

Coping and Adjustment in Child Cancer Survivors: An Investigation into Spirituality as a
Predictor of Psychosocial Outcomes

by

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(ABSTRACT)

The state of the literature on the psychosocial adjustment of children and adolescents with cancer is primed for novel contributions to the promotion of quality of life and depletion of negative psychosocial outcomes. Many recent studies indicate that this population may be at increased risk for depressed and anxious symptomatology; however, there is a large degree of individual variation. Coping responses have been demonstrated as significant predictors of adjustment outcomes with these patients. Research focusing upon coping with childhood chronic illness is progressing toward levels of greater specificity of construct and application; therefore, it is timely to target specific coping mechanisms in response to specified stressors. Health psychology has examined the role of spirituality as promoting positive health outcomes in adult populations. However, the pediatric literature has not empirically addressed this potential coping mechanism for child populations. The current study sought to: (a) develop a preliminary child measure of spiritual coping, and (b) to employ this assessment tool in

an empirical investigation of the relationship between spiritual coping and psychosocial adjustment in the childhood cancer population.

This investigation included 55 child participants recruited from three hospital settings across the southeastern, Midwestern, and western United States. During the measure development phase, 22 children were interviewed regarding their use of coping strategies (specifically spirituality) to target illness-related stress. The spiritual coping measure was based upon the response set obtained during this phase, and incorporated items into two subscales: existential and religious coping. The rest of the sample (N=33) participated in an individual interview that assessed coping (approach, avoidant, and spiritual) as well as depression, anxiety, and quality of life. A pilot factor analysis was employed to examine the structure of the new spiritual coping measure. Additionally, hierarchical regression analyses were employed to examine the contributions of each coping variable to the prediction of child adjustment outcomes.

The results indicated that depression is significantly predicted by the full coping model; however, the analyses for anxiety and quality of life were not significant. Furthermore, spiritual coping was not demonstrated to add significantly to the prediction of child adjustment in the full coping model. Post-hoc analyses revealed a mediation effect for social functioning upon the relationship of existential coping and depression. Additionally, religious coping was found to mediate the effect of emergency room utilization upon perceived efficacy of avoidant coping. The factor analysis for the measure, while preliminary in nature, reflected a two-factor solution with strong loadings that closely approximated the theoretical delineation of the subscales.

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Coping and Adjustment in Child Cancer Survivors: An Investigation into Spirituality as a Predictor of Psychosocial Outcomes

The psychosocial adjustment of childhood cancer survivors is a vital area of research for clinical and pediatric professionals. With recent medical advances, childhood cancer is emerging as a life-threatening chronic illness, in contrast to its prior status as nearly always fatal (Varni, Katz, Colgrove, & Dolgin, 1996). As mortality rates are decreasing across pediatric cancers, incidence rates are rising (Ries et al., 1999). Approximately 11,000 new cases of childhood cancer are diagnosed yearly, with the incidence rate including about 12 diagnosed children per 100,000 (Bleyer, 1990). Healthy People 2010 (Department of Health and Human Services [DHHS], 2000) promotes cancer survivorship as a primary focus in future health initiatives. Accompanying this objective is the goal of increasing quality of life and decreasing negative psychosocial outcomes for cancer survivors and their families. Much of the extant literature on the psychosocial adjustment of childhood cancer sufferers indicates that this group is at increased risk for pathology, with a large degree of individual variation (Wallander & Varni, 1998). Treatment status has not been reliably predictive of non-specific adjustment difficulties, as psychosocial disturbances have been identified in both on-treatment and off-treatment childhood cancer patients (Sanger, Copeland, & Davidson, 1991). Additionally, although the prevalence of adjustment difficulties is higher in the childhood chronic illness versus healthy populations, a minority of ill children exhibits significant maladjustment (Eiser, 1990; Eiser, Hill, & Vance, 2000). Synthesizing these findings indicates that subsets of children with chronic illness exhibit quite different

adjustment profiles, and live disparate qualities of life. The current state of the field is left with the persisting question: What are the key mechanisms that facilitate the well-adjusted children's healthy adaptation to childhood chronic illness, and through what methods can these strategies be implemented in interventions for the children with poorer adjustment outcomes to enhance quality of life?

Coping research that targets the development of new domains of coping with improved clinical utility is a potentially powerful answer to the question posed. Sanger, Copeland, and Davidson (1991) suggest that the identification of children who cope poorly could be an important finding in the attempted examination of individual differences in adjustment. The child's coping strategies for pain, level and style of cognitive functioning, as well as maternal psychological adjustment have been found to be predictive of the child's self-reported psychological adjustment (Sharpe, Brown, Thompson, & Eckman, 1994; Thompson Gil, Burbach, Keith, & Kinney, 1993a; Thompson, Gil, Burbach, Keith, & Kinney, 1993b). A web of stressors, such as the child's background variables, disease status, and psychological and social functioning, can interact to impair the child's adaptive coping mechanisms (MacLean, Perrin, Gortmaker, & Pierre, 1992).

Current leaders in the field of pediatric research have set forth challenges to researchers by identifying conceptual and methodological limitations in the state of the literature. Varni et al. (1996) point to "the general lack of theoretically-driven investigations on the potentially modifiable predictors of the individual differences in adjustment" evidenced by children diagnosed with cancer. Quittner et al. (1996) write, "... we currently have only a limited understanding of *how* and *under what*

conditions coping strategies affect the physical and psychological outcomes of stress... conceptual and methodological problems account for this limited knowledge, including the absence of clear and consistent definitions of both the stress and coping constructs, and a lack of contextual specificity in their measurement." One way to meet these challenges is by incorporating the commonly utilized (and thus consistent with the majority of the extant literature) approach-avoidance coping paradigm with the inclusion of a theoretically-driven and as yet not adequately tested, advancement in coping conceptualization, the construct of spiritual coping. Additionally, the employment of a specific illness population in which to study the new addition of spirituality in the coping paradigm, is anticipated to address the "contextual specificity" concern. The ultimate goal of such a line of investigation is to comprehensively assess and identify coping domains that facilitate the child's adjustment to cancer, and to implement these findings in increasingly efficacious interventions for pediatric oncology patients and their families.

Indices of Child Psychosocial Adjustment

Psychological dysfunction in chronically ill children is best conceptualized as a crisis occurring in the course of normal development, rather than as some type of consistent psychopathology (Glazer, 1991). Certain indicators have been widely employed as indices of children's adjustment to chronic illness, including depression, anxiety, and quality of life.

Depression and Anxiety.

Both depression and anxiety are variables that can be affected by the presence of illness (Phipps, Steele, Hall, Leigh, 2001; Phipps & Srivastava, 1997; Sawyer, Streiner,

Antoniou, Toogood, & Rice, 1998; Steele, Phipps, Srivastava, 1999; Varni & Katz, 1997). Studies on childhood leukemia indicate that anxiety levels of these children increase with the frequency of outpatient clinic visits. Other studies suggest that terminally ill children experience an increasing sense of isolation and anxiety about death (Koocher & Gudas, 1992). Coping has been identified as a significant predictor of depression and anxiety in childhood oncology populations. In a study conducted with 86 pediatric oncology patients, Frank, Blount, and Brown (1997) found that 47% of the variance in child depression was accounted for by the child's reported use of avoidant coping strategies, social competency, and depressive attributions. Likewise, child anxiety was predicted by avoidance coping, a depressional attribution style, and age at diagnosis (older children endorsed less anxiety than younger children in the sample). Therapy status (on- versus off-treatment) was found to be related to externalizing behavior problems (these problems were higher in off-treatment children), but status was not related to anxiety or depression scores. Spiritual coping has been indicated as a powerful coping tool for adults dealing with illness-centered anxiety (Hall, 1994; Lukoff, Turner, & Lu, 1993), but the research on childhood coping has not examined the potential positive effects of spiritual coping on anxiety or depression reduction.

Quality of Life.

Quality of life has become an increasingly salient construct as many children with chronic illnesses (including cancer) are living longer, but not necessarily more comfortable, lives. Healthy People 2010 (DHHS, 2000) cites increasing quality of life as one of two overarching goals and emphasizes the importance of incorporating quality of life measurement into the assessment of survivorship. Quality of life is defined in

Healthy People 2010 as a "general sense of happiness and satisfaction with our lives and environment," and is noted to incorporate domains of health, culture, beliefs, values, and life conditions supportive of these basic elements. The definition is made more specific to illness populations in the construct health-related quality of life (HRQOL). Varni, Seid, and Rode (1999) conceptualize HRQOL as "a patient's perceptions of the impact of disease and treatment functioning in a variety of dimensions, including physical, mental, and social domains." Treatments for pediatric cancer are often painful and difficult, both from physiological and social/developmental stances. The medical community is continuing to evolve with the definition of "health", which now integrates the presence of mental, physical, and social well-being with the former definition of health as the absence of physical disease (Testa & Simonson, 1996). The inclusion of quality of life as a positive indicator of health is therefore important to new models of adaptation to illness (Eiser & Morse, 2001). Additionally, spirituality is particularly primed to affect survivors' quality of life by acting on the elements of satisfaction with and meaning in life that are embedded in the quality of life definition.

Current Coping Conceptualizations

Lazarus and Folkman (1984) are theoretical forerunners in the conceptualization of stress and coping. Their work has focused on the delineation of two categories of coping behavior: problem-focused and emotion-focused coping. Problem-focused coping efforts directly target the stressor in an attempt to resolve the stressful situation. Emotion-focused coping efforts are the individual's attempts to regulate the negative emotional state that is aroused by the stressor, without directly targeting the stressor itself.

Although the field of coping research is indebted to the strides of this model, this conceptualization of coping is too simplistic to adequately address people's engagement in stress-reducing maneuvers. Coping is a complex process involving an array of invoked strategies that serve to regulate the individual's stress response and mediate psychological outcomes. The assumption underlying the Lazarus-Folkman model is that problem-focused coping is active, resulting in a positive outcome, whereas emotion-focused coping is not adaptive, leading to negative outcomes (Quittner et al., 1996). However, this notion is not supported uniformly in the literature. Some studies have indicated that problem-focused coping efforts lead to decreased psychological distress more so than emotion-focused, but others indicate that in some situations, emotion-focused efforts are adaptive and facilitate adjustment (Billings & Moos, 1981; Strauss & Wellisch, 1981; Wertlieb, Weigel, & Feldstein, 1987). When applied generally to the daily-hassle genre of problems, problem-focused strategies may be more adaptive, but controllability of the more complex stressor (e.g., illness) can moderate this tendency.

