of 16 subscales, which comprise 4 indices (warmth/closeness, relative status/power [i.e. dominance], conflict, and rivalry). In this study, I am primarily interested in the warmth/closeness, dominance, and conflict indices because researchers have primarily investigated these indices in previous studies (Buist, Deković, & Prinzie, 2013; Buhrmester & Furman, 1990; Jenkins et al., 2010; Pike & Oliver, 2017).

Parents rate SRQ-P items on a 5-point Likert-type scale (1=Hardly at all; 5=EXTERMELY MUCH). In the initial validation study, the SRQ-P yielded good to excellent internal consistency, ranging from α=0.70-0.93 (Furman & Buhrmester, 1985). This has been replicated in other studies except for one study in which the conflict index yielded an internal consistency of α=0.38 (Jennings & Howe, 2001). In the present study, the 16 subscales yielded similar internal consistency to those found in the initial validation study, ranging from α=0.60-0.88 for parents (Table C5). The warmth/closeness and conflict indices yielded greater internal consistency compared to individual subscales (warmth α=0.86, conflict α=0.75; Table D5). Internal consistency for the dominance index was not reported because calculation of the index score consists of an algebraic formula ([scale scores of nurturance of sibling + dominance of sibling] – [scale scores of nurturance by sibling and dominance by sibling]; Furman & Buhrmester, 1985). Correlations between subscales comprising the dominance index are reported for parent (Table C6). Given the diametric nature of dominance and nurturance subscales, it was expected that these would be inversely related. However, only nurturance by sibling and

dominance of sibling exhibited an inverse relationship, which was also insignificant (r = -.07, p>.05).

Parent coping. To assess coping strategies, parents completed the Brief COPE Inventory (Carver, 1997). The instrument consists of 14 subscales that are comprised of 28 items rated on a 4-point Likert-type scale (1=I haven't been doing this at all; 4=I've been doing this a lot). When completing the Brief COPE, parents were asked to think about how they usually respond when the patient is very ill and needs to go to the hospital. Carver's development and validation study of the Brief COPE with adult victims of Hurricane Andrew yielded poor to excellent internal consistency, ranging from α=0.50-0.90. In the present study, Brief COPE subscales yielded poor to good internal consistency, ranging from r = 0.36-0.87 (p<.01) (Table C7). Despite poor internal consistency of some subscales, the Brief COPE Inventory continues to be a commonly used assessment tool in pediatric chronic illness literature.

I conducted PCA using Varimax rotation with Kaiser normalization to address poor subscale internal consistencies, to determine whether a different component structure better described the study sample, and to reduce the quantity of scales submitted to analyses. PCA yielded a 2-factor solution: maladaptive coping (α=0.75), and adaptive coping (α=0.84) (Tables C7 and C8). The humor subscale failed to load on either factor at a level ≥ 0.3 and was therefore excluded from subsequent analyses.

Patient and sibling measures.

Child perceptions of sibling relationship quality. To assess child perceptions of sibling relationship quality, patients and siblings each completed the 48-item Sibling Relationship Questionnaire-Revised—Child (SRQ-C; Furman & Buhrmester, 1985). Analogous to the SRQ-P, the SRQ-C consists of 16 subscales, which comprise 4 indices (warmth/closeness, relative

status/power [i.e. dominance], conflict, and rivalry). As reported above, I am primarily interested in in the warmth/closeness, dominance, and conflict indices for the current study because researchers have primarily investigated these indices in previous studies (Buist et al., 2013; Buhrmester & Furman, 1990; Jenkins et al., 2010; Pike & Oliver, 2017).

Children rate SRQ-C items on a 5-point Likert-type scale (1=Hardly at all; 5=EXTERMELY MUCH). The original SRQ was developed with 198 fifth- and sixth-graders (52% girls), primarily from middle-class to upper middle-class Caucasian families. In the initial validation study, the SRQ-C yielded good to excellent internal consistency, ranging from α=0.70-0.93, except for one domain (conflict: α=0.38; Jennings & Howe, 2001). In the present study, SRQ-C subscales were similar to those in the initial validation study, ranging from α=.52-.87 for patients and α=0.64-0.88 for siblings (Table C5). Regarding indices, the warmth/closeness (patient: α=0.89; sibling: α=0.85) and conflict indices (patient: α=0.75; sibling: α=0.85) yielded greater internal consistency compared to individual subscales (Table C5). Internal consistency for the dominance index was not reported because calculation of the index consists of an algebraic formula potentially incompatible with traditional methods of calculating internal consistency ([scale scores of nurturance of sibling + dominance of sibling] – [scale scores of nurturance by sibling and dominance by sibling]; Furman & Buhrmester, 1985). Correlations between subscales comprising the dominance index are reported for patients and for siblings in (Tables C9 and C10, respectively). However, only nurturance by sibling and dominance of sibling exhibited an inverse relationship, which was also insignificant (patient: r = -.04, p>.05; sibling r = -.10, p>.05).

Procedure

Participants were recruited during patients' routine outpatient oncology clinic visit or inpatient hospitalization at a pediatric cancer treatment center in the southern central United States. Following consent/assent, participating parents and patients completed study measures. Siblings were invited to participate if present. Researchers scheduled with the parent for a researcher to obtain sibling assent via telephone if the sibling was not present during the recruitment clinic visit. In these cases, parents brought sibling measures home for sibling completion, and returned completed sibling measures at the family's earliest convenience. When parents brought sibling measures home, researchers asked parents to allow siblings to complete measures in a quiet, private space in the home. Researchers also asked parents to allow siblings to seal their completed questionnaire packet in a researcher-provided manila envelope to promote sense of privacy from family members.

Participants could choose to have research personnel read questions aloud in person, or on the telephone instead of responding to questionnaires on their own via paper-and-pencil, or online. 92.8% of parents, 89.1% of patients, and 28.6% of siblings chose to complete study measures on their own via paper-and-pencil during an appointment. Two percent of parents and 3.5% of patients chose for research personnel to read study measures aloud in an appointment and 4.6% of parents, 5.1% of patients, and 68.4% of siblings chose for research personnel to read study measures aloud over the phone. Less than one percent (0.4%) of patients and 3.1% of siblings chose to complete study measures at home on their own; no parents completed study measures at home on their own. Less than one percent (0.7%) of parents and 1.9% of patients chose to complete study measures online on their own; no siblings completed study measures

online on their own. Participants were not financially compensated for participation. Approximately 80% of eligible, recruited families agreed to participate in this study.

Data Analytic Strategy

Preliminary analyses. I computed index/subscale scores as arithmetic means of items that load on the respective index/subscale as long as participants responded to at least 50% of the items comprising that index/subscale. I excluded cases from specific analyses if a requisite measure is missing; however, participants were not excluded from analyses in which missing measures would not have been needed. I screened data to ensure data meet assumptions of planned parametric tests (e.g., normal distribution of error; homoscedasticity; Howell, 2013). Variables without normal distribution were to be statistically transformed, when appropriate. I used IBM SPSS Statistics 25 (IBM Corp, 2017) for all analyses except where otherwise indicated below.

Because parents, patients, and siblings were not all required to participate from each family, the sample sizes for each family member group differ. Only 61 families had all three eligible family members (i.e. parent, patient, sibling) participate, which would not been a large enough sample to provide adequate statistical power if data were analyzed as nested within families. To maintain adequate statistical power and to prevent excluding data from participants who did not participate as a family triad, data were analyzed separately for the parent, patient, and sibling sample.

Correlation analyses. To begin exploring the relationships between predictor and criterion variables, I conducted Pearson-product moment correlation analyses. I reported statistical significance (i.e., whether $p < .05$) and effect size. Effect size was reported as *r*, where

small effect size is r=.1, a medium effect size r=.3, and a large effect size is r=.5 (Cohen, 1988 as cited in StatisticSolution, 2013).

Regression. To test study aims, I conducted a series of nine hierarchical regression analyses predicting parent-, patient-, and sibling-reported sibling conflict, dominance disparity and warmth. Due to power limitations, each hierarchical regression only focused on one SRQ-related outcome for one group at time (e.g. parent-reported SRQ warmth). In each regression equation, variables were entered as follows: (Step 1) parent maladaptive coping, parent adaptive coping, (Step 2) parent coaching ES beliefs, parent dismissing ES beliefs, and (Step 3) interactions between parent coping indices and parent ES belief indices. I reported statistical significance level (i.e., $p<.05$) and effect sizes. Effect size was reported as Cohen's f^2, where a small effect size is f^2=.02, a medium effect size is f^2=.15, and a large effect size is f^2=.35 (Cohen, 1988, as cited in Soper, 2019).

***Aim 1 analyses*.** To test hypotheses H_1-H_2, I examined the main effects (Steps 1 and 2) of the hierarchical regression equations.

***Aim 2 moderation analyses*.** To test hypotheses H_3-H_4, I examined the interaction effects (Step 3) of each hierarchical regression. When conducting moderation analyses, introduction of the interaction term introduces the problems of multicollinearity and evaluation of a main effect at a value of 0 for predictor variables (Howell, 2013). To avoid these problems in my analyses, I centered variable means before creating interaction terms. For statistically significant interaction terms, I conducted post-hoc analyses based on Holmbeck's (2002) recommendations to determine the nature and direction of significant interactions.

Post-hoc power analyses for planned regression equations. I calculated statistical power for all regression equations using G*Power 3.1.9.4 (Faul, Erdfelder, Buchner, & Lang,

2009). For equations in which the final step did not explain significant variance in the outcome variable, power was computed for Step 2 of the regression analysis. For equations in which the final step explained significant additional variance in the outcome variable, power was computed for the final step.

***Regression analyses predicting parent-reported outcomes*.** Based on N = 142, p = .05, f^2=.19, and 4 predictor variables, statistical power for regression analyses predicting parent-reported sibling warmth was .99. Based on N=142, p = .05, f^2=.10, and 4 predictor variables, statistical power for regression analyses predicting sibling conflict was .86. Based on N=138, p = .05, f^2=.08, and 4 predictor variables, statistical power for regression analyses predicting sibling dominance disparity was .75.