Coping is best conceptualized as a dynamic process rather than as a categorical behavioral response to a specified situation. With a process orientation, it is not necessary to choose between the use of problem-focused versus emotion-focused coping; rather both strategies can be employed in an interactive way to regulate oneself in the context of a stressor. Coping emerges as a player in and product of the complex interplay between situational and personal variables (Carver, Scheier, & Weintraub, 1989). An excellent example of a process-oriented model is the Transactional Stress and Coping Model, put forth by Thompson and colleagues (1993b), which highlights the interaction of person-situation variables.

Spiritual Coping and Survivorship

Definition of Spirituality.

Spirituality is a complex construct, which is defined differently in various literatures. Spirituality is expressed in psychology literature, for the most part, as that aspect of the self which searches for meaning, attempts to render sense out of life events, and which seeks to reconcile one's experiences with personal beliefs. Pate and Bondi (1992) described spirituality as the sense of one's place in the universe and Gilchrist (1992) identified spirituality as that which individuals deem sacred and central in their lives. In this broad conception, spirituality is viewed as an individual's life philosophy, as the backdrop to which the individual makes sense out of his/her experiences. Spirituality provides each person with a context for his or her life within the ultimate environment in terms of what the person most values. Therefore, everyone is spiritual according to this definition, as each person approaches life's circumstances with a certain degree of existential questioning and answering. Spirituality is instrumental for coping through its generation of hope, sense of purpose for even seemingly incomprehensible events, and provision of support through connection to something larger than self (Ganje-Fling & McCarthy, 1996). This notion of interconnectedness is strongly tied to spiritual thought (Zumeta, 1993), and it may be operationalized as a connection to a deity, or to other people, or merely the sense that one is part of a larger order of the universe. These aspects of spirituality can be immensely adaptive in times of stress, and are shown to be widely endorsed in the general populace by demographic data (Rowan, 1996).

Conceptually, it is important to distinguish spirituality from religion. Spirituality is the umbrella under which the substrate of religion falls. Religion is just one of many

possible answers to spiritual questioning, and connotes specified belief systems and practices (Aldridge, 1991). Other expressions of spirituality may be highly unstructured and individualized. James Fowler, who developed his six stages of faith by interviewing hundreds of people aged four to eighty, makes it explicitly clear that in his use of the word "faith" he is not implicating religious faith. He defines faith as a universal quality of knowing and relating oneself to the larger whole; and he asserts that each person has a need to have faith in something, and that something is variable -- a god figure, a concept of the universal whole, even oneself (Fowler, 1991). However, much of the psychological research in the area of spirituality has been conducted with religion as the primary variable due to ease of measurement. It is much more difficult to assess for individual philosophical approaches than for defined group-based belief systems. Therefore, by nature of the data, religiosity will be discussed as well as the broader perspective of spirituality. For the purposes of the proposed research project, the "definition of spirituality" was distilled into four concepts: purpose/meaning, care by a higher power, connection to a higher power, and spiritual practice.

Spirituality and Adjustment to Illness.

Spirituality is an appropriate addition to the currently employed coping paradigm in pediatric research. Although spirituality has been largely neglected in the child coping literature, it has been examined in adult populations as a viable coping response. Recently, data have been published indicating spirituality as clinically relevant in both the prevention of physical and mental illness in adult populations as well as in coping and recovery from illness (Larson & Milano, 1995). Additionally, demographic data indicate that up to 90% of the United States adult population endorses a belief in God (Rowan,

1996). It is likely that children are also utilizing spirituality as a coping mechanism; however, this possibility has not been acknowledged nor studied in the childhood illness adjustment literature. Research indicating that religion can aid an individual's adaptation to both physiological and psychological stress has led to the suggestion that religion can be conceptualized in terms of a cognitive schema through which individuals may interpret and cope with stressors (Koenig, 1995). It has been suggested that clinicians incorporate spirituality into the treatment process in an effort to combat pathological cognitions during periods of stress (Gopaul-McNicol, 1997).

Spiritual coping is particularly relevant for adjusting to illness (Waldfoegel & Wolpe, 1993). Aldridge (1991) suggests that spirituality is a potential, and in his perspective, essential coping mechanism in dealing with the specific stressors of significant illness. He contends that the suffering and loss of hope and meaning that accompanies a period of illness cross the boundaries of physiological, psychological, and social domains, and therefore necessitates coping with issues across these contexts. Spirituality is a coping strategy that is particularly primed for maintaining hope, and is often cited by patients as a primary strategy for remaining positive during illness (Hall, 1994). Current data suggest that greater than 75 percent of patients surveyed indicated that their physicians should address spiritual issues in conjunction with their medical care (Larson & Milano, 1995). The introduction of spirituality into the medical realm has been facilitated by research conducted within the field of psychoneuroimmunology (or mind-body medicine), and is beginning to subsume a larger role in many physicians' daily practice (Wirth, 1993).

Illness is a period of high-stress, and religion has been indicated as playing a greater role in coping when an individual perceives a situation as having stressful intensity (Larson & Milano, 1995; Mickley, Carson, & Soeken, 1995). A study examining spiritual well-being in breast cancer patients found a significant relationship between illness stressors (e.g. number of previous breast operations) and higher spiritual well-being. This finding indicates that spirituality becomes a more significant coping strategy at times of intense or prolonged stress (Fox & Odling-Smee, 1995). Additionally, patients aware of their poor prognosis were found to utilize more spiritual coping strategies than those unaware of their prognosis (Sodestrom & Martinson, 1987). Spirituality has been shown to have relevance to clinical outcomes in terms of illness prevention, coping, and care (Larson & Milano, 1995). Researchers followed 232 elective heart surgery patients and analyzed the contributing factors to patient recovery and survival. They found that the amount of comfort that patients attributed to their religious beliefs was the most consistent indicator of survival; non-religious patients had nearly three times the risk of death as religious patients (Oxman, Freeman, & Manheimer, 1995). Research has also linked religious beliefs and involvement to health beliefs, attitudes, and behaviors (Levin & Vanderpool, 1991), and improved well-being (Koenig, 1991). Specifically, patients who engage in spiritual coping have lower rates of depression than other patients (Larson & Milano, 1995). Similarly, cancer patients who endorse strong religious faith exhibit higher scores on hope and coping scales than those patients who do not indicate strong faith (Herth, 1989). Likewise, breast cancer patients have rated spiritual coping as helpful and frequently employed as a strategy to increase feelings of support (Halstead & Fernsler, 1994).

Children with chronic illness have been shown to engage in more complex cognitive appraisals and coping responses than healthy controls due to their need to adapt to more intense and varied stressors (Olson, Johansen, Powers, Pope, & Klein, 1993). Spiritual coping may be designated as a complex coping strategy which is facilitated by intense stress such as illness or threat of death because stressors of such magnitude require greater complexity of appraisal and response.

Anxiety has been shown to increase when children are not allowed to discuss their fears regarding death and illness (O'Halloran & Altmaier, 1996), and family religiosity has been found to facilitate this type of discussion. Spilka, Zwartjes, and Zwartjes (1991) conducted a study evaluating the importance of religion in coping with childhood cancer, and found that religion appeared to facilitate connectiveness for the child with his/her family members through the "talking out" of illness-related feelings. Religiosity was also associated with the children's increased understanding of the disease, which was likely due to this open atmosphere for discussion.

As demonstrated, the state of the literature is primed for the inclusion of an addition to the current coping conceptualization. Spirituality deepens and broadens the potential for coping efforts to impact survivorship experience, both via the amelioration of negative experience (depression and anxiety) and the augmentation of positive global health outcomes (quality of life).

The Present Study

The aim of the proposed study was to broaden current conceptualizations of the coping and adjustment process in child cancer survivors to include spirituality as an additional predictor of positive health outcomes. The immediate goals of the project

were: (a) to develop a preliminary version of a child measure of spiritual coping, and (b) to subsequently examine the relationship between spiritual coping and psychosocial adjustment in the pediatric oncology population. To address the first aim, the researcher built upon preliminary work, which involved the designation of four theoretically driven constructs in spiritual coping: purpose/meaning, care by a higher power, connection to a higher power, and spiritual practice. Elements of these factors were developed into a semi-structured interview for the purpose of spiritual coping item development. The interview was administered by a trained facilitator to focus groups of children ages 7 to 17 years who have been diagnosed with cancer and are less than two years post-treatment. The children's interview responses were converted to items for inclusion in the first draft of the spiritual coping measure, which were administered to a sample of children with the same age and treatment parameters. Factor analysis was conducted on these items, and the emerging factors were examined for confirmation or lack of support for the theoretically driven factors. Our second aim for the proposed project was to examine the relationship between spiritual coping and adjustment outcomes, including depression, anxiety, and quality of life. It was hoped that findings from the investigation would guide the restructuring of coping interventions, increasing efficacy via specific assessment and treatment techniques that target domains of coping salient to the pediatric oncology population above and beyond current coping conceptualizations.

Hypotheses

At the outset of this study, it was expected that:

- (1) The spiritual coping measure will yield two distinct factors: existential and religious-based coping.

- (2) The full predictive model of the ill child's self-reported quality of life, depression, and anxiety (including all four coping variables [approach, avoidant, religious, and existential]) will account for a significant portion of the variance in each adjustment outcome.
- (3) Spiritual coping will significantly add to the prediction of child adjustment outcomes, over and beyond general coping strategies.
- (4) General coping strategies will be differentially related to the adjustment outcomes; that is, approach coping will be positively associated with quality of life and negatively associated with depression and anxiety, and avoidant coping will be negatively associated with quality of life and positively associated with depression and anxiety.
- (5) Spiritual coping strategies will predict the ill child's self-reported quality of life, depression, and anxiety, with higher levels of spiritual coping leading to better quality of life, and lessened experience of depression and anxiety.

Method

Study Sites

The study was conducted at three participating sites: The Medical University of South Carolina (MUSC) in Charleston, South Carolina; the University of Kansas Medical Center (KUMC) in Kansas City, Kansas; and the University of California at Los Angeles (UCLA) Medical Center. At each setting a consultant was enlisted to serve as liaison to the pediatric oncology clinic for recruitment and administrative purposes. Additionally, each setting offered appropriate office space or private hospital patient rooms for meeting with study participants.

Participants

A total of 55 children were recruited for participation in the study over both phases. Twenty-two of these children were participants in the measure development component of the study (Phase 1) and 33 were participants in the coping and adjustment investigation (Phase 2). Children were invited to participate in the study if they were between the ages of 7 and 17 years and less than two years post-diagnosis. There were no exclusionary criteria regarding specific diagnoses. No exclusionary criteria were applied based upon gender. Subject parameters were the same for Phase 1 and Phase 2 participants.

The sample for Phase 1 was recruited from the KUMC and MUSC pediatric oncology populations. Of these 22 children, 59% were female and 41% male, with a mean age of ten years. Additionally, the sample obtained was multi-ethnic: approximately 81% of these 22 children were Caucasian, 13% were African-American, and 9% were Latino.

The sample for Phase 2 was recruited from the MUSC and UCLA pediatric oncology populations. Of these 33 children, 38% were female and 62% male, with a mean age of 12 years (range of 7 to 17 years of age). The sample was ethnically diverse: approximately 47% were Caucasian, 34% African-American, 10% Latino, 3% Asian, and 6% other or biracial. Phase 2 child participants spent an average of 22.45 nights in the hospital over the twelve months prior to project participation (range = 1 to 182, SD = 43.108) and had an average of 1.5 emergency room visits (range = 0 to 11, SD = 2.45).

Socioeconomic status for Phase 2 participants was reflected by level of parental education. Regarding the mothers, 12% completed between 7 to 11 grades, 24% were high school graduates, 36% attended some college or certification course, 18% were college graduates, 6% obtained a graduate or professional degree, and 3% did not account for level of education. Regarding the fathers, 9% completed between 7 to 11 grades, 15% were high school graduates, 21% attended some college or certification course, 18% were college graduates, 12% obtained a graduate or professional degree, and 25% did not have a reported level of education. To further describe the social history of the sample, current marital status was obtained for the parents of participants. Fifty-eight percent of the mothers were married, 6% were single, 6% were living with someone, 15% were divorced, 6% were separated, 6% were widowed, and 3% did not report. For the fathers, 64% were married, 6% were single, 3% were living with someone, 6% were divorced, 3% were separated, 0% were widowed, and 18% did not have reported data. Please see Table 1 for a representation of these data.

Procedures

The project was conducted in two phases to accomplish the specific aims.

Participant Recruitment.

Subjects were recruited in the same manner throughout both phases of the project. Basic data were collected from medical records to identify potential subjects. These data included age of the child and the date that the child was diagnosed with cancer. If the child was identified as falling within subject parameters (between ages of seven and seventeen years, not longer than two years post-diagnosis), the family was approached for

participation in the study. Eligible families were approached by face-to-face contact in the clinic or inpatient setting by a member of the research team.

Phase 1.

The first project phase targeted the specific aim of developing the child spiritual coping measure. To accomplish this goal, the researchers built upon preliminary work, which involved the designation of four theoretically driven factors in spiritual coping: purpose/meaning, care by a higher power, connection to a higher power, and spiritual practice. Elements of these factors were developed into a semi-structured interview for the purpose of spiritual coping item development, inquiring into the child's coping strategies and querying specifically about the child's use of spirituality in coping with illness related stressors. The interview was administered by a trained facilitator to children ages 7 to 17 years who were diagnosed with cancer and were less than two years post-diagnosis date. The length of participation varied from thirty to sixty minutes. Four groups of children were recruited during this phase of the project. During the time between groups, researchers worked on item development and format of the measure. Items were written based upon the content of the subjects' interview responses. These items were presented as test items in subsequent groups (for example, Group 3 was presented with items generated by responses of Groups 1 and 2) for feedback on understandability and applicability of the items and concepts. Three consecutive iterations of the measure were developed and presented to participants, so that the final version of the measure incorporated only items that have been reviewed and approved by child participants. The measure reflects the researchers' theoretical delineation between existential and religious coping by relegating items to one of these two subscales.

It was intended that four focus groups, each consisting of four to five child cancer survivors and patients, be conducted. However, due to illness constraints (hospitalization, isolation due to suppressed immune system, etc.), scheduling and coordinating the groups evidenced burden upon certain subjects. Therefore, some of the interviews were conducted in an individual format with the child participants. The first group of children (N=5) were interviewed individually utilizing the semi-structured spiritual coping interview. The children's interview responses were converted to items that were included in the first draft of the spiritual coping measure. Groups 2 (N=7) and 3 (N=5) met as focus groups and Group 4 (N=5) participants were interviewed individually.

Along with interviewing children with cancer during Phase 1, the researcher sought input from other groups that have extensive contact with these children. A focus group consisting of six parents and two siblings was conducted for the purpose of further exploration of the construct from a family perspective. Furthermore, feedback was solicited from nurses, doctors, psychologists, and hospital chaplains who work with the childhood cancer population. Suggestions from these individuals were submitted to the child groups for review of relevance and comprehensibility. In this manner, all items in the final version of the measure were reviewed and discussed by the target pediatric population.

At the close of Phase 1, the researchers finalized the first draft of the spiritual coping measure to be used in Phase 2. The children who participated in this project phase are denoted as "sample 1" (N=22) and were not recruited for participation in the second project phase.

Phase 2.

The second project phase was targeted to accomplish the second specific aim of the project: to examine the relationship between spiritual coping and psychosocial adjustment in the pediatric oncology population. The research protocol primarily involved measure completion with the child subjects; however, certain information concerning the child was requested of the child's parent or guardian. Child cancer patients recruited for participation in this phase are denoted as "sample 2" (N=33).

A member of the research team explained the purposes and procedures of the study to each child and parent, answering any questions that arose. The parents and children were then asked to sign the informed consent form. Once consent was granted, the parents were asked to complete a one-page demographic information form. While the parents were completing this form, the trained interviewers conducted the child interviews (approximately sixty minutes). The child protocol is reflective of the project aims: each child was asked to complete the spiritual coping measure created in Phase 1 of this project, a general coping strategies measure, and adjustment outcome measures (quality of life, depression, and anxiety). The coping measures were administered in an interactive format, with the researcher prompting the child to think about the overall experience of his or her illness (spiritual coping measure) and also to recall a specific recent illness-related stressful event (general coping measure). The children were asked to rate the frequency with which they utilized specific coping strategies. The interviewers additionally read the self-report measures targeting depression, anxiety, and quality of life to the children to control for differences in reading level across subjects.

The measures were administered in a rotating format across subjects so that the order of administration would not impact the validity of the collected data.

The interviewers particularly attended to the children's responses to suicidal ideation items as well as general psychosocial functioning throughout the course of the interview. If a child endorsed the experience of suicidal thoughts, a brief suicidality assessment was immediately conducted, and the researcher made the appropriate referrals to the family, as well as informed the clinical psychologist(s) responsible for care of the pediatric cancer patients. This occurred in four cases (three children endorsed "I think about killing myself but I would not do it" and one child endorsed "I want to kill myself"). Likewise, the researcher referred the child to the licensed professionals if the child evidenced high indices of depression and/or anxiety (two additional cases).

Referral chains were established at each study site.

Measures

Phase 1 Child Measures.

Children were interviewed in individual and group formats utilizing the semi-structured **Spirituality Interview**, developed for use in this project. The interview solicited information from the children regarding engagement in existential and religious thought and practices, both generally and as a specific stress-response. The interview included questions targeting both broad life perspectives ("Do you think that life is fair, that things always happen as they should?") and specific behaviors ("Do you pray or take time to think by yourself?"). Additionally, the spirituality interview contained a list of items developed from the literature base. The interviewer prompted the children for feedback regarding understandability and applicability of the existing items.

Phase 2 Child Measures.

Quality of life was assessed via the Pediatric Quality of Life Inventory (PedsQL, Varni, Seid, & Rode, 1999). The PedsQL is a measure of health-related quality of life to be administered in pediatric populations. The measure consists of 23 items that comprise four factors: physical, emotional, social, and school-based functioning. The scale was derived empirically from data collected from a sample of 291 pediatric oncology patients at varying stages of treatment. Internal consistency estimates were .83 for the child self-report measure, and .86 for the parent proxy report. Discriminant validity was demonstrated with the known-groups approach, revealing significant differences for patients on- and off-treatments. A multimethod-multitrait matrix was constructed to show construct validity via correlations in the expected directions with standardized psychosocial questionnaires (including the Child Depression Inventory, the State-Trait Anxiety Inventory for Children, and the Child Behavior Checklist).

Depression was assessed via the Child Depression Inventory (CDI; Kovacs & Beck, 1977). This measure is a 27-item self-report instrument scored on a 3-point scale. Each item is scored according to the presence of the specified symptom (0=absence of a symptom, 2=severe symptom presence). The sum of the item scores result in the total score, which can range from 0 to 54. Higher scores indicate greater depressive symptomatology. Normative data indicate that a combined male and female sample mean is 9.09 with a standard deviation of 7.04. The upper 10% of the distribution is indicated by a cutoff score of 19. In a sample of normal children ages 8-16, the CDI has shown a range of internal consistency coefficients between .83-.89. However, test-retest reliability has been variable across populations and testing intervals. Validity studies

indicate that the CDI correlates highly with measures of self-concept and distinguishes emotionally distressed from normal school-aged children.

Anxiety was measured by the Multidimensional Anxiety Scale for Children (MASC, March et al., 1997). The MASC is a 45-item self-report instrument that assesses for the presence and severity of anxiety symptoms in children. These symptoms correspond to DSM-IV (APA, 1994) delineated symptoms of anxiety disorder. The scale was validated on two samples of children ages 7-17. The measure is comprised of four factors: physical symptoms, separation anxiety, social anxiety, and harm avoidance. The total composite score was utilized in the final analyses. Internal reliability coefficients ranged from .74-.85 across the four factors. Test-retest reliability was averaged across raters at three week and three month time intervals. The results for the factors follow: physical symptoms = .803, harm avoidance = .344, social anxiety = .786, and separation anxiety = .892. Total MASC scorer test-retest reliability was .785.

General coping strategies were measured by the Kidcope (Kidcope; Spirito, Stark, & Williams, 1988), which assesses children's coping responses to a self-generated stressful situation. The interviewer prompts the child to recall a situation that has bothered him/her in the past month, then asks the child to appraise the stressor in terms of emotions elicited (nervous, sad, mad). The child then indicates a yes/no endorsement of the coping items (e.g. "tried to calm myself down" or "yelled, screamed, or got mad") as well as an indicator of how much the effort helped him/her deal with the situation (not at all, a little, or a lot). The items are grouped into positive/approach (cognitive restructuring, problem-solving, social support, and emotional regulation) versus negative/avoidance strategies (distraction, blaming others, wishful thinking, and

resignation). Spirito and colleagues computed test-retest reliability scores for each of these item groupings, readministering the Kidcope at one and two weeks post initial test. The one-week correlations ranged from .64 to .97, and the two-week scores ranged from .68 to .90. Spirito suggested these scores are high considering the dynamic process of coping.