***Regression analyses predicting patient-reported outcomes*.** Based on N=89, p = .05, f^2=.04, and 4 predictor variables, statistical power for regression analyses predicting sibling warmth was .27. Based on N=89, p = .05, f^2=.02, and 4 predictor variables, statistical power for regression analyses predicting sibling conflict was .15. Based on N=84, p = .05, f^2=.06, and 4 predictor variables, statistical power for regression analyses predicting sibling dominance disparity was .38.

***Regression analyses predicting sibling-reported outcomes*.** Based on N=82, p = .05, f^2=.07, and 4 predictor variables, statistical power for regression analyses predicting sibling warmth was .42. Based on N=82, p = .05, f^2=.02, and 4 predictor variables, statistical power for regression analyses predicting sibling conflict was .14. Based on N=81, p = .05, f^2=.03, and 4 predictor variables, statistical power for regression analyses predicting sibling dominance disparity was .19.

Results

Preliminary Analyses

Data Screening. Data were screened for normality of distribution, linearity, and outliers. Data for parent report of patient emotion-coaching philosophy, sibling emotion-coaching philosophy, adaptive coping, maladaptive coping, dominance, and conflict were not normally distributed, exhibiting kurtosis or skewness. To normalize the data, I transformed it (Pallant, 2010); however, adaptive coping, maladaptive coping and dominance could not be transformed. Because not all data could be transformed, to maintain consistency and avoid problems of interpretation in Aim 1 and 2 analyses, I maintained original data values. Patient- and sibling-reported warmth, conflict, and dominance were normally distributed and linear.

A related-samples Wilcoxon signed rank test was conducted to determine the similarity in parent report of emotion-coaching ES and emotion-dismissing ES for parents and siblings. Emotion-coaching ES for patients (M=4.70, SD=.37) and siblings (M=4.66, SD=.36) were found to be significantly different from one another (p<.001); however, these variables were found to be highly correlated (r=.98, p<.001). Emotion-dismissing ES for patients (M=3.08, SD=.64) and siblings (M=3.30, SD=.49) were found to be significantly different from one another (p<.001); however, these variables were also found to be highly correlated (r=.91, p<.001). Given the high degree of correlation between the parent report of sibling and patient ES variables, I calculated the mean of emotion-coaching ES for patients and siblings (M=4.70, SD=.36), and emotion-dismissing ES (M=3.16, SD=.59); these values were used in all analyses for parents, patients and siblings.

Outliers were detected in several variables; however, they were not transformed, nor removed. The pediatric cancer population is a unique population, and would not be expected produce responses similar to the general population. The difference in responses may provide insight into the impact of the pediatric cancer treatment process on families, therefore I maintained outliers.

Bivariate Correlations

Parent-reported outcomes. I conducted Pearson-product moment correlation analyses to explore the relations between parent ES beliefs, coping, and parent-reported perceptions of SRQ (Table C11). Parent adaptive coping was positively and significantly correlated with emotion-coaching ES beliefs (r=.21, p<.05) and sibling warmth (r=.32, p<.01), and negatively and significantly correlated with sibling dominance disparity (r= -.27, p<.01). Parent maladaptive coping was positively and significantly correlated with emotion-dismissing ES beliefs (r=.19, p<.01) and sibling conflict (r=.18, p<.05). Emotion-dismissing ES beliefs and conflict were positively and significantly correlated (r=.21, p<.05).

Patient-reported outcomes. I conducted Pearson-product moment correlation analyses to explore the relations between parent ES beliefs, parent coping, and patient-reported SRQ (Table C12). Parent adaptive coping was positively and significantly correlated with emotion-coaching ES (r=.26, p<.05); parent maladaptive coping was positively and significantly correlated with emotion-dismissing ES beliefs (r=.34, p<.01).

Sibling-reported outcomes. I conducted Pearson-product moment correlation analyses to explore the relations between parent ES beliefs, parent coping, and sibling-reported SRQ (Table C13). Sibling-reported warmth and conflict were negatively and significantly correlated (r= -.26, p<.01).

Correlations between parent-, patient-, and sibling-reported perceptions of SRQ warmth, conflict, and dominance disparity. I conducted a Pearson-product moment correlation analysis to explore the relations between parent-, patient-, and sibling-reported sibling warmth, sibling conflict and sibling dominance disparity (Table C14). Parent-reported sibling warmth positively and significantly correlated with patient-reported sibling warmth (r=.45, p<.01), sibling-reported sibling warmth (r=.40, p<.01), and, interestingly, sibling-reported sibling dominance disparity (r=.28, p<.01). Parent-reported sibling conflict positively and significantly correlated with patient-reported sibling conflict (r=.39, p<.01) and sibling-reported sibling conflict (r=.40, p<.01). Parent-reported sibling dominance disparity negatively and significantly correlated with patient-reported sibling dominance disparity (r= -.52, p<.01) and sibling-reported sibling conflict (r= -.31, p<.01); parent-reported sibling dominance disparity positively and significantly correlated with sibling-reported sibling dominance disparity (r=.38, p<.01).

Patient-reported sibling warmth positively and significantly correlated with sibling-reported sibling warmth (r=.54, p<.01), and negatively and significantly correlated with sibling-reported sibling conflict (r= -.31, p<.01). Patient-reported sibling conflict positively and significantly correlated with sibling-reported sibling conflict (r=.47, p<.01).

Sibling-reported sibling warmth negatively and significantly correlated with sibling-reported sibling conflict (r= -.26, p<.01).

Hierarchical Regression Analyses

Parent-reported outcomes.

***Warmth*.** The first hierarchical regression analyzed parent-reported sibling warmth as the criterion variable (Table C15). Step 2 explained an additional 5% of the variance in sibling warmth ($F\Delta$=3.36, p<.05) with a medium effect size (f^2=.19). Parent adaptive coping positively

predicted sibling warmth (r=.32, β=.34, p<.01). Parent maladaptive coping positively predicted warmth (r=.12, β=.16, p<.05). In addition, emotion-dismissing ES negatively predicted sibling warmth (r= -.16, β= -.20, p<.05). No significant interactions were identified.

Conflict. The second hierarchical regression analyzed parent-reported sibling conflict as the criterion variable (Table C16). Step 2 explained an additional 4% of the variance in sibling conflict ($F\Delta$=3.06, p<.05), with a small effect size (f^2=.10). Emotion-dismissing ES beliefs positively predicted sibling conflict (r=.21, β=.18, p<.05). No significant interactions were identified.

Dominance. The third hierarchical regression analyzed parent-reported sibling dominance disparity as the criterion variable (Table C17). Only Step 1 was significant, and explained 8% of the variance in sibling dominance disparity ($F\Delta$=5.67, p<.01), with a small effect size (f^2=.08). Parent adaptive coping negatively predicted sibling dominance disparity (r= -.28, β= -28, p<.01). However, the interaction between parent adaptive coping and emotion-dismissing ES beliefs positively predicted sibling dominance disparity (r= .23, β= .19, p<.05).

Holmbeck's (2002) post-hoc analysis revealed that for parents high in emotion-dismissing ES beliefs, parent adaptive coping was a significant, negative predictor of perceived sibling dominance disparity (β= -.23, t=-2.72 p<.01). For parents low in emotion-dismissing ES beliefs, parent adaptive coping was also a significant, negative predictor of perceived sibling dominance disparity (β= -2.33 , t= -2.51, p<.05).

Patient-reported outcomes.

Warmth. The first hierarchical regression analyzed patient-reported sibling warmth as the criterion variable (Table C18). All steps of the hierarchical regression were non-significant (p>.10), with a small effect size (f^2=.04). No main effects or interactions were identified.

Conflict. The second hierarchical regression analyzed patient-reported sibling conflict as a criterion variable (Table C19). Steps 1 and 2 of the hierarchical regression were non-significant (p>.10), with a small effect size (f^2=.02). However, step three approached significance in explaining additional variance (p < .10; 9% of additional variance). The interaction between emotion-coaching ES beliefs and parent adaptive coping strongly, negatively predicted sibling conflict (r= -.26, β= -.31, p<.01).

Holmbeck's (2002) post-hoc analysis revealed that, for parents high in emotion-coaching ES beliefs, parent adaptive coping was a non-significant, positive predictor of perceived sibling conflict (β= .02, t=.13, p>.10). For parents low in emotion-coaching ES beliefs, parent adaptive coping was a significant, positive predictor of perceived sibling conflict (β= 6.25, t= 2.54, p<.05).

***Dominance*.** The third hierarchical regression analyzed patient-reported sibling dominance as criterion variable (Table C20). All steps of the hierarchical regression were non-significant (p>.10), with a small effect size (f^2=.06). No main effects or interactions were identified.

Sibling-reported outcomes.

***Warmth*.** The first hierarchical regression analyzed sibling-reported sibling warmth as the criterion variable (Table C21). All steps of the hierarchical regression were non-significant (p>.10), with a small effect size (f^2=.07). No main effects or interactions were identified.

Conflict. The second hierarchical regression analyzed sibling-reported sibling conflict as a criterion variable (Table C22). All steps of the hierarchical regression were non-significant (p>.10), with a small effect size (f^2=.02). No main effects or interactions were identified

***Dominance*.** The third hierarchical regression analyzed sibling-reported sibling dominance disparity as criterion variable (Table C23). All steps of the hierarchical regression were non-significant (p>.10), with a small effect size of f^2=.03. No main effects or interactions were identified.