Spiritual Coping was assessed via the Child Spiritual Coping Survey (CSCS, Boeving & Finney). The CSCS is a 22 item measure of religious (9 items) and existential (13 items) coping strategies. The administration of the measure involves a prompt by the interviewer to “think about when you are feeling down or afraid about being sick.” The child is then asked to rate each coping item based upon frequency of use and effectiveness of technique in reducing distress. Response options range from 0 (“I never do this”/“This never helps”) to 4 (“I always do this”/“This always helps”).

Phase 1 and Phase 2 – Parent Measure.

Demographic Information about the child, parents, and family situation were gathered via a one-page form. Child information included the child's name, age, race, gender, grade in school, and basic information regarding illness (e.g., number of emergency room visits and overnight hospital stays in past twelve months). Parent information included marital status, education level, and age.

Statistical Data Analysis

The Statistical Package for Social Sciences, 10th Version (SPSS 10.1) for Windows was utilized for all data analyses.

Phase 1/Measure Development.

Subscale Analyses

The theoretically derived subscales, Religious Coping and Existential Coping, were scored to each obtain a frequency (“how often do you do this?”) and efficacy (“how much does it help when you do this?”) total score. Inter-item reliability coefficients were computed for the items within each score for the two theoretically derived factors. Additionally, correlations were run to examine the strength of association between the frequency and efficacy scores for each subscale. It was originally intended that all four scores be entered into the predictive model (along with positive and approach coping); however, due to sample size constraint, it was necessary to choose either efficacy or frequency scores to be utilized in the final model. A correlation matrix was run examining the associations between the frequency and efficacy scores and the outcome variables. The scores with the strongest correlations with the outcome variables were chosen for the regression equations.

Descriptive statistics were computed for each subscale (religious and existential). These statistics included the range of responses, as well as the mean and standard deviation for each subscale. Please see Table 2 for a depiction of these statistics.

Pilot Factor Analysis

Factor analysis was conducted with items on the spiritual coping measure to evaluate emergent constructs within the scale. Factor analysis (FA) is a technique employed to analyze covariance (shared variance between observed variables), eliminating error and unique variance, to present factors with greater clarity. FA (as opposed to principal components analysis) is the technique employed for the analysis of theoretically driven data with hypothesized underlying processes associated with the

constructs (Tabachnik & Fidell, 2001). Although the measure development interview is guided by theoretically derived constructs, exploratory (EFA) rather than confirmatory factor analysis (CFA) was employed. The use of EFA allowed the researcher to examine potential alternate factors, and was additionally justified due to the novelty of the developed measure (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

In order to examine potential factor clusters that were not theoretically identified, the researcher first ran the factor analysis on the measure without specifying a number of factors to be extracted. In this analysis, factors with Eigen values greater than 1 were extracted. For the second analysis, the researcher specified a two component extraction to examine the fit of the items into the theoretically driven factors of religious and existential coping. After extraction, the solutions were rotated to increase interpretability of findings. A method of judging a stable solution is to employ more than one rotation technique and examine consistency of factor structure across analyses (Tabachnik & Fidell, 2001). Thus, two rotation techniques (varimax and promax) were utilized in the analysis of these data. Varimax is an orthogonal rotation that produces uncorrelated factors by maximizing the variance of the factor loadings across variables (high post-extraction loadings becoming higher and low factor loadings become lower for rotated solution). This is the most commonly used rotation technique due to ease of interpretability and high utility of findings; however, it is unlikely that the factors will be theoretically distinct, as suggested by an orthogonal rotation. Oblique rotations produce a solution with correlated factors, decreasing ease of interpretability, but more closely reflecting underlying theory. Promax is an oblique rotation that was employed secondarily to examine the stability of the solution across rotation methods.

Phase 2: Coping Prediction of Psychosocial Outcomes.

For each of the three outcome measures (child depression, anxiety, and quality of life), the percent of variance (R^2) accounted for by the full model including all predictor variables (general coping strategies, spiritual coping strategies) were identified through regression analysis. Hierarchical multiple regression analyses were run to determine the proportion of variance accounted for by each general coping variable (avoidant and approach) and the spiritual coping variables (religious and existential coping). The order of entry was approach and avoidant coping (Model 1), then spiritual coping with religious and existential simultaneously entered (Model 2). The first independent variable entered has the greatest statistical odds of predicting variance in the dependent variable, as degrees of freedom decrease with each added predictor. Entering spiritual coping in the last block was planned to assure greatest difficulty in attaining a significant increase in variance accounted for in the dependent variables, granting increased confidence to the predictive capacity of the variable. Additionally, this order of entry allowed for the computation of a change statistic, indicating whether or not spiritual coping accounted for a significant portion of the variance over and above that attributable to approach and avoidance coping styles. Finally, correlation matrices and beta weights were computed to determine the direction and degree of association between the coping constructs and child adjustment variables.

Results

Phase 1: Measure Development

Pilot Factor Analysis

In order to examine potential factor clusters that were not theoretically identified, in the first round of analysis, the researcher ran the factor analysis on the 22-item measure extracting factors with Eigen values greater than 1. This component matrix was then rotated utilizing the varimax and promax (with Kaiser Normalization) methods. Six factor components emerged with both solutions, reflecting three primary factors and three with minimal variables loaded. The items loaded onto the primary factors in similar patterns for each rotation, reflecting the theoretically identified constructs: existential coping (factor 1) and religious coping (factors 2 and 3).

For the second phase of the factor analysis, the researcher specified a two component extraction to examine the fit of the items into the theoretically driven factors of religious and existential coping. Again, each component matrix was rotated utilizing first varimax and then promax, each with Kaiser Normalization. The two emergent factors directly reflected the theoretically determined constructs of religious and existential coping. The two-factor rotated solution can be found in Table 3.

The first factor extracted reflects the existential coping construct. Twelve of the thirteen existential coping items loaded together; ten with loadings ranging from .547 to .762 and two with loadings of less than .400 (varimax). The final existential coping item (“When I can, I spend time in a place that is special to me”) loaded onto the second factor with the religious coping items, but also at less than .400. The second factor taps into the religious coping construct, with all nine items written for this subscale loading together (range .420-.769).

Descriptive Statistics

Means, standard deviations, and response ranges for the child spiritual coping measure (CSCS) appear in Table 2.

Religious Coping. This subscale consisted of nine items, each of which is scored on the same scale for frequency and efficacy of use. The range of possible total scores for both frequency and efficacy is zero to 36. Internal consistency reliability estimates for both the frequency and the efficacy items were high, $\alpha = .93$ and $.92$, respectively. Additionally, a two-tailed test indicated that Religious Frequency and Religious Efficacy scores are significantly correlated ($r=.923$, $p<.001$).

Neither the frequency nor efficacy scores for the religious coping subscale fell along a normal distribution, but were negatively skewed (pileup of cases to the right and a long left tail). Religious efficacy demonstrated a skewness of $-.934$ and the religious frequency scores displayed a skewness of $-.831$. This indicated that there was a ceiling effect of responses to the religious coping items. This frequency distribution is depicted in Figure 1. Multiple transformations were attempted to normalize these data prior to using the religious coping variable in the subsequent regression analyses. With negatively skewed data, it is suggested that the variable be reflected and that the transformation for positive skewness be subsequently applied (Tabachnick & Fidell, 2001). To reflect the variable, a constant is created that is larger than any score in the distribution by adding the number “1” to the highest score. A new variable is then created by subtracting each score from the constant. Through this method, the negatively skewed variable is flipped (or “reflected”) so that it becomes positively skewed, allowing for transformation. Dependent upon severity of the skew, a square root transformation (targets moderate skewness) or a logarithm transformation (targets substantial skewness)

may be utilized. Both transformations were attempted on these data; however, the techniques did not correct the non-normal distribution. The data remained skewed (in a positive direction, due to reflection) at a similar value as pre-transformation. Therefore, the original data were used in the subsequent analyses.

Existential Coping. This subscale consists of thirteen items, allowing a possible range of 0 to 52 for total frequency and efficacy scores. While slightly lower than the religious coping subscale, internal reliability estimates for the existential frequency and efficacy items were acceptable, at $\alpha = .86$ and $.87$, respectively. Although not perfectly normally distributed, existential frequency and efficacy scores (Figure 2) were a closer approximation of a normal distribution than were the religious coping scores.

A two-tailed test indicated that Existential Frequency and Existential Efficacy scores are significantly correlated with the same strength of association as the Religious scores ($r=.923$, $p<.001$). Furthermore, the Religious and Existential coping values are significantly correlated with one another (efficacy scores: $r = .631$, $p=.001$; frequency scores: $r = .577$, $p = .001$). These correlations are depicted in Table 4.

Phase 2: Coping as Predictor of Child Adjustment Outcomes

Descriptive Statistics

Means and standard deviations of all measures appear in Table 2.

General Coping. Subjects responded with a range of endorsing no use of approach coping to endorsing utilization of all presented positive strategies (0-4). The mean response for approach coping was 2.83, with a standard deviation of 1.167.

Regarding avoidant coping, the response range was 1 to 4 with a mean of 2.138 and a standard deviation of 0.743. The subjects recruited from the UCLA and MUSC patient

populations responded very similarly on the general coping measure and thus did not significantly differ on the approach and avoidant coping variables.

Spiritual Coping. Each spiritual coping subscale, Religious and Existential, were scored to obtain frequency and efficacy data. The range of possible scores is identical for each subscale's frequency and efficacy components. The possible score range for the Religious subscale was 0 to 36 and the possible range for the Existential subscale was 0 to 52.

Religious Frequency scores reflected a sample mean of 26.303 and a standard deviation of 9.58. The range of total frequency scores was 4 to 36. Mean responses indicated that on a scale of 0 ("something you never do") to 4 ("something you always do"), the average response fell in the middle of the scale, between "you do this sometimes" and "you do this a lot" (item mean = 2.92). Very similarly to Religious Frequency, Religious Efficacy scores reflected a sample mean of 26.212 and a standard deviation of 9.646. The range of total scores was 2 to 36. Mean responses indicated that on a scale of 0 ("this never helps") to 4 ("this always helps"), the average response fell in the middle of the scale, between "this sometimes helps" and "this helps a lot" (item mean = 2.92). Subjects recruited from UCLA differed significantly from those recruited from the MUSC population on the Religious Coping subscale. UCLA subjects reported significantly less use of religious coping and also endorsed significantly lower efficacy ratings. MUSC (N=22) patients reported a mean of 28.59 (SD=8.68) for efficacy of religious coping, whereas UCLA patients reported a mean total of 21.45 (SD=10.11). Regarding Religious Frequency, MUSC patients reported a mean total score of 29.13 (SD=7.73) and UCLA patients reported a mean of 20.64 (SD=10.72). These differences

were demonstrated to be significant via a two-tailed T-test for both frequency ($t(31)=2.109, p=.043$) and efficacy of religious coping ($t(31)=2.612, p=.014$) across sites.

Existential Frequency scores reflected a sample mean of 27.818 and a standard deviation of 11.452. The range of total scores was 6 to 48. Mean responses indicated that on a scale of 0 (“something you never do”) to 4 (“something you always do”), the average response fell in the middle of the scale, between “you do this sometimes” and “you do this a lot” (item mean = 2.14). Again, very similarly to Existential Frequency, Existential Efficacy scores reflected a sample mean of 27.03 and a standard deviation of 11.690. The range of total scores was 4 to 50. Mean responses indicated that on a scale of 0 (“this never helps”) to 4 (“this always helps”), the average response was “this sometimes helps,” which falls near the middle of the scale (item mean = 2.08). There were no significant site differences on the Existential Coping subscale responses.

Adjustment Outcomes.

Depression. The range of raw scores obtained for depression was zero to 20, with a mean of 5.633 and a standard deviation of 4.916. As indicated by the mean, this sample did not evidence levels of depression above population norms. Although patients from MUSC reported more depressive symptomatology than those recruited from UCLA, this difference was not significant ($t(30)=1.829, p=.078$).

Anxiety. Raw scores were also utilized with the anxiety measure, and children responded with a range of 14 to 74, mean of 42.80, and standard deviation of 14.346. T-scores calculated from these data indicate that participants responded in a manner consistent with the population norms. Patients recruited from MUSC endorsed a greater

number of anxiety symptoms than participants from UCLA at a level approaching significance ($t(28)=2.043$, $p=.051$).

Quality of life. Participant responses ranged from 42-98 (a score of zero reflects very poor quality of life and 100 reflects a perfect report of quality of life). The mean response was 77.606 (standard deviation = 14.120), which indicates some problems reported, but an overall good quality of life. A difference was evidenced between the project sites for the mean scores reported for child quality of life, with the MUSC patients reporting significantly higher quality of life than the UCLA patients ($t(30)=2.359$, $p=.025$).

Regression Analyses.

Hierarchical regression analyses were run to test Hypotheses 2 (significant full model) and 3 (significant contribution of spiritual coping beyond general coping) for each adjustment outcome variable. To examine the amount of variance differentially accounted for in each dependent variable by the coping constructs, variables were entered in an order predetermined as the most robust test of the contribution of spiritual coping. These results are depicted in Tables 5, 6, and 7.

Depression. Approach and avoidant coping variables, entered as the first step, accounted for a significant 39.1% of the variance in depression ($R^2=.391$, $F(2,24)=7.703$, $p=.003$). Religious and Existential Coping efficacy were subsequently entered into the predictive model, adding 7% predicted variance in depression, which was not a significant increase ($R^2\text{change}=.070$, $F(2,24)=1.428$, $p=.261$). Therefore, Hypothesis 2 was upheld, as the full model predicted a significant 46.1% of the variance in depression ($R^2=.461$, $F(4,22)=4.703$, $p=.007$). Hypothesis 3 was not supported, as spiritual coping

did not significantly add to the prediction of depression beyond that accounted for by general coping.

Anxiety. Approach and avoidant coping variables, entered as the first step, accounted for a .07% of the variance in anxiety, which was not significant ($R^2=.007$, $F(2,26)=.091$, $p=.914$). Religious and Existential Coping efficacy were subsequently entered into the predictive model, adding 3% predicted variance in depression, which was not a significant increase ($R^2\text{change}=.03$, $F(2,24)=.689$, $p=.917$). Hypothesis 2 was not upheld, as the full model predicted a non-significant 3.7% of the variance in depression ($R^2=.037$, $F(4,24)=.232$, $p=.917$). Hypothesis 3 was not supported, as spiritual coping did not significantly add to the prediction of depression beyond that accounted for by general coping.

Quality of Life. Approach and avoidant coping variables, entered as the first step, accounted for 2.3% of the variance in quality of life ($R^2=.023$, $F(2,26)=.310$, $p=.736$). Religious and Existential Coping efficacy were subsequently entered into the predictive model, adding 7.8% predicted variance in depression, which was not a significant increase ($R^2\text{change}=.078$, $F(2,24)=1.04$, $p=.367$). Hypothesis 2 was thus not supported, as the full model predicted 10.1% of the variance in quality of life ($R^2=.101$, $F(4,24)=.678$, $p=.614$), which was not statistically significant. Hypothesis 3 was not supported, as spiritual coping did not significantly add to the prediction of depression beyond that accounted for by general coping.

Correlations.

A zero-order correlation matrix was computed for the predictor and criteria variables in order to evaluate Hypotheses 4 (significant specified associations between

general coping variables and adjustment outcomes) and 5 (significant specified associations between spiritual coping and adjustment outcomes). These data are presented in Table 8.

Higher reported use of approach strategies were significantly associated with less depressive symptomatology ($r = -.480, p = .006$). However, approach coping was not significantly associated with anxiety ($r = .067, p = .365$) nor with quality of life ($r = .137, p = .239$). Avoidant coping was not demonstrated to be significantly associated with depression ($r = .231, p = .123$), anxiety ($r = -.029, p = .440$), nor with quality of life ($r = .103, p = .298$). Therefore, despite the one significant association between approach coping and depression, Hypothesis 4 was not supported.

Spiritual coping was examined differentially with correlations between religious and existential efficacy scores and the outcome variables. Religious Efficacy was not demonstrated to be significantly associated with depression ($r = -.123, p = .258$), anxiety ($r = -.142, p = .226$), nor with quality of life ($r = .058, p = .376$). Existential Efficacy was associated with significantly lower depression ($r = -.382, p = .019$), but was not significantly related to anxiety ($r = -.028, p = .442$) nor quality of life ($r = .275, p = .064$). Thus, similarly to the general coping variables, Hypothesis 5 was not upheld with the exception of one significant relationship (existential coping and depression). However, differences were again evident between project sites on these analyses. Spiritual coping evidenced greater associations with adjustment outcomes for the MUSC population than for UCLA. Within the MUSC sample, religious coping was shown to be significantly correlated with depression ($r = -.636, p = .003$) and with quality of life ($r = .501, p = .017$). Similarly, existential coping evidenced a stronger correlation with depression in this

restricted sample ($r = -.539, p = .014$) and was significantly correlated with quality of life ($r = .498, p = .018$).

Post-Hoc Analyses

After the analyses were conducted to test the a priori hypotheses, a set of post-hoc analyses were run to examine possible mediation models involving spiritual coping variables (religious and existential) and child adjustment. A correlation matrix (Table 9) was run to identify correlations between the spiritual coping variables and subscales of the adjustment outcome measures that were not utilized in the primary analyses. This post-hoc investigation was employed to discern potential effects that were not identified by the first round of data analysis. The role of social functioning (approximated by the PedsQL Social Quality of Life subscale and the MASC Social Anxiety subscale) was examined as a mediating influence upon the effect of existential coping on depression. Additionally, religious coping was investigated as a mediator upon the effect of a utilization variable (number of emergency room visits over the twelve months prior to participation in study) on general avoidant coping.

The methods of Baron and Kenny (1986) were used to test possible mediating effects. Statistical mediation refers to a phenomenon in which some third variable (the mediator variable) influences the relationship between two other variables. A mediator variable must be related to both variables; it is the process or means through which one variable exerts influence upon the other. To establish that a variable (C) acts as a mediator between variables A and B, the following conditions must hold in regression equations: 1) A must be significantly related to B; 2) A must be significantly related to the potential mediator variable (C); 3) Variations in the mediator variable must be

significantly related to changes B; and 4) When the effect of the mediator variable on changes in B is controlled, the effect of A upon B is diminished.

Social Functioning Mediator Analyses. Correlations were first run to determine the relationships between the potential mediators and the outcome variables. Child social quality of life was significantly correlated with depression ($r = -.352, p = .028$) as was social anxiety ($r = .468, p = .007$). Regression analyses were then performed to confirm the effect of existential coping on depression, after controlling for social functioning (measured first by the by social quality of life and subsequently by social anxiety). The regression analysis indicated that existential coping significantly predicts depression, such that children reporting greater efficacy of existential coping also reported less depressive symptomatology ($F = 4.788, p = .037, b = -.382, p = .037$). A second series of regression analyses was conducted to confirm the influence of the potential mediating variables on depression. Child social quality of life was significantly related to change in depression ($F = 4.245, p = .048, b = -.352, p = .048$), as was social anxiety ($F = 6.994, p = .014, b = .468, p = .014$). A final series of regression analyses was conducted to determine whether the hypothesized mediator variables significantly attenuated the effect of existential coping on depression. For depression, the effect of existential coping alone was significant ($b = -.382, p = .037$). After controlling for child social quality of life, the effect of existential coping was no longer significant ($b = -.333, p = .072$). Also, after controlling for social anxiety, the effect of existential coping was no longer significant ($b = -.327, p = .068$).

Medical Utilization and Coping Mediator Analysis. Correlations were first run to examine the relationships within the potential mediator model. The number of

emergency room (ER) visits during the twelve months prior to assessment was significantly correlated with avoidant coping efficacy ($r = -.480, p = .010$) and with religious coping efficacy ($r = -.407, p = .019$). Additionally, the coping variables were correlated ($r = .386, p = .021$). For avoidant coping efficacy, the effect of ER utilization alone was significant ($b = -.480, p = .021$). After controlling for religious coping, the effect of utilization was no longer significant ($b = -1.987, p = .061$).

Discussion

Summary and Relevance

The goal of the current research was to enhance existing conceptualizations of the coping and adjustment process in childhood cancer patients via the incorporation of spirituality as a coping construct. Spirituality was hypothesized to be a mechanism by which children cope with the stress of illness, perhaps leading to increasingly positive psychosocial outcomes. To accomplish the overall goal, the researchers first developed a child measure of spiritual coping to assess the self-reported frequency and efficacy of using spirituality to cope with illness-related stress (Phase 1). This measurement tool was subsequently utilized in a coping investigation to assess the relationship between spiritual coping, general coping (approach and avoidant), and psychosocial adjustment in children with cancer (Phase 2).

Although the spiritual coping measure developed in Phase 1 of the project evidences good potential, the overriding aims of the research project were not met. Neither spiritual coping nor approach and avoidant coping were shown to be significant predictors of child adjustment across psychosocial variables. There were limited findings differentially on particular adjustment outcomes, but the complete model did not prove to

be a good fit. The benefits to the current investigation include the exploration of a novel construct within pediatric populations and the development of an assessment tool employable in new coping investigations. However, there are clear limitations to the applicability of the findings from the empirical investigation (Phase 2).