Discussion

For many children, sibling relationships can help shape children's social development (Brody et al., 1985; Dunn, 2007; Faith et al., 2015; Minuchin, 1974) and psychosocial adjustment. Positive, constructive sibling relationships have generally been associated with positive outcomes, such as increased social competence (Kim et al., 2007; Richmond, et al., 2005), more effective emotion regulation skills (Kennedy & Kramer, 2008), and fewer behavioral and emotional problems (Buist et al., 2013; Hetherington, 1988; Richmond et al., 2005). Conversely, negative, destructive sibling relationships have generally been associated with poorer outcomes, such as increased symptoms of depression (Kim et al., 2007; Pike et al., 1996), antisocial behaviors, and delinquency (Aguilar et al., 2001; Buist, 2010).

Extant literature demonstrates that a child's cancer diagnosis and subsequent treatment process often disrupts family roles, family routines, and patient, parent, and sibling psychosocial adjustment (Alderfer et al., 2009; Houtzager et al., 2004; Kazak et al., 2001); yet, the impact of childhood cancer on SRQ remains unexplored. In addition, although researchers have found clear links between parent psychological distress and patient/sibling adjustment to pediatric cancer (Mavrides & Pao, 2014; Robinson et al., 2007; Pierce et al., 2017), studies have yet to determine the extent to which parent coping is associated with SRQ for pediatric cancer patients and their healthy siblings. This study examined the relations between parent coping and sibling relationship quality as perceived by parents, patients, and patients' nearest age sibling. Further, in light of research demonstrating a clear role of parents' emotion socialization beliefs on healthy children's psychological adjustment (Katz et al., 2012), this study also examined the potential

moderating effects of parent ES beliefs on the relations between parent coping and perceived SRQ. In general, findings partially supported hypotheses for parent- and patient-reported perceptions of SRQ; parent ES beliefs moderated the relationship between parent coping and some SRQ outcomes. However, findings did not support hypotheses for the sibling sample.

For parent-reported outcomes, parents' adaptive coping positively predicted parent-perceived sibling warmth and negatively predicted parent-perceived sibling dominance disparity, partially supporting hypotheses. Ergo, parents engaging in more adaptive coping strategies tended to perceive greater warmth (i.e. displays of affection and feelings of love and respect) between patient and sibling, and less likely to perceive sibling dominance disparity (i.e. one sibling exerts more dominance over the other). Further, parent emotion-dismissing ES beliefs positively predicted parent-perceived sibling conflict, and negatively predicted parent-perceived sibling warmth. This indicates that the more parents dismissed negative emotions, the more conflict and less warmth they perceived between patient and sibling.

These findings are supported by a combination of psychological theories and hypotheses. As previously mentioned, family systems theory posits that family members can affect one another because they form emotionally interconnected "subsystems" (Steinglass, 1987). Further, aligning with family systems theory, the crossover hypothesis posits that emotions may be transferred between people (Nelson et al., 2010). Extant research is consistent with the predictions of family systems theory. For example, parents' adaptive coping strategies have been associated with more positive outcomes in families of children with pediatric cancer, such as less caregiver strain, better parental adjustment, and fewer internalizing and externalizing problems in children (Greening & Stoppelbein, 2007; Norberg, Lindblad, & Bowman, 2005). Although evidence regarding parents' maladaptive coping in the pediatric cancer literature is

limited, parents' maladaptive coping has been associated with negative patient outcomes. For example, Stoppelbein and colleagues (2013) found that parental substance use and self-blame was positively correlated to patient post-traumatic stress symptoms (PTSS), and that substance use mediated the relations between parent and patient PTSS in pediatric oncology families. These findings demonstrate how parents' emotions and behaviors may affect their children in pediatric oncology families. Therefore, if parents are coping well throughout their child's cancer treatment, it is not surprising that their overall improved adjustment may contribute to family environments that support strong sibling relationships. Another possibility is that the benefits of parents' adaptive coping are transferred to their children through the crossover hypothesis such that children's sibling relationships are greater in warmth and lower in dominance disparity if their parents cope well with childhood cancer. Finally, links between parent coping and parent-reported SRQ could be explained by the halo effect (DeVries, Hartung, & Golden, 2017), such that parents who are coping adaptively with their child's cancer treatment may view their children's sibling relationship more positively.

Regarding the finding that parents' emotion-dismissive ES beliefs positively predict parent-perceived sibling conflict and negatively predict parent-perceived sibling warmth, these findings may also be explained by the crossover hypothesis. If a parent endorses emotion-dismissive beliefs regarding their children's emotions, children may be unable to appropriately express their negative emotions, thereby limiting their ability to discuss emotions in a productive manner. This skill deficit may then be transferred to the sibling relationship, where patient and sibling may be unprepared to deal with negative emotions, and lead to the observance of less warmth and increased conflict.

Findings linking parents' coping and ES beliefs with their perceptions of SRQ may also be explained by social learning theory. That is, if parents employ adaptive coping strategies to address stressors and problems, then their children may observe and adopt their parents' behaviors to manage their own stressors and problems. For example, a patient may learn from a parent to seek emotional support or instrumental support, rather than deny the existence of a problem, which may increase the patient's likelihood of seeking support to manage cancer-related stressors. In the context of the patient and sibling relationship, parents' adaptive coping may engender sibling warmth by increasing feelings of intimacy, companionship, or affection. Conversely, if a parent endorses and models emotion dismissive beliefs regarding their children's emotions, then patients and their siblings may learn to be dismissive of others' negative emotions and therefore construct a less positive sibling relationship.

Importantly, because this study was not experimental in design, I cannot infer causality or directionality of these findings. For example, it is possible that parents tend to cope more adaptively when their children are well-adjusted or demonstrate a harmonious sibling relationship. Although family processes literature has consistently shown that parent variables affect children's SRQ, it is plausible that SRQ may impact the parent in the context of pediatric cancer, according to family systems theory and the crossover hypothesis. For example, if siblings and patients engage in frequent caring behaviors, this may reduce parental stress for parents who are already experiencing high stress due to the treatment process. Conversely, if siblings and patients frequently engage in conflict, this may increase parental stress for parents already experiencing high stress due to the treatment process.

In addition, it is also possible that parent or child characteristics (e.g. disposition, temperament) may be better positioned to cope well with the stresses of the treatment process.

For example, rather than ruminating on the difficulties wrought by the treatment process, positive individuals may have a more positive perception of the process. Alternatively, individuals with negative attributions about cancer treatment may be more likely to ruminate on the difficulties and unpleasantness wrought by the cancer treatment process, potentially worsening the treatment experience. At least one study examined the effects of pediatric oncology patients' resilience on the experience of pain and distress during painful medical procedures. It was found that higher resilience in pediatric oncology patients was correlated with less pain/distress during painful medical procedures, as reported by patients, parents, nurses, and trained observers (Harper, Penner, Peterson, Albrecht, & Taub, 2012).

Post-hoc analysis revealed that parents' adaptive coping inversely predicted parent-perceived sibling dominance disparity, but that this finding was amplified for parents low in emotion-dismissing beliefs. That is, by parent-report, siblings were less likely to have large dominance disparities with each other if parents were coping adaptively and this was especially true if parents' adaptive coping was coupled with non-dismissive ES beliefs. Children who learn adaptive coping strategies (behavioral or cognitive) from their parents may potentially learn to employ more constructive coping and conflict resolution strategies that reduce differences in sibling power distribution. For example, if a sibling is angered by a perceived injustice committed by the other child (e.g. playing a video game out of turn), a sibling who has learned adaptive coping skills may react by actively trying to solve the problem with the other child or seeking support and help from adult caregivers rather than retaliating or ignoring the other child's behavior (both of the latter of which could contribute to sibling dominance disparity).

Regarding the moderating role of ES beliefs and relations between parents' adaptive coping and sibling dominance disparity, ES research with healthy samples has found that

emotion-dismissing ES beliefs are associated with children's negative socio-emotional outcomes, such as poorer emotion regulations skills, increased externalizing behaviors (Katz & Windecker-Nelson, 2004), and increased internalizing symptoms (Hurrell et al., 2017; Katz & Hunter, 2007; Schwartz et al., 2018). Pediatric oncology research on parent coping has found that parental employment of adaptive coping strategies is associated with fewer children's internalizing and externalizing problems (Greening & Stoppelbein, 2007; Norberg et al., 2005). Finally, clinical child research with healthy samples has found that asymmetric power dynamics in sibling dyads is associated with negative outcomes for both children. Such dynamics may results in a pattern of victimization for the submissive child (Dunn, 2007; Faith, 2015); the dominant child may learn inappropriate conflict resolution skills, such as coercion or intimidation (Dunn, 2007). Thus, research and social learning theory yield support for the finding that adaptive coping was a stronger negative predictor of sibling dominance disparity in the context of low emotion-dismissing ES beliefs. In contrast, children's SRQ may still glean some benefits from parents' adaptive coping even if parents hold dismissive ES beliefs, but the benefits may be limited by parental messaging and behaviors that communicate devaluing of emotional experiences.

Contrary to hypotheses, parents' maladaptive coping positively predicted parent-perceived sibling warmth. It is possible that the finding is spurious, especially because the relationship was not strong (r=.12, β=.16, p<.05), and contradicts extant research regarding outcomes of parents' maladaptive coping. Generally, parental maladaptive coping strategies have been associated with adverse outcomes, such as symptoms of posttraumatic stress in pediatric cancer survivors (Stoppelbein et al., 2013) and parental depression (Greening & Stoppelbein, 2007). However, it is also possible that parent maladaptive coping strategies, in the context of pediatric cancer, may present in a manner that contributes to increased perceived sibling warmth.

As aforementioned, families experience significant life disruption during children's cancer treatment, accompanied by significant stressors and shifts in family roles and responsibilities. During the initial phases of treatment, parents often struggle to accept that they must shift child care responsibilities for healthy siblings to other caregivers. This is particularly true for mothers (McGrath, 2001) because mothers usually assume of the role of caretaker for the ill child (Chesler & Parry, 2001; McGrath, Paton, & Huff, 2005). A potential manifestation of parents' maladaptive coping during this process may be children's attempt to compensate by increasing warmth with each other and seeking support from each other.