Hypothesis 1. There is limited support for the hypothesis that the spiritual coping measure would yield two distinct factors: existential and religious based coping. With the application of a two factor extraction, all items with a loading value of greater than .400 loaded onto the factor for which they were theoretically intended. The three existential items that performed poorly (loaded at less than .400) were written to tap the coping strategies of meditation (“I like it when it’s so quiet I can hear myself breathing”) and place as a stimulus for peaceful feelings (“I close my eyes and imagine my favorite place” and “When I can, I spend time in a place that is special to me”). These results indicate that either these concepts were not applicable or perhaps not easily understood by the child participants.

The factor analysis therefore reflected an existential coping factor that consisted of ten items and a religious coping factor that consisted of nine items (all religious coping items loaded as intended). The retention of this factor structure across rotation techniques grants further indication of a viable solution. All items were retained in the measure scores for the final analysis, as it would be premature to eliminate items based upon a pilot factor analysis. Furthermore, the internal reliability estimates for the items within each subscale were adequate, reflecting coherence of the coping constructs, despite the inclusion of the poorly performing items. The children responded to the items

in a manner that created strong associations, indicating that they understood the item content and responded appropriately.

The factor structure therefore supports Hypothesis 1, but the limitations of the sample size necessitate caution in interpreting the results. The factor analysis conducted with this variable must be interpreted only as a pilot investigation into the properties of the measure. The sample size was too small for the results to be confirmatory of true factor structures. However, as it is more difficult to obtain clear results with a limited number of respondents than with a large number, the results of this analysis bode well for the future development of the coping measure. The optimistic outcome of the measure analyses thus far indicate that the procedures of interviewing and item development during Phase 1 were successful and appropriate techniques to utilize with this population.

Hypotheses 2 and 3. There was lack of support for the hypothesis that the full coping model would account for a significant portion of the variance across adjustment outcomes. Furthermore, spiritual coping was not demonstrated to significantly add to the prediction of adjustment outcomes beyond the general coping variables.

Regarding the full model, results were mixed across the adjustment outcomes. Coping did significantly predict the children's expression of depressive symptoms, but did not account for anxiety nor quality of life. Children experiencing greater depression utilized less approach coping and more avoidant coping, as well as evidenced a trend of less spiritual coping. This suggests that children who are depressed may be avoiding the engagement of certain illness-related stressors, so that they utilize distraction and "forgetting about it" as their primary coping responses. While these coping responses

can be very adaptive for particular illness experiences (e.g., during a painful procedure), they reflect the relinquishment of locus of control, and are not likely to encourage benefit seeking or high self efficacy for other, more general tasks. The resulting picture may be one in which depressed children, coping avoidantly, become even less active and engaged, (which are, in fact, symptoms of depression) and exhibit a perpetuating pattern of poor adjustment. Alternatively, those children who seek the elements of the illness experience with which they can deal directly (e.g., talking about their fears with parents, asking for information regarding their illness, looking for the good in their experience such as meeting new friends, etc.) evidence a pattern of less depressive symptomatology.

Findings were not significant for coping as predicting anxiety and quality of life. Although this study failed to replicate specific findings suggesting that (avoidant) coping significantly predicts anxiety (Frank, Blount, & Brown, 1997), levels of reported anxiety in the current sample were generally low, and the minimal variance in the variable may have made prediction more difficult. A recent systematic review of the psychological consequences of childhood cancer survivors (many within the same general age and illness parameters as the current sample) indicated that children with cancer report indices of psychosocial adjustment (including anxiety, depression, quality of life, social competence, etc.) at levels commensurate with healthy controls. It is a current debate in the literature whether cancer patients underreport symptomatology or are perhaps not experiencing negative psychosocial effects of illness. Thus, children in the current sample may have underreported their anxiety symptoms or may not have been experiencing anxiety at greater levels than the normal population. An alternative explanation is that the majority of these patients were far enough along in treatment that

the cancer experience was no longer novel, and thus they did not notice the symptoms escalate. Child cancer patients live in a milieu of high anxiety, both in the family dynamic (worried parents and siblings) and in the hospital environment (painful procedures, other ill children, etc.). It may be that these children's cognitive and emotional experience of anxiety is blunted by repeated exposure to anxiety-provoking situations.

An additional contributor to these discrepant findings may be the differences in reporting found between the subject populations at MUSC and UCLA. The patients did not significantly differ on reports of depression, which could explain (at least in part) the significant full sample finding for that outcome. However, patients at UCLA expressed significantly lower anxiety as well as lower quality of life than children recruited at MUSC. The restricted response range on these outcome variables with the UCLA sample pulled down the effects, particularly for quality of life.

Spiritual coping was not a significant predictor of adjustment outcomes in the full sample. Likely, the explanations previously cited regarding the full coping model (site differences in adjustment indices) apply to this coping construct as well. Additionally, spirituality may be particularly sensitive to the time of assessment in the course of the adjustment process. The adult literature on spiritual coping indicates that people utilize this coping construct differentially during times of crisis versus stability. Therefore, it may be highly important to assess this coping variable prospectively, or with a large enough sample to group the subjects by time since diagnosis, recent illness crises, etc. The children at the two sites also reported different levels of spiritual coping (MUSC children endorsing higher levels of both religious and existential coping). Examined

solely in the MUSC population, spiritual coping did account for a significant portion of the variance in depression above and beyond approach and avoidant coping. Therefore, the difference between the sites may have contributed significantly to the lack of support for these hypotheses. Alternatively, it is plausible that spiritual coping does not contribute substantially to the current conceptualization of coping with childhood cancer. The results of the spiritual coping measure analyses suggest that the children comprehended the item contents and that they responded appropriately. Therefore, it is unlikely that the lack of findings during the empirical investigation were due to a poorly understood or overly complicated measure. It is possible that the children do utilize religious and existential coping during the process of adjustment to cancer (indicated by the measurement data), but that these coping strategies do not play a significant role in the reduction of symptomatology and promotion of positive health outcomes.

As a broader point, it is important to note that these data did not account for illness severity or recency of illness-related crisis (such as surgery, ineffectiveness of chemotherapy treatment, etc.), which may be blunting the overall effects. Coping is a dynamic process, and the picture 48 hours after diagnosis can be quite different than 1 ½ years later. At times of crises, coping behavior may escalate as may also symptomatology that is associated with poor adjustment outcomes. Dependent upon when in the process the interview occurs, the child may be experiencing different levels of symptomatology and coping (e.g., low levels of symptomatology paired with minimal coping, high symptomatology and high levels of coping, etc.) This project did not examine the process of coping via a prospective design, so it is not known at what point

in the trajectory for each individual child the “snapshot” was taken of the child’s paired coping and adjustment.

Hypotheses 4 and 5. There was minimal support for the hypothesized correlations between the adjustment outcomes and the coping variables (approach, avoidant, religious, existential), but these were not significant across all findings. Again, there was differential responding between the project sites. The MUSC patients responded in a manner that reflected a greater number of significant associations between spiritual coping and psychosocial adjustment.

Post-Hoc Mediation Analyses

The results for the mediation analyses reflect interesting relationships that were not hypothesized in the research design. Social functioning (approximated by social quality of life and social anxiety subscales) was demonstrated to mediate the effect of existential coping upon depression; such that, existential coping was most successful in attenuating depression when social quality of life was high and social anxiety was low. This suggests that existential coping may exert its effect upon depression against the backdrop of overall social functioning. Previous research has indicated that the role of peer relationships, social satisfaction, and social anxiety play a significant role in children’s adjustment to chronic illness (Meijer et al., 2000). Perhaps the children who experience greater satisfaction with existential coping (or those who feel their coping attempts are working, as measured by “existential efficacy”) experience less social anxiety, enabling them to more effectively have satisfying peer relationships. Additionally, the treatment effects of cancer often negatively alter physical appearance (including hair loss, surgical scars, and puffy face from steroid use), which can often lead

to teasing and bullying of these children by their peers. It is possible that the children who become less depressed during illness are those who effectively employ existential coping to navigate these negative events.

An additional model was investigated to examine the manner in which a specified set of coping strategies (religious coping efficacy) mediated the effect of medical utilization upon a more general coping variable (avoidant coping efficacy). A high number of emergency room visits led to lower avoidant coping efficacy via the reduction of religious coping efficacy. Religious coping reflects a placement of the child's locus of control with a powerful other ("God") whereas existential coping retains more locus of control (e.g., "I find the good in things"). If a child prays to be well, and subsequently becomes acutely ill and must visit the emergency room, his or her beliefs about how well religious coping works may be impacted. This in turn may permeate the child's general avoidant coping efficacy. The belief that asking God for illness related help does not work may decrease the child's beliefs that any coping will work, and these may be the children who do not have positive (approach) coping techniques readily accessible. It is additionally interesting that the acute utilization variable (ER visits) predicted a decrease in coping efficacy, whereas the routine utilization variable (scheduled outpatient clinic visits) did not. Perhaps it is the unexpected quality of the acute illness experience that reduces the child's belief that religious and avoidant coping strategies are efficacious.

It is important to note that, while conceptually intriguing, the mediation models presented must be interpreted with caution. These relationships were not theoretically anticipated; furthermore, while the effects were significant, they were not robust.

Therefore, these data were interpreted in a manner to suggest areas of future investigation that may be fruitful pursuits.

Site Differences.

As stated, there were noted differences between the project sites in reported adjustment outcomes and spiritual coping. Geographic region may have played a role in this disparity. UCLA is located in a large urban environment in the western United States. Alternatively, MUSC is located in the southeastern United States (in the midst of the “Bible Belt”) in a mid-size community. These environmental variables may have impacted the participants’ response patterns. Cultural variables may also have contributed to the discrepancy, as there was a greater percentage of Hispanic participants at UCLA versus African-American participants at MUSC. However, both of these minority groups are typically religious and both have a social history of discrimination and difficulty. It may therefore be unlikely that cultural variables significantly impacted the data.

It is additionally possible that there were administration differences in the interview process between the sites that impacted the children’s response patterns. Despite extensive training received by the interviewers at UCLA, they were not directly supervised during the interview process, nor did they have levels of clinical experience and education commensurate with the interviewers at the other sites. It is not known whether the UCLA interviewers routinely completed the checks for item comprehension that were a component of the interview process. Some items on each measure were flagged to test for participant comprehension. For example, on the MASC, a statement reads “I feel tense or uptight”. The interviewer was to ask the child if he/she knew what

the word “tense” means, and then the interviewer was instructed to give a definition standard across interviews. If these item checks were not standardly employed, the validity or reliability of the assessments may have been reduced.