Parents who maladaptively cope with their child's illness, in an attempt to decrease their own stress, may also submit to patient and sibling wishes and preferences during the ill child's cancer treatment (Long & Marsland, 2011), which may provide temporary harmony between children (e.g. if both children receive a toy, there may be less conflict, thus less stress, for the parent). This possible explanation is perhaps supported by the way in which I constructed the parent maladaptive coping index. The parent maladaptive coping index was constructed from several subscales of the Brief COPE, including the Behavioral Disengagement subscale. The Behavioral Disengagement subscale assesses parents' likelihood of "taking the path of least resistance" rather than actively coping and problem-solving to manage stressors. In the context of pediatric cancer, for example, a parent high in Behavioral Disengagement may choose to indulge their children's desires in an attempt to temporarily relieve their own stress, rather than attempting to teach children how to deal with their difficult emotions and conflicts. Additional research is needed to clarify the role of parent maladaptive coping in children's SRQ during pediatric cancer, especially in light of the counter-intuitive nature of the study finding.

For patient-reported outcomes, there was only one statistically significant finding. Post-hoc analysis revealed that parent adaptive coping in the context of low emotion-coaching ES beliefs positively predicted patient-perceived sibling conflict. However, parent adaptive coping did not predict patient-reported conflict when parents were high in emotion-coaching ES beliefs. One possibility is that, when parents are coping well with pediatric cancer but do not believe they should coach children about negative emotions, children are not afforded ample opportunities to observe and replicate parents' adaptive coping. Because these children may struggle to learn appropriate adaptive coping, it is plausible that they may also experience increased conflict with their sibling. This interpretation is supported by social learning theory. That is, parents who do not believe they should coach children's emotions may model fewer of their own adaptive coping strategies, have fewer discussions with their children regarding negative emotions, and/or limit their children's exposure to emotion-laden stimuli. If children's opportunities for emotion socialization are limited, children may not have sufficient understanding and practice in resolving difficult emotion, thus resulting in increased perceived sibling conflict.

This supposition is further probable given that the cancer treatment process has been associated with adverse social and emotional effects for patients and siblings. Given the increased salience and occurrence of negative patient experiences such as social isolation, depression, anxiety confusion, and fear (Kupst & Bingen, 2006; Marvides & Pao, 2014), and negative sibling experiences such as loss, loss of self, and sadness (Woodgate, 2006; Wilkins & Woodgagte, 2005), loss of support (Sloper & While, 1996), jealousy and guilt (Packman et al, 1997), children of pediatric oncology families may need extra emotional direction from their parents. However, if parents minimally engage and teach their children when experiencing

negative emotions during this increased difficult time, children may lack the example and practice necessary to deal with their negative emotions. This, in turn, may manifest as increased patient-perceived sibling conflict, as negative emotions may spill into the sibling relationship, which children are also unprepared to resolve. Alternatively, lacking sufficient ES direction from parents, children may become confused regarding appropriate resolution skills when faced with conflict, as they have at times received instruction on how to deal with conflict, but not during others.

For sibling-reported outcomes, there were no significant main effects of parent ES beliefs or coping. Further, interactions between parent ES beliefs and coping, as a set, did not explain significant additional variance in any sibling-reported sibling relationship dimension. The lack of statistically significant findings pertaining to sibling-reported outcomes may be related to this study's methodological limitations. First, specific cancer diagnosis and time since diagnosis were not included in analyses. These are important variables because they provide reference for the kind of treatment, intensity of treatment, degree of medical uncertainty, and prognosis that families are experiencing. For example, patients undergoing the early phases of active treatment for acute lymphoblastic leukemia may face prolonged hospitalization and intense chemotherapy regimens, minimizing their time at home (Children's Oncology Group, 2011). In contrast, patients who are post-treatment, or near the end of their treatment process, may require fewer clinic visits and hospitalizations, increasing their time at home. Similarly, specific diagnosis and associated prognosis may significantly impact family coping and parenting behaviors during pediatric cancer treatment.

In addition, for many families in which a pediatric cancer patient is in the active phases of treatment, life is often "consumed" and shaped by the patient's treatment and care needs (De

Graves & Aranda, 2008). Unfortunately, the disruption of family life has been associated with decreased feelings of togetherness among family members (McGrath, 2005). Thus, it is possible that, if a patient is undergoing active treatment and spending less time at home, the sibling may have less of an opportunity for their perception of SRQ to be shaped by parent coping and/or ES beliefs through family systems theory or social learning.

Further, during pediatric cancer treatment, one parent (usually the mother) often assumes the role of primary caregiver for the ill child, and spends less time with the sibling (Long & Marsland, 2011). If a sibling spends less time with the patient's primary caregiving parent, they may spend more time with another caregiver. Consequently, it is possible that sibling-reported SRQ outcomes may have been more impacted from the coping and ES beliefs of the parent or caregiver with whom the sibling is spending more time. Thus, the associations between predictor variables and sibling-reported SRQ outcomes may not have been significant in this study because the siblings' primary caregiver was not surveyed. For example, if a mother has taken on the role of being the patient's caregiver, the sibling may spend increased time with their father. Because of increased time together, the father's coping and ES beliefs may predict sibling reported SRQ outcomes more so than would otherwise be the case. However, this may not be reflected in a mother's report of her own coping and ES beliefs. Consistent with this supposition, Faith and colleagues (2019) found that parent ES beliefs moderated the relationship between patients' primary caregivers' coping and patient coping, but not between this caregiver's coping and sibling coping.

Of note, although interaction terms, as a set, failed to predict sibling-reported warmth, conflict, or dominance disparity, the interaction between parent maladaptive coping and parents' emotion-coaching ES beliefs emerged as an individual predictor of sibling-reported sibling

dominance disparity. Given that interaction terms did not explain significant additional variance in sibling-reported dominance disparity, this finding should be interpreted with extreme caution. However, to the extent that the statistically significant interaction term could inform future research, we conducted post-hoc analyses to evaluate the nature of the interaction. Post-hoc analysis revealed that, for parents high in emotion-coaching ES beliefs, parent maladaptive coping positively but non-significantly predicted sibling-reported dominance disparity. For parents low in emotion-coaching ES beliefs, parent maladaptive coping negatively predicted sibling-reported dominance disparity. Future research should continue to evaluate relations between parent coping, parent ES beliefs, and sibling-reported dominance disparity to determine whether interactions between parent coping and ES beliefs would explain significant variance in sibling-reported dominance in a larger sample.

A final consideration regarding the modest findings of this study pertaining to parent-, patient-, and sibling-reported outcomes, is the racial/ethnic composition of the sample. As previously mentioned, extant research has found differences regarding ES practices and related outcomes according to race/ethnicity. African-American (AA) mothers have been found to endorse and report benefits of an emotion-coaching approach (Bowie et al., 2013; Garner et al., 1994; Garner & Spears, 2000; Morelen, 2013). However, dismissive parenting has been associated with less teacher-reported aggression for pre-school-aged AA children (Smith & Walden, 2001). Further, although research regarding ES practices within Hispanic populations is limited, evidence suggests that outcomes of parent ES practices may differ from patterns found in European-American families. Pintar Breen and colleagues (2015) found that Mexican and Dominican mothers' nonsupportive ES behaviors did not predict young children's emotion knowledge (Pintar Breen, Tamis-LeMonda, & Kahana-Kalman, 2015). Lugo-Candelas and

colleagues (2015) found that Hispanic mothers' (predominantly Puerto-Rican) minimization of children's negative emotions was not correlated with externalizing behaviors in young children. These findings indicate that emotion-dismissing ES practices do not have the same effects across all cultures, impressing the importance of controlling for race and ethnic group. Regarding this study, 30.1% of participants were Hispanic and 14.6% were AA. Given extant research regarding ES practices and outcomes in these groups, it is possible that effects of ES beliefs may have been tempered in this study. In particular, effects of emotion-dismissing ES beliefs may have been impacted because extant research has shown that dismissive ES practices in Hispanic families are not associated with expected negative outcomes, but may even be beneficial, such as in AA families. I was unable to control for race and ethnicity in this study because of our limited sample size, but future studies should consider important cultural parameters in evaluating the role of emotion socialization on sibling relationship quality.

Clinical Implications

Research regarding the effects of parent coping and ES beliefs on the sibling relationship is limited, particularly within the context of pediatric oncology. Previous parent coping and ES research has usually examined psychosocial and socio-emotional outcomes at the individual-level, such as parent or child; less focus has been extended to the impact on relationships. Consequently, intervention research has documented the benefits of improved parent coping and ES beliefs and practices. For example, a meta-analysis examining the effectiveness of parent coping support interventions on parent distress during acute hospitalizations found that parent coping support interventions reduced parent anxiety and stress, but not depression (Doupnik et al., 2017). ES intervention research has found that improving parent ES practices results in parent impulse control, reduced family conflict, and reduced externalizing behaviors in the target

youth in healthy samples (Havighurst, Kehoe, & Harley, 2015) but has not been empirically evaluated for pediatric oncology samples. This is the first known study to examine relations between parent coping, parent ES beliefs, and perceptions of SRQ in pediatric oncology. Findings identified the significance of parent coping and ES beliefs concerning parent- and patient-reported perceptions of SRQ, but not for sibling-reported perceptions of SRQ. The present study provides preliminary support for parent coping and ES beliefs as therapeutic treatment targets that may benefit all family members.

Main effects of parent coping were found only for parent-reported perceptions of SRQ. Findings mirrored extant pediatric oncology literature regarding the benefits of parents' adaptive coping and the detrimental of effects of negative parent variables. Specifically, parental adaptive coping was positively associated with parent-perceived sibling warmth, and negatively associated with parent-perceived sibling dominance disparity, whereas maladaptive coping was positively associated with parent-perceived sibling conflict. These findings provide further evidence of the importance of addressing parent coping during the pediatric cancer process. Not only is it possible that parent coping can psychologically impact patients individually (Faith et al., 2015; Greening & Stoppelbein, 2007; Norberg et al., 2005), but it may also impact the quality of the sibling relationship, which is one of the most important settings for socio-emotional development. It would be worthwhile to assess parent coping at the time of children's diagnosis or within the first 4-6 weeks of children's cancer treatment, when distress levels are usually at their highest (Hoekstra-Weebers et al., 2001). If parents endorse more maladaptive coping strategies, clinicians may target parent coping in brief therapy so that parents may learn adaptive coping strategies. It may be beneficial for parents' coping to be assessed at multiple

time points throughout children's oncology treatment to ensure that parents are employing adaptive coping strategies.

I found main effects of parent ES beliefs on parent perceptions of SRQ. Specifically, emotion-dismissing beliefs were negatively associated with parent-perceived sibling warmth, and positively associated with parent-perceived sibling conflict. These findings mirrored extant clinical child literature regarding the benefits of an emotion-coaching approach with healthy children (Denham et al, 1997; Katz & Windecker-Nelson, 2004), and provide initial evidence of the relevance of parent ES beliefs in pediatric oncology. Because extant clinical child literature delineates the importance of parent ES beliefs and practices regarding children's emotional and behavioral development (Gottman et al., 1997; Katz & Hunter, 2007; Katz & Windecker-Nelson, 2004), it may be worthwhile to assess parent ES beliefs at the time of children's diagnosis. If parents are found to endorse more emotion-dismissing ES beliefs, parent ES beliefs and practices may be a potential target of brief therapy so that parents may learn emotion-coaching ES behaviors, and reduce emotion-dismissing ES behaviors. Similar to parent coping, it may be beneficial for parent ES beliefs and practices to be assessed at multiple time points throughout children's oncology treatment to ensure that parents are employing appropriate ES practices. As there are currently no ES interventions specifically for pediatric oncology families, adaptation and evaluation of extant, effective interventions from the clinical child literature, such as Tuning in to Kids (Havighurst et al., 2013; Havighurst, Wilson, Harley, Prior, & Kehoe, 2010) and Tuning in to Teens (Havighurst, et al., 2015; Havighurst, Harley, Kehoe, & Pizarro, 2012), may provide direction in working with pediatric oncology families.

Finally, ES beliefs were found to moderate parent coping effects on parent- and patient-reported perceptions of SRQ. Specifically, parent-perceived sibling dominance disparity

decreased when parents' adaptive coping was coupled with low emotion-dismissing ES beliefs; patient-perceived sibling conflict increased when parents' adaptive coping was coupled with emotion-coaching ES beliefs. Although modest, these novel findings provide initial evidence regarding how parent coping and ES beliefs may function in tandem to affect the sibling relationship, and further support targeting parent coping and ES beliefs for brief therapy at the time of children's diagnosis. Further, despite modest findings for sibling-reported sibling relationship quality, it is possible that siblings may also benefit from parent coping or ES interventions, as posited by family systems theory. More research is required prior to intervention development to better understand the relations among these variables, particularly as there were no significant findings for siblings.

Strengths and Limitations

This study had several strengths. This is the first study to examine the relationship between parent coping and perceived sibling relationship quality within pediatric cancer populations. For healthy children, scholars have found that sibling relationships are important for socio-emotional development (Brody et al., 1985; Dunn, 2007; Minuchin, 1974), so it was important for this study to examine how parent variables during the treatment process may affect perceptions of sibling relationship quality.

Although modest, results and trends expand the literature identifying parent coping as an important predictor of well-being in families of children with pediatric cancer (Faith et al., 2018; Hoekstra-Weebers et al., 2001; Houtzager et al., 2004; Klassen et al., 2011). This study is also one of few studies to examine the predictive and moderating role of emotion socialization between parent coping and family outcomes within pediatric cancer populations. Results of this study expand our scant knowledge of the impact of parent ES beliefs within this unique

population, as most extant research on parent ES beliefs has been conducted with families with children with acute illness, and research on parent ES practices in families with physically healthy children (Faith et al., 2018; Havighurst et al, 2015; Havighurst et al., 2013; Zhang et al., 2018)

The sample of this study was also a strength. Participation rate was approximately 80% and the sample was ethnically diverse, including a significant proportion of Hispanic and Black/African American families (see Method). Further, a large proportion of patients' nearest age siblings were recruited for this study. Sibling-related outcomes are not often included in pediatric cancer studies because siblings are difficult to reach, given the stressors encountered by families during the treatment process (e.g. disrupted routines, schedules, and family members' roles). Inclusion of sibling-related outcomes helps provide a clearer representation of family dynamics, and expands our knowledge of siblings' experience during the cancer treatment process. Finally, the sample size of siblings (N=104) was relatively large in comparison to most studies including, or focusing on siblings. For example, a systematic review of 65 studies examining the psychosocial adjustment of siblings of pediatric cancer patients reported that 58% of included studies consisted of a sample size smaller than 50 (Alderfer et al, 2010).

Flexible study methodology represents another strength. Participants were given the option to complete study measures via paper-and-pencil, online, or with a researcher reading the items aloud in person or over the phone. These options reduced barriers to participation and diversified the sample. Study measures were also provided in English and in Spanish, which was important for a largely immigrant population, further diversifying the sample. Research staff was also available to read items aloud to participants in English or Spanish, which decreased participation barriers for participants who could not read or write in their preferred language.

This was particularly important given that several participating parents were under-educated, with approximately 6% of parents reporting an education level of ninth grade or lower. In addition, participants had several options for study completion. Participants were able to complete study measures during inpatient hospitalization or during an outpatient appointment (taking as long as necessary), or they could take the measures home and return them during their next appointment. Participants also had the option to begin study measures during one appointment and complete them during a subsequent appointment or inpatient hospitalization. Participants could also choose to begin study measures during one appointment or inpatient hospitalization, and complete them via telephone structured interview.

A final strength of this study is that study measures were counterbalanced. The questionnaires analyzed for this study were part of a larger battery of questionnaires (approximately 300 items for parents, and approximately 90 items for children). Counterbalancing study measures reduced the impact of order effects and fatigue on item responses (Kooken et al., 2017). In addition, fatigue effects were also addressed by requiring a participant to have responded to a minimum of 50% of items to produce a subscale score.

This study also had limitations. First, although our sibling sample was large compared to many other published studies, our patient and sibling samples sizes did not provide adequate statistical power for analyses that examined patient- and sibling-reported outcomes. Given that patients and siblings had to be at least seven years of age to participate in the study and the most common type of pediatric cancer (pediatric acute lymphoblastic leukemia) affects predominately children under the age of 5 years (Hastings, et al., 2012a, pg. 144), the patient and sibling samples were approximately two-thirds the size of the parent sample. Even though patient and sibling samples sizes were large for pediatric cancer research, this resulted in underpowered

analyses for these groups. In contrast, the parent sample was larger, given that parents could report on children younger than seven years of age, yielding appropriately powered analyses. In addition, given power limitations, I was unable to control for factors that pediatric cancer literature has identified as impactful on family well-being, such as: income, time since diagnosis, distance from hospital, gender, race/ethnicity, and age. Further, study data was cross-sectional and non-experimental in nature, limiting my ability to draw causal conclusions. In addition, I was unable to nest analyses within families because families were permitted to participate regardless of whether or not all three family members joined the study. I therefore did not have access to an adequately powered sample of families in which all three family members participated and instead conducted analyses separately for parent-, patient-, and sibling-reported outcomes.

The nature of data collection was a limitation. Not only was the survey was long, but a significant proportion of participants elected to complete it during an outpatient appointment. This may have affected item responses in appointments where multiple children accompanied patient and parents, or where patient and/or siblings were very young. Either possible scenario could potentially be burdensome for parents because of child fatigue, diminished patience, or demands for attention, which may be distracting, particularly during longer appointments where child patience has been diminished. Participants may also have been motivated to leave the outpatient clinic expediently, which may have influenced item responses, although adequate measure internal consistency does not suggest random responding for most participants. Despite counterbalancing, and participant study completion options, the combination of a long survey with the attention demanded by a hospital visit and child management duties may have produced fatigue in participants. Further, because the study was completely composed of self-report

measures, social desirability bias in participant responses may be an issue as several questionnaires inquired regarding sensitive topics, such as parenting beliefs and treatment of siblings (Paulhaus, 1991, as cited in Kreitchmann, Abad, Ponsada, Nieto, & Morillo, 2019). The research team attempted to mitigate this concern by ensuring that no one on the patient's study team was involved in recruitment.

Future Directions

To better understand relations between parent coping, parent ES beliefs, and SRQ, future studies would benefit from several improvements. First, a larger sample size would allow for the application of more sophisticated statistical methods, such as structural equation modeling, which would allow for analysis of the family as a unit. This would be beneficial within the pediatric cancer literature because few studies include multiple family members (Katz et al., 2019). A significant proportion of extant studies focus on individuals, such as parents, patients, or siblings, with parents oftentimes self-reporting, as well as reporting for the patient or sibling (Alderfer et al., 2010; Long et al., 2018; Long & Marsland, 2011). A clearer understanding of how parental coping and ES beliefs impact sibling relations may allow for the development of more targeted, effective interventions.

Second, employment of a longitudinal design would provide a clearer understanding of the impact of parent coping and ES beliefs on sibling relationships over time. According to extant literature, many families usually experience increased levels of psychological distress (e.g. anxiety) upon receiving a pediatric cancer diagnosis and at the start of the treatment process, which usually dissipates over the course of treatment in most families (Alderfer et al, 2010; Houtzager et al, 2004; Katz et al, 2018; Pai et al., 2007). Therefore, understanding the how parent coping and ES beliefs potentially affect the sibling relationship over time may allow for

the adaptation and implementation of targeted interventions prior to the start of the treatment process, hopefully leading to improved family adjustment and psychosocial outcomes. In addition, it may also be beneficial to investigate psychological distress. Given that psychological distress varies with time for most families, it may be informative to concurrently analyze how it impacts parent coping and ES beliefs.