In conclusion, the current project was conducted to (a) develop a measure of spiritual coping to be used with pediatric populations, and (b) to subsequently employ this measure in an empirical examination of coping and adjustment with child cancer patients. Findings from the research did not support the overarching hypotheses of the project; namely, neither general coping nor spiritual coping significantly predicted adjustment outcomes (with the exception of depression). Although the spiritual coping measure bears promise, its utility in the empirical investigation was not evident.

Limitations

The most prominent limitation was the small sample size with which the hypotheses were tested. Due to this restriction, the researcher was unable to examine differential effects of demographic variables (e.g., age and race), illness parameters (e.g., severity, recency of illness crisis, etc.), or specific cancer diagnoses (e.g., leukemic disease versus tumor with central nervous system involvement). These variables may impact the role of coping in the adjustment process and would be important to look at with a larger sample.

Additionally, as previously discussed, the significant differences between project sites on key variables of interest were limiting to the utility of the findings. Due to the sample size limitation, these data could not be analyzed separately (as the limited numbers did not meet the assumptions for the regression analyses). This difference clouds the interpretation of the final results, introducing the question of measurement

validity across the final sample. Additionally, there was a difference in level of clinical experience and education between the interviewers at both project sites. In retrospect, greater care may have been taken to standardize the interviewers across sites.

Future Directions

Investigations into the coping and adjustment process with childhood cancer remain in need of novel explorations. It is important for the field to continue to broaden the understanding of how children adjust to the stress of severe and chronic illness by testing innovative additions to current models. As previously discussed, an important consideration in coping research is the assessment of the child's pattern of adjustment over time. Empirical findings would translate into greater clinical utility with a deeper understanding of when (at which points in the process) children utilize certain types of coping, and how these coping strategies impact adjustment over time. A prospective design would also be optimal as the precursor to an intervention study, as hypotheses could be rendered with greater accuracy regarding the points at which to target specific symptoms. Finally, the spiritual coping measure evidenced potential as a viable measurement tool, as the preliminary analyses reflected the theoretically identified subscales. The measure should be further developed with a larger sample, allowing for tightening of the subscales (dropping of poorly performing items). The measure should then be subsequently tested for predictive utility in another sample of child cancer patients.

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Table 1

Demographic characteristics of the study sample

Variable	Category	% sample
Sex:	Female	38
	Male	62
Age	7-9 years	27
	10-12 years	20
	13-15 years	43
	16-17 years	10
Race	Caucasian	47
	African-American	34
	Latino (non-white)	10
	Asian	3
	Bi/Multicultural or other	6
Mother Marital Status	Single	6
	Married	58
	Cohabiting	6
	Separated	6
	Divorced	15
	Widowed	0
	Unreported	3
Mother Education Level	7-11 grade	12
	High school graduate	24
	Some college or certification	36
	College graduates	18
	Graduate or professional degree	6
	Unreported	3

Table 2.

Means, Standard Deviations, and Range of Responses on Measures

Variable	Mean	Standard Deviation	Range
Coping			
Approach Coping	2.830	1.167	0-4
Avoidant Coping	2.138	0.743	1-4
Religious Coping	26.212	9.646	2-36
Existential Coping	27.030	11.690	4-50
Adjustment Outcomes			
Depression	5.633	4.916	0-20
Anxiety	42.800	14.346	14-74
Quality of Life	77.606	14.120	42-98

Table 3

CSCS Factor Analysis: Solution reflecting Two-Factor Extraction with Varimax Rotation

	Factor 1	Factor 2
Abbreviated Items	Existential Coping	Religious Coping
God is helping me get better	.426	.691
There is a reason I'm alive	.620	.485
God cares	.255	.593
People praying for me	6.440E-02	.420
I'm not alone in the world	.754	.275
I pray	.367	.793
Think about good things in life	.759	.168
God won't let anything terrible happen	.123	.845
Never alone, everyone connected	.686	7.622E-02
Sick has taught me about life	.547	.198
I like it quiet to hear myself breathing	.256	.188
Something good happens every day	.592	.163
Good to be alive	.568	.318
I ask God to help	.148	.640
I remember God is with me	.405	.689
Find a peaceful time to be alone	.618	.140
God will make everything okay	.368	.769
I spend time in a special place	6.640E-03	.353
Someone bigger (God) to help	.370	.763
I have a place in the world	.762	.250
Always something good & I find it	.647	.225
I imagine my favorite place	.200	-.166

Extraction Method: Principal Axis Factoring.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 3 iterations.

Table 4.

Zero-Order Correlations between Spiritual Coping Subscales: Religious Coping

(Frequency and Efficacy) and Existential Coping (Frequency and Efficacy)

	Religious Efficacy	Religious Frequency	Existential Efficacy	Existential Frequency
Religious Efficacy	1	.923**	.631**	.593**
Religious Frequency	.923**	1	.517**	.577**
Existential Efficacy	.631**	.517**	1	.923**
Existential Frequency	.593**	.557**	.923**	1

**Significant at <.01 level, 2 -tailed

Table 5.

Heirarchical Regression for Variance in Depression explained by Approach, Avoidant, Religious, and Existential Coping

Step: Variables	R ² total	p	β	Unique R ² chg	p
1. General Coping	.391	.003			
Approach Coping			-.612		.001
Avoidant Coping			.422		.019
2. Spiritual Coping	.461	.007		.070	.261
Religious Coping			-.033		.874
Existential Coping			-.256		.235

Table 6.

Heirarchical Regression for Variance in Anxiety explained by Approach, Avoidant, Religious, and Existential Coping

Step: Variables	R ² total	p	β	Unique R ² chg	p
1. General Coping	.007	.914			
Approach Coping			.081		.693
Avoidant Coping			-.052		.802
2. Spiritual Coping	.037	.917		.030	.917
Religious Coping			-.242		.402
Existential Coping			.125		.663

Table 7.

Heirarchical Regression for Variance in Quality of Life explained by Approach, Avoidant, Religious, and Existential Coping .

Step: Variables	R ² total	p	β	Unique R ² chg	p
1. General Coping	.023	.736			
Approach Coping			.117		.565
Avoidant Coping			.070		.730
2. Spiritual Coping	.101	.614		.078	.367
Religious Coping			-.153		.582
Existential Coping			.374		.185

Table 8.

Zero-Order Correlations between Coping Variables and Adjustment Outcomes

	Approach Coping	Avoidant Coping	Religious Efficacy	Religious Frequency	Existential Efficacy	Existential Frequency	Depression	Anxiety	QOL
Approach Coping	1	.276 p=.074	.206 p=.142	.258 p=.088	.306 p=.053	.292 p=.062	-.480** p=.006	.067 p=.365	.137 p=.239
Avoidant Coping	.276 p=.074	1	.284 p=.068	.383* p=.020	.157 p=.208	.094 p=.314	.231 p=.123	-.029 p=.440	.103 p=.298
Religious Efficacy	.206 p=.142	.284 p=.068	1	.923** p<.001	.631** p<.001	.593** p<.001	-.123 p=.258	-.142 p=.226	.058 p=.376
Religious Frequency	.258 p=.088	.383* p=.020	.923** p<.001	1	.517** p=.001	.557** p<.001	.038 p=.421	-.068 p=.360	-.089 p=.314
Existential Efficacy	.306 p=.053	.157 p=.208	.631** p<.001	.517** p=.001	1	.923** p<.001	-.382* p=.019	-.028 p=.442	.275 p=.064
Existential Frequency	.292 p=.062	.094 p=.314	.593** p<.001	.557** p<.001	.923** p<.001	1	-.324* p=.040	-.007 p=.486	.131 p=.237
Depression	-.480** p=.006	.231 p=.123	-.123 p=.258	.038 p=.421	-.382* p=.019	-.324* p=.040	1	.362* p=.032	-.411* p=.012
Anxiety	.067 p=.365	-.029 p=.440	-.142 p=.226	-.068 p=.360	-.028 p=.442	-.007 p=.486	.362* p=.032	1	-.405* p=.015
Quality of Life (QOL)	.137 p=.239	.103 p=.298	.058 p=.376	-.089 p=.314	.275 p=.064	.131 p=.237	-.411* p=.012	-.405* p=.015	1

* Significant at <.05 level, 1 –tailed

**Significant at <.01 level, 1 -tailed

Table 9.
Zero-Order Correlations Correspondent to Mediator Models

	Social QOL	Depression	Social Anxiety	Existential Efficacy	ER Visits	Avoidant Coping Efficacy	Religious Efficacy
Social QOL	1	-.352*	-.671*	.374*	.099	.091	.161
Depression	-.352*	1	.468**	-.382*	-.245	-.124	-.123
Social Anxiety	-.671**	.468**	1	-.363*	-.134	.077	-.339*
Existential Efficacy	.374*	-.382*	-.363*	1	.063	.320*	.631**
ER Visits	.099	-.245	-.134	.063	1	-.480*	-.407*
Avoidant Coping Efficacy	.091	-.124	.077	.320*	-.480*	1	.386*
Religious Efficacy	.167	-.123	-.339*	.63188	-.407*	.386*	1

* Significant at <.05 level, 2 –tailed

**Significant at <.01 level, 2 -tailed

Figure 1.

Frequency Distribution of Religious Coping Subscale (Efficacy) with Overlay of Normal Curve

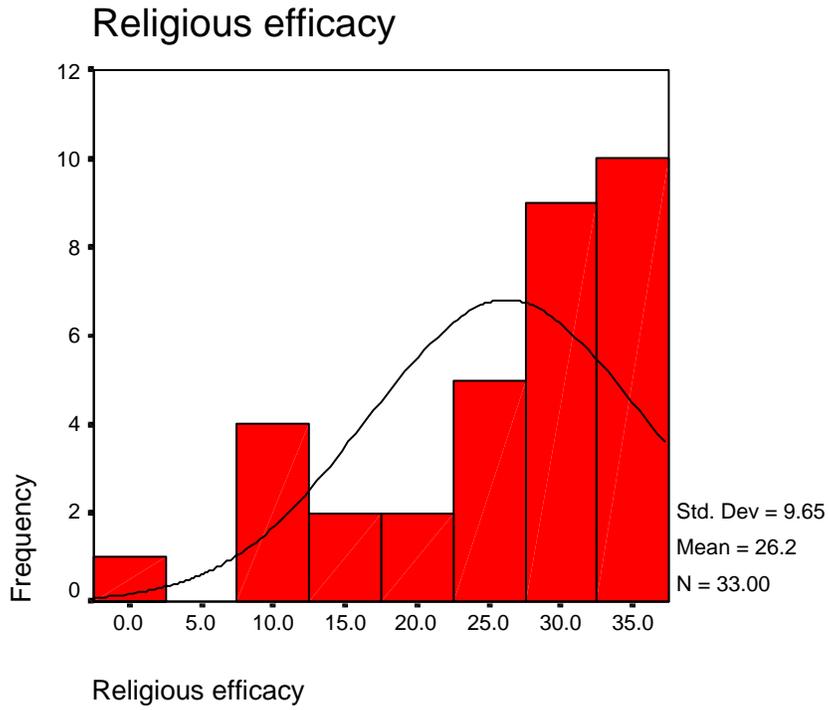


Figure 2.