Further, the current study focused the evaluations of parent ES beliefs. Although extant research delineates that parent ES beliefs are predictive of parent ES practices, evaluation of parent ES practices may potentially provide a clearer understanding of how parent ES beliefs and practices impact the perceptions of family dynamics. Parent ES practices may be assessed via another questionnaire, such as the Coping with Children's Negative Emotions Scale (CCNES; Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002). A parent ES practices measure could provide an understanding of how parents believe they typically deal with their children's emotions. Parent ES practices may also be studied via direct observation. Direct observation may potentially reduce the problem of social desirability bias by providing an example of actual parent practices, potentially providing ecological validity (Andrade, 2018; Diehl, Wahl, & Freund, 2017). For example, participants and their children may be placed in a room with a single desirable toy or object. Trained researchers could then observe how the parent resolves the situation and reacts to emotions expressed by children (e.g. anger, disappointment), providing a more realistic approximation of parent ES practices.

In addition, rather than relying solely on parent self-report of parenting behaviors, it may be helpful for future studies to include an evaluation of child perceptions of parents ES behaviors, such as the Emotions as a Child Scale (EAC; Guo, Mrug, & Knight, 2017; Magai & O'Neal, 1997), as well as child perceptions of parent coping. Reports from multiple informants

may provide valuable insight into how similarly, or dissimilarly, family members perceive family dynamics during the treatment process. Application of these suggestions may provide richer data that may better inform ES interventions that may improve outcomes for families of children with pediatric cancer.

Conclusions

In conclusion, study findings provide preliminary evidence of the role of parent ES beliefs and parent coping in shaping perceptions of SRQ in pediatric oncology families. Study findings may potentially inform future research regarding the development of ES interventions to improve family processes in families undergoing the pediatric cancer treatment process. This endeavor may be worthwhile because sibling relationships are critical to many children's socio-emotional development. This study also contributes meaningfully to the limited literature on ES beliefs and parent coping in relation to sibling relationships in pediatric oncology populations. However, more research is needed to better understand how parent variables affect sibling relationships in pediatric oncology families.

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APPENDIX A:

INSTITUTIONAL REVIEW BOARD DECISION LETTER

UNIVERSITY OF SOUTH FLORIDA
USF RESEARCH & INNOVATION

RESEARCH INTEGRITY & COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd, MDC35, Tampa, FL 33612-4799
(813) 974-5638 FAX (813) 974-7091

January 10, 2020

Esther Davila, B.A.
Psychology
4202 East Fowler
Tampa, FL 33620

RE: **Not Human Subjects Research Determination**
IRB#: Pro00042222
Title: Parent Coping Style and Sibling Relationship Quality in Pediatric Cancer: The Moderating Effects of Parental Emotion Socialization Beliefs

Dear Ms. Davila:

The Institutional Review Board (IRB) has reviewed your application. The activities presented in the application involve methods of analysis of preexisting de-identified data. As such, USF IRB approval and oversight are not required.

While not requiring USF IRB approval and oversight, your study activities should be conducted in a manner that is consistent with the ethical principles of your profession. If the scope of your project changes in the future, please contact the IRB for further guidance.

If you will be obtaining consent to conduct a program evaluation, quality improvement project, or needs assessment, please remove any references to "research" and do not include the assigned Protocol Number or USF IRB contact information.

If your study activities involve collection or use of health information, please note that there may be requirements under the HIPAA Privacy Rule that apply. For further information, please contact a HIPAA Program administrator at (813) 974-5638.

Sincerely,

Kristen Salomon, Ph.D., Chairperson
USF Institutional Review Board

APPENDIX B:

DEMOGRAPHICS SURVEY

About Us

1.) How many children live **in your home**?_____

2.) How many adults live in your home?_____

3.) How old is your child who has a chronic illness (the one who has cancer, hemophilia, etc.)? _____

   a. What illness does this child have?

      _____

   b. What grade is this child in at school? _____

   c. Is this child a boy or a girl? †Boy †Girl

   d. When was this child first diagnosed with the chronic illness (month and year)?

      _____

   e. How are you related to this child (mother, father, grandmother, etc.)?_____

   f. Has this child received: Chemotherapy? †Yes †No

      Radiation? †Yes †No

      Surgery related to the illness? †Yes †No

      Blood transfusions?†Yes †No

      Factor treatment (bleeding disorders)?†Yes †No

      Other treatment?†Yes †No If yes, please describe:

      _____

      _____

      _____

      _____

4.) We want to know more about how this child gets along with brothers and sisters. Think about all of the children **who live in your home**. Who is this child's brother or sister who (a) is closest to his/her age **and** (b) is at least 7 years old?

   First name of brother/sister: _____

   Note: For all questions about how your child who has an illness gets along with a brother or sister, please think about his or her relationship with the brother or sister you just named.

   a. How old is this brother/sister?_____

   b. What grade is this brother/sister in at school?_____

c. Is this brother/sister a boy or a girl? †Boy †Girl

d. How are you related to this brother/sister (mother, father, grandmother, etc.)?_____

e. Has this brother/sister ever had any major medical problems (like cancer, sickle cell disease, developmental delays, or any other major problems)?†Yes †No

If so, what were the major medical problems (like sickle cell disease, spina bifida, paralysis, etc.)?

_____

_____

5.) Other than the two children we asked about on this form, have any of the other children **in your home** had any major medical problems (like cancer, sickle cell disease, spina bifida, paralysis, or any other major problems)?†Yes †No

a. If so, what were the major medical problems?

_____

6.) How would you describe yourself (please check all that apply):

___White
___Black/African American
___American Indian or Alaska Native
___Asian
___Native Hawaiian or Pacific Islander

a. Are you Hispanic/Latino?

___ Hispanic/Latino
___Not Hispanic/Latino

7.) How would you describe the child who has been diagnosed with an illness? (please check all that apply):

___White
___Black/African American
___American Indian or Alaska Native
___Asian
___Native Hawaiian or Pacific Islander

a. Is this child Hispanic/Latino?

___ Hispanic/Latino
___Not Hispanic/Latino

8.) How would you describe the brother or sister? (please check all that apply):

___White
___Black/African American
___American Indian or Alaska Native
___Asian
___Native Hawaiian or Pacific Islander

a. Is this brother/sister Hispanic/Latino?

___ Hispanic/Latino
___Not Hispanic/Latino

9.) What is the highest grade you completed in school? _____

10.) How old are you? _____

11.) Are you:
† Single
† Married
† Divorced
† Widowed
† Remarried
† Cohabitating

12.) What is your average household yearly income (please select one)?

†$0-$10,000	†$30,001-$40,000	†$60,001-$70,000
†$10,001-$20,000	†$40,001-$50,000	†$70,001-$80,000
$20,001-$30,000	†$50,001-$60,000	†$80,001 or more

APPENDIX C

TABLES

Table 1

Demographic Variables for Parent, Patient and Sibling Samples

	Parent (N=155)		Patient (N=103)		Sibling (N=104)	
Relationship to Child						
Mother	127	81.9%	79	76.7%	67	64.4%
Father	23	14.8%	19	18.4%	15	14.4%
Grandmother	4	2.6%	3	2.9%	3	2.9%
Uncle	1	0.6%	1	1.0%	1	1.0%
Missing	--	--	1	1.0%	18	17.3%
Distance from Hospital (in miles)						
1 – 25	76	49.0%	48	46.6%	48	46.2%
26 – 50	33	21.3%	25	24.3%	24	24.0%
51 – 75	5	3.2%	4	2.9%	3	2.9%
76 – 100	7	4.6%	6	5.8%	4	3.8%
101 – 125	10	6.4%	6	5.8%	7	6.8%
126 – 150	11	7.1%	5	4.9%	8	7.6%
151 – 175	3	1.9%	2	1.9%	3	2.9%
176+	10	6.5%	8	7.8%	6	5.8%

Table 2

Parents' Beliefs about Emotion Socialization Scale (PBCE): Index and Subscale Reliabilities (Cronbach's alpha)

	Patient		Sibling	
Factor	α	N	α	N
Emotion-Coaching	*.84*	*144*	*.83*	*137*
Positive Emotions are Valuable	.74	132	.75	125
Parents Need to Guide	.79	133	.80	124
Developmental Process	.76	136	.77	127
Emotions Just Are	.77	130	.78	123
Privacy	.64	138	.64	129
Negative Emotions are Valuable	.70	129	.69	123
Emotion-Dismissing	*.89*	*144*	*.86*	*137*
Children Can Learn on Own	.76	133	.82	123
Contempt	.71	129	.74	127
Manipulation	.88	128	.86	117
Control	.81	134	.76	124
All Emotions are Dangerous	.79	131	.77	124

N=155

Note: Italics indicate indices that are comprised of subscales that follow. For indices, Chronbach's alpha is presented at the level of subscale internal consistency.

Table 3

Rotated Component Matrix: Factor Loadings for the Parents' Beliefs about Emotion Socialization Scale (PBCE) for Patients

Factor	Emotion-Coaching	Emotion-Dismissing
Positive Emotions are Valuable	.80	
Parents Need to Guide	.77	
Developmental Process	.66	
Emotions Just Are	.66	
Privacy	.55	
Negative Emotions are Valuable	.46	
Children Can Learn on Own		.72
Manipulation		.66
Contempt		.65
Control		.64
All Emotions are Dangerous		.64

N=155

Table 4

Rotated Component Matrix: Factor Loadings for the Parents' Beliefs about Emotion Socialization Scale (PBCE) for Siblings

Factor	Emotion-Coaching	Emotion-Dismissing
Positive Emotions are Valuable	.83	
Parents Need to Guide	.76	
Developmental Process	.69	
Emotions Just Are	.67	
Privacy	.59	
Negative Emotions are Valuable	.32	
Children Can Learn on Own		.76
Manipulation		.62
Contempt	-.30	.62
Control		.61
All Emotions are Dangerous		.58

N=155

Table 5

Sibling Relationship Questionnaire: Index and Subscale Reliabilities (Cronbach's Alpha)

	Parent		Patient		Sibling	
Factor	α	N	α	N	α	N
Warmth	*.86*	*154*	*.89*	*103*	*.85*	*104*
Prosocial	.78	152	.62	99	.75	103
Intimacy	.88	149	.69	98	.82	104
Companionship	.82	151	.76	98	.74	104
Similarity	.82	151	.82	98	.82	101
Admiration of Sibling	.84	149	.81	98	.84	103
Admiration by Sibling	.84	148	.77	96	.76	103
Affection	.80	148	.75	99	.84	104
Dominance	---		---		---	
Nurture of Sibling	.81	151	.68	96	.70	71
Nurture by Sibling	.83	151	.80	99	.91	104
Dominance of Sibling	.77	150	.79	99	.74	103
Dominance by Sibling	.79	152	.76	99	.68	103
Conflict	*.75*	*155*	*.78*	*103*	*.84*	*104*
Antagonism	.60	141	.52	97	.64	104
Competition	.84	149	.81	98	.84	103
Quarreling	.87	150	.87	98	.88	103
Rivalry	---	---	---	---	---	---
Maternal Partiality	.77	152	.70	98	.72	103
Paternal Partiality	.87	138	.75	91	.75	98

Parent N=155; Patient N=103; Sibling N=104

Note: Italicized factors denote index-level subscales. For indices, Chronbach's alpha is presented both at the level of subscale internal consistency and item internal consistency.

*Chronbach's alpha not presented for the dominance index because the index is formulated as an algebraic formula using four subscales (i.e. (Nurture of Sibling + Dominance of Sibling) – (Nurture by Sibling + Dominance by Sibling)) rather than as a mean of the four subscales.

Table 6

Sibling Relationships Quality: Summary of Correlations, Means and Standard Deviations of Dominance Subscales for Parent

Subscale	1	2	3	4	*M*	*SD*
1. Nurture of Sibling	-				3.29	.91
2. Dominance of Sibling	.47**	-			2.52	.93
3. Nurture by Sibling	.10	-.07	-		3.07	.95
4. Dominance by Sibling	.12	.34**	.25**	-	2.71	.94

N=155

** $p<.01$

Table 7

Brief COPE: Index and Scale Reliabilities

Scale	Cronbach's alpha	*r*	N
Adaptive Coping	.84	---	137
Active Coping		.39**	
Planning		.49**	
Use of Emotional Support		.76**	
Use of Instrumental Support		.87**	
Positive Reframing		.57**	
Acceptance		.39**	
Religion		.32**	
Maladaptive Coping	.75	---	140
Denial		.55**	
Behavioral Disengagement		.43**	
Self-Blame		.72**	
Venting		.35**	
Self-distraction		.51**	
Substance Use		.79**	
Humor		.66**	

N=155

Note 1: Italicized factors denote index-level subscales.

Note 2: Reliabilities for the original Brief COPE subscales were calculated via bivariate correlations as each subscale contained too few items (2) to calculate a reliable Cronbach's alpha.

* $p<.05$; ** $p<.01$

Table 8

Rotated Component Matrix: Factor Loadings for the Brief COPE

Factor	Adaptive	Maladaptive
Active Coping	.76	
Planning	.72	
Use of Emotional Support	.68	
Use of Instrumental Support	.64	
Positive Reframing	.63	
Acceptance	.61	
Religion	.30	
Denial		.76
Behavioral Disengagement		.68
Self-Blame		.66
Venting		.66
Self-distraction		.50
Substance Use		.50
Humor	-	-

N=155

Note: factor loadings only shown where loading was $\geq$.3

Table 9

Sibling Relationships Quality: Summary of Correlations, Means and Standard Deviations of Dominance Subscales for Patient

Subscale	1	2	3	4	*M*	*SD*
1. Nurture of Sibling	-				2.84	.89
2. Dominance of Sibling	.51**	-			2.50	1.00
3. Nurture by Sibling	.09	-.00	-		2.76	1.02
4. Dominance by Sibling	.25*	.25*	.15	-	2.55	1.07

N=103

* $p<.05$; ** $p<.01$

Table 10

Sibling Relationships Quality: Summary of Correlations, Means and Standard Deviations of Dominance Subscales for Sibling

Subscale	1	2	3	4	*M*	*SD*
1. Nurture of Sibling	-				3.31	.99
2. Dominance of Sibling	.16	-			2.61	.97
3. Nurture by Sibling	.24*	-.10	-		2.90	1.18
4. Dominance by Sibling	-.04	.25**	.13	-	2.64	.97

N=104

* $p<.05$; ** $p<.01$

Table 11

Parent Correlation Analyses

Subscale	Reporter	1	2	3	4	5	6	7
1. Emotion Coaching Philosophy - Mean	Parent	-						
2. Emotion Dismissing Philosophy - Mean	Parent	.04	-					
3. Parent Adaptive Coping	Parent	.21*	.03	-				
4. Parent Maladaptive Coping	Parent	.03	.19*	.02	-			
5 SRQ Warmth	Parent	-.03	-.15	.32**	.13	-		
6. SRQ Conflict	Parent	-.08	.21*	-.01	.18*	-.09	-	
7. SRQ Dominance	Parent	.05	.02	-.27**	.00	-.11	-.07	-

* $p<.05$; ** $p<.01$

Table 12

Patient Correlation Analyses

Subscale	Reporter	1	2	3	4	5	6	7
1. Emotion Coaching Philosophy - Mean	Parent	-						
2. Emotion Dismissing Philosophy - Mean	Parent	.15	-					
3. Parent Adaptive Coping	Parent	.26*	.11	-				
4. Parent Maladaptive Coping	Parent	-.05	.34**	.06	-			
5 SRQ Warmth	Parent	.01	-.03	.78	.00	-		
6. SRQ Conflict	Parent	-.04	.04	.04	-.09	.05	-	
7. SRQ Dominance	Parent	-.09	.13	.09	.18	.02	.15	-

* $p<.05$; ** $p<.01$

Table 13

Sibling Correlation Analyses

Subscale	Reporter	1	2	3	4	5	6	7
1. Emotion Coaching Philosophy - Mean	Parent	-						
2. Emotion Dismissing Philosophy - Mean	Parent	.02	-					
3. Parent Adaptive Coping	Parent	.20	.10	-				
4. Parent Maladaptive Coping	Parent	.04	.17	.08	-			
5. SRQ Warmth	Sibling	-.15	.15	.10	.02	-		
6. SRQ Conflict	Sibling	-.05	.11	.05	.02	-.26**	-	
7. SRQ Dominance	Sibling	.13	-.07	-.06	.06	.07	-.15	-

* $p<.05$; ** $p<.01$

Table 14

Sibling Relationship Quality: Summary of Parent, Patient, and Sibling Index Correlations

Index	Reporter	1	2	3	4	5	6	7	8	9	*M*	*SD*
1. Warmth	Parent	-									3.62	.62
2. Conflict	Parent	-.09	-								2.51	.78
3. Dominance	Parent	-.11	-.07	-							.30	5.87
4. Warmth	Patient	.45**	-.15	-.18	-						3.35	.69
5. Conflict	Patient	-.14	.39**	-.02	-.02	-					2.82	.84
6. Dominance	Patient	-.07	.00	-.52**	.00	.14	-				.55	6.27
7. Warmth	Sibling	.40**	-.04	.17	.54**	-.03	-.06	-			3.52	.67
8. Conflict	Sibling	-.16	.40**	-.31**	-.31**	.47**	.15	-.26**	-		2.72	.94
9. Dominance	Sibling	.28**	-.03	.38**	.13	-.13	-.44	.07	.15	-	1.02	6.04

* $p<.05$; ** $p<.01$

Table 15

Parent-reported Sibling Warmth: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	$F\Delta$
1	1. Parent Adaptive Coping	.32**	.12	.32**	.38**	.10	3.96**	9.04**
	2. Parent Maladaptive Coping	.12		.12	.16	.11	1.53	
2	1. Parent Adaptive Coping	.32**	.05	.34**	.41**	.10	4.22	3.66*
	2. Parent Maladaptive Coping	.12*		.16*	.22*	.11	2.03	
	3. Emotion Coaching Beliefs	-.02		-.08	-.14	.14	-1.03	
	4. Emotion Dismissing Beliefs	-.16*		-.20*	-.21*	.08	-2.46	
3	1. Parent Adaptive Coping	.32**	.03	.10**	.41**	.10	4.04**	1.30
	2. Parent Maladaptive Coping	.12†		.16†	.22†	.12	1.90†	
	3. Emotion Coaching Beliefs	-.02		-.05	-.08	.14	-.56	
	4. Emotion Dismissing Beliefs	-.16*		-.20*	-.20*	.09	-2.28*	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.01		.07	.21	.26	.83	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	.01		.08	.29	.32	.90	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	-.14		-.10	-.20	.17	-1.15	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.18		.12	.29	.20	1.46	

† $p \leq .10$; * $p < .05$; ** $p < .01$

Table 16

Parent-reported Sibling Conflict: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	*FΔ*
1	1. Parent Adaptive Coping	.01	.04	.01	.02	.14	.15	2.52†
	2. Parent Maladaptive Coping	.19*		.19*	.34*	.15	2.24*	
2	1. Parent Adaptive Coping	.01	.04	.14	.05	.14	.36	3.06*
	2. Parent Maladaptive Coping	.19†		.16†	.28†	.15†	1.85†	
	3. Emotion Coaching Beliefs	-.09		-.11	-.24	.19	-1.26	
	4. Emotion Dismissing Beliefs	.21*		.18*	.26*	.12	2.17*	
3	1. Parent Adaptive Coping	.01	.04	.03	.04	.14	.31	.70
	2. Parent Maladaptive Coping	.19		.16	.22	.12	1.36	
	3. Emotion Coaching Beliefs	-.09		-.11	-.24	.20	-1.22	
	4. Emotion Dismissing Beliefs	.21*		.19*	.28*	.12	2.26*	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.05		-.07	-.27	.37	-.75	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	-.01		.04	.21	.46	.45	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	.07		.06	.17	.24	.68	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.14		.11	.35	.28	1.26	

† $p \leq .10$; * $p < .05$; ** $p < .01$

Table 17

Parent-reported Sibling Dominance: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	$F\Delta$
1	1. Parent Adaptive Coping	-.28**	.08	-.28	-3.37**	1.00	-3.37	5.67**
	2. Parent Maladaptive Coping	-.00		-.01	-.07	1.11	-.06	
2	1. Parent Adaptive Coping	-.28**	.01	-.30**	-3.61**	1.02	-3.54**	.78
	2. Parent Maladaptive Coping	-.00		.01	-.11	1.13	-.10	
	3. Emotion Coaching Beliefs	.05		-.11	1.78	1.44	1.24	
	4. Emotion Dismissing Beliefs	.01		.01	.14	.91	.15	
3	1. Parent Adaptive Coping	-.28**	.03	-.26**	-3.15**	1.07	-2.95**	1.26
	2. Parent Maladaptive Coping	-.00		-.00	-.01	1.22	-.01	
	3. Emotion Coaching Beliefs	.05		.09	1.54	1.46	1.05	
	4. Emotion Dismissing Beliefs	.01		.00	.03	.92	.03	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	.02		-.04	1.71	2.73	.44	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	.07		.05	-.52	3.39	.51	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	.23*		.19*	3.92*	1.82	2.15*	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	-.04		-.02	-1.21	2.09	-.25	

† $p \leq .10$; * $p < .05$; ** $p < .01$

Table 18

Patient-reported Sibling Warmth: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	*FΔ*
1	1. Parent Adaptive Coping	.20†	.04	.20†	.29†	.16	1.86†	.18
	2. Parent Maladaptive Coping	-.01		-.02	-.03	.17	-.19	
2	1. Parent Adaptive Coping	.20†	.00	.21†	.31†	.16	1.90†	.88
	2. Parent Maladaptive Coping	-.01		-.02	-.03	.18	-.18	
	3. Emotion Coaching Beliefs	.00		-.05	-.10	.22	-.49	
	4. Emotion Dismissing Beliefs	.00		-.01	-.01	.15	-.08	
3	1. Parent Adaptive Coping	.20†	.03	.19†	.28†	.17	1.68†	.67
	2. Parent Maladaptive Coping	-.01		-.11	-.18	.22	-.85	
	3. Emotion Coaching Beliefs	.00		-.07	-.13	.22	-.56	
	4. Emotion Dismissing Beliefs	.00		.02	.02	.16	.14	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.04		.00	.01	.42	.02	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	-.09		-.13	-.54	.53	-1.02	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	-.05		-.02	-.04	.31	-.13	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.12		.15	.42	.32	1.32	

† $p \leq .10$; * $p < .05$; ** $p < .01$;

Table 19

Patient-reported Sibling Conflict: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	*FΔ*
1	1. Parent Adaptive Coping	.05	.01	.06	.10	.18	.53	.43
	2. Parent Maladaptive Coping	-.09		-.09	-.16	.20	-.79	
2	1. Parent Adaptive Coping	.05	.01	.07	.12	.19	.61	.37
	2. Parent Maladaptive Coping	-.09		-.12	-.22	.22	-1.00	
	3. Emotion Coaching Beliefs	-.04		-.07	-.16	.26	-.63	
	4. Emotion Dismissing Beliefs	.04		.08	.13	.18	.69	
3	1. Parent Adaptive Coping	.05	.10	.02	.03	.19	.17	2.03†
	2. Parent Maladaptive Coping	-.08		-.14	-.27	.24	-1.10	
	3. Emotion Coaching Beliefs	-.04		-.11	-.25	.26	-.97	
	4. Emotion Dismissing Beliefs	.04		.09	.14	.18	.79	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.26**		-.31**	-1.31**	.49**	-2.70**	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	.07		.09	.43	.60	.71	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	-.08		.01	.02	.36	.06	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.03		.07	.24	.37	.65	

† $p \leq .10$; * $p < .05$; ** $p < .01$

Table 20

Patient-reported Sibling Dominance: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	$F\Delta$
1	1. Parent Adaptive Coping	.08	.04	.08	1.05	1.45	.73	1.67
	2. Parent Maladaptive Coping	.18†		.18†	2.54†	1.52†	.18†	
2	1. Parent Adaptive Coping	.08	.01	.10	1.35	1.50	.90	.56
	2. Parent Maladaptive Coping	.18		.15	2.09	1.62	1.30	
	3. Emotion Coaching Beliefs	-.09		-.11	-1.84	1.99	-.92	
	4. Emotion Dismissing Beliefs	.11		.08	.92	1.41	.65	
3	1. Parent Adaptive Coping	.08	.01	.11	1.44	1.57	.92	.34
	2. Parent Maladaptive Coping	.18		.19	2.74	1.90	1.44	
	3. Emotion Coaching Beliefs	-.09		-.10	-1.71	2.05	-.84	
	4. Emotion Dismissing Beliefs	.11		.07	.87	1.46	.59	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.01		.02	.84	4.32	.20	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	-.08		.00	.08	4.78	.01	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	-.06		-.08	-2.003	3.04	-.66	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	-.04		-.11	-2.71	2.88	-.85	

† $p \leq .10$; * $p < .05$; ** $p < .01$;

Table 21

Sibling-reported Sibling Warmth: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	$F\Delta$
1	1. Parent Adaptive Coping	.10	.01	.10	.13	.15	.84	.37
	2. Parent Maladaptive Coping	.02		.01	.01	.18	.07	
2	1. Parent Adaptive Coping	.10	.05	.12	.16	.15	1.03	2.22
	2. Parent Maladaptive Coping	.02		-.01	-.02	.18	-.13	
	3. Emotion Coaching Beliefs	-.15		-.18	-.38	.24	-1.60	
	4. Emotion Dismissing Beliefs	.16		.16	.21	.15	1.40	
3	1. Parent Adaptive Coping	.10	.04	.15	.20	.17	1.21	.85
	2. Parent Maladaptive Coping	.02		.02	.03	.25	.10	
	3. Emotion Coaching Beliefs	-.15		-.19	-.41	.25	-1.62	
	4. Emotion Dismissing Beliefs	.16		.15	.19	.16	1.23	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	.07		.04	.15	.45	.32	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	.09		.12	.50	.61	.81	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	.06		.12	.31	.31	1.00	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.17		.10	.30	.36	.83	

† $p \leq .10$; * $p < .05$; ** $p < .01$

Table 22

Sibling-reported Sibling Conflict: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	$F\Delta$
1	1. Parent Adaptive Coping	.05	.00	.09	.05	.20	.43	.11
	2. Parent Maladaptive Coping	.02		.04	.02	.24	.17	
2	1. Parent Adaptive Coping	.05	.02	.09	.05	.21	.43	.77
	2. Parent Maladaptive Coping	.02		-.00	-.00	.25	-.01	
	3. Emotion Coaching Beliefs	-.05		-.18	-.07	.32	-.57	
	4. Emotion Dismissing Beliefs	.13		.22	.13	.20	1.11	
3	1. Parent Adaptive Coping	.05	.04	.01	.01	.23	.04	.70
	2. Parent Maladaptive Coping	.02		.09	.04	.35	.26	
	3. Emotion Coaching Beliefs	-.05		-.32	-.11	.34	-.93	
	4. Emotion Dismissing Beliefs	.13		.26	.15	.22	1.22	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.13		-.93	-.20	.62	-1.50	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	.05		.67	.12	.84	.80	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	-.04		-.06	-.02	.42	-.14	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.04		-.02	-.01	.49	-.05	

† $p \leq .10$; * $p < .05$; ** $p < .01$

Table 23

Sibling-reported Sibling Dominance: Hierarchical Regression

Model	Variable	*r*	ΔR^2	β	B	SEB	*t*	*FΔ*
1	1. Parent Adaptive Coping	-.06	.01	-.07	-.81	1.31	-.62	.34
	2. Parent Maladaptive Coping	.06		.07	.94	1.56	.61	
2	1. Parent Adaptive Coping	-.06	.02	-.09	-1.05	1.34	-.78	.91
	2. Parent Maladaptive Coping	.06		.07	1.03	1.58	.65	
	3. Emotion Coaching Beliefs	.13		.14	2.57	2.06	1.25	
	4. Emotion Dismissing Beliefs	-.05		-.06	-.68	1.30	-.52	
3	1. Parent Adaptive Coping	-.06	.07	-.06	-.73	1.45	-.51	1.32
	2. Parent Maladaptive Coping	.06		.26	3.63	2.17	1.67	
	3. Emotion Coaching Beliefs	.13		.12	2.06	2.17	.95	
	4. Emotion Dismissing Beliefs	-.05		-.08	-.86	1.38	-.63	
	5. Emotion Coaching Beliefs x Parent Adaptive Coping	-.06		-.05	-1.54	3.92	-.39	
	6. Emotion Coaching Beliefs x Parent Maladaptive Coping	.17*		.33*	11.64*	5.27*	2.21*	
	7. Emotion Dismissing Beliefs x Parent Adaptive Coping	.09		.02	.34	2.66	.13	
	8. Emotion Dismissing Beliefs x Parent Maladaptive Coping	.06		-.00	-.08	3.10	-.03	

† $p \leq .10$; * $p < .05$; ** $p < .01$