Frequency Distribution of Existential Coping Subscale (Efficacy) with Overlay of Normal Curve

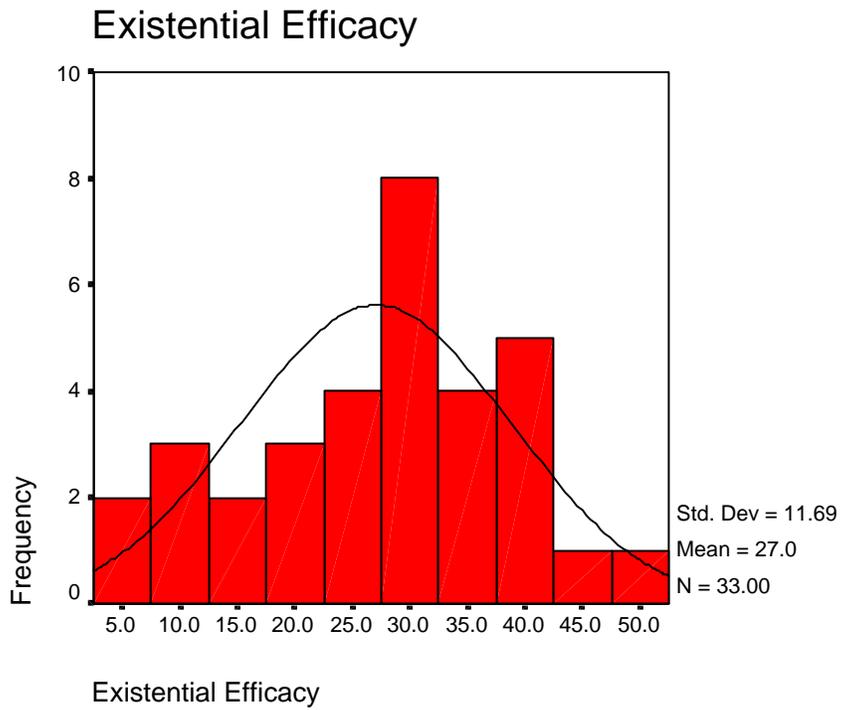


Figure 3.

Mediation Model: Social Functioning as Mediator of Existential Coping effect upon Depression

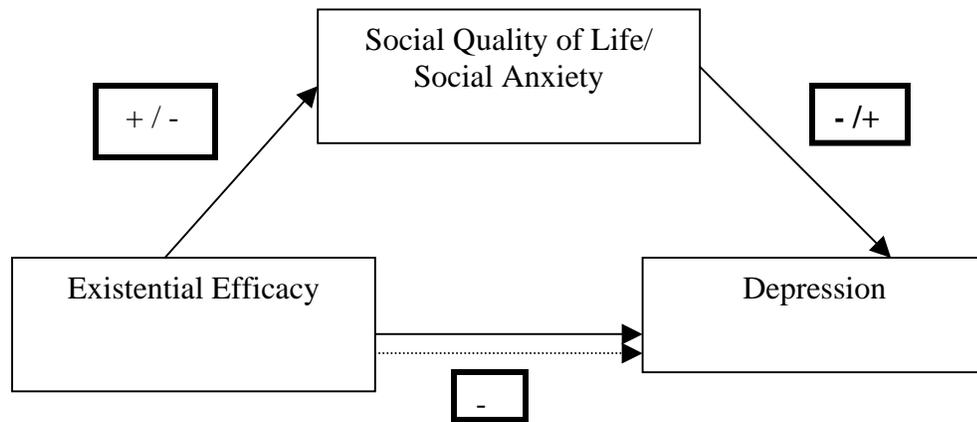
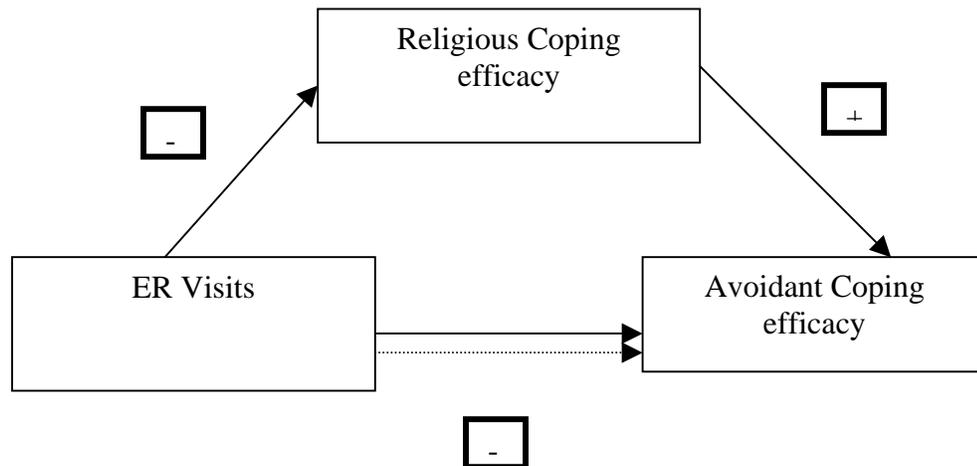


Figure 4.

Mediation Model: Religious Coping Efficacy as Mediator of ER Utilization effect upon Avoidant Coping Efficacy



ID# _____

Date _____

CSCS

Directions

Kids do different things when they are feeling down or afraid about being sick. Some of the things kids have told us they do or feel are listed on the next page. When **YOU** feel down or afraid about being sick, how much do you do these things? Please circle 0-4...

- 0** if this is something you **never** do
- 1** if you do this **once in awhile**
- 2** if you do this **sometimes**
- 3** if you do this **a lot**
- 4** if you **always** do this

Sometimes the things we do when we feel down really help to make us feel better. Other times the things we do might not help very much. Please circle 0-4 again, but this time, to say how much it helps you...

- 0** if this **never** helps
- 1** if this only helps **once in awhile**
- 2** if this **sometimes** helps
- 3** if this helps **a lot**
- 4** if this **always** helps

*What **you do** to help when you are feeling down or afraid about being sick...*

1. I close my eyes and imagine my favorite place

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

2. I ask God to help me out

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

3. I remember that God is with me

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

4. Sometime during the day or night, I find a peaceful time to be by myself

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

5. I think about how God will make everything okay

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

6. When I can, I spend time in a place that is special to me

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

7. I think about God and remember there is someone bigger than me to help

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

8. I remember that I have a place in the world

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

9. There is always something good, and I find it

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

10. I think about how God is helping me get better

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

11. I remember that there is a reason that I am alive

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

12. I remind myself that God cares about what is happening to me

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

13. I think about people praying for me

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

14. I tell myself that I am not alone in the world

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

15. I pray

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
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16. I think about the good things in my life

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

17. I think that God will never let anything terrible happen to me

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

18. I tell myself that I am never really alone because everyone in the world

is connected

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

19. I think about what being sick has taught me about life

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

20. I like it when it's so quiet I can hear myself breathing

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

21. I think something good happens to me every day

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

22. I think it's good to be alive, even on bad days

How much do I do this?

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

This helps me...

0 Never	1 Once in Awhile	2 Sometimes	3 Often	4 Always
-------------------	---------------------	----------------	------------	-------------

Focus Group Prompts
Spiritual Experiences and Beliefs

- Do you think that life is fair? Do things always happen as they should? Why do you feel this way?

- Do you think that life is basically good/not so good? Tell me why you feel that way.

- Tell me about things that might have changed for you in the way you look at life since you became sick. (after child answers) Are there any ways that your family has changed in the way they look at and deal with life after you became sick?

- Tell me about the types of things you do that help you feel better whenever you are down and afraid about being sick. (Allow child to mention some coping strategies. If spiritual strategies are cited, prompt for elaboration.)

- Tell me some things that your family does/can do to help you feel better and not feel so bad themselves?

- What do you think happens when we die? (Obtain a sense of whether child is fearful of or comfortable with what happens after death).

- Some kids think that their illness is the worst thing that ever happened to them. Other kids don't think that it is so bad. Tell me how you feel about your illness.

- What do you think your mom/dad/guardian feels about you being sick? Do you think that he/she feels that it is the worst thing or not so bad?

- Do you believe in a higher power? Why (not)?

Have you ever had any experiences that made you believe that God exists/does not exist? Do you believe that there is anything bigger than us that is good and loving?

- (If child believes in God) Do you feel like God watches over you? Do you feel like God cares about what happens to you and your family?

- Do you pray, take time to think by yourself, etc.?

(If so) Why do you do this? Tell me how it makes you feel. Does it help you? What kinds of things do you pray/think about?

Religious Practices

- Does your family go to church, temple, or any other religious services? (If so) how often do you attend, about how long do you stay when you go, and for how long have you/your family been attending the services?

- (If family attends religious services) Do you go to a special children's class, like Sunday School, Bible School, Hebrew School, etc.? (If so) Tell me about the kinds of things you learn there.

- Does your family ever pray together (e.g. before meals, at bedtime, etc.)?

(If so) What kinds of things do you pray about together?

CURRICULUM VITAE
C. Alexandra Boeving

PERSONAL INFORMATION

205 W. Indian, P.O. Box 1954
Folly Beach, SC 29439
Phone number: 843-367-4855
Email: boeving@musc.edu

Date of Birth: October 3, 1975
Marital Status: Single

EDUCATION

Virginia Polytechnic Institute and State University, Blacksburg, VA.
•Ph.D., Psychology, degree expected Spring 2003

Medical University of South Carolina, Charleston, SC
•Clinical Internship, completed July 2003

Virginia Polytechnic Institute and State University, Blacksburg, VA.
•M.S., Psychology, Fall 2000

Duke University, Durham, NC.
•B.A. (Magna Cum Laude), Psychology, Spring 1997

GRANTS

2001-2003 *Spiritual Coping and Adjustment in Child Cancer Survivors.*
National Cancer Institute (RO3), direct costs \$100,000
C.A. Boeving, Principal Investigator; J.W. Finney, Co-Investigator
Two year grant (1/2001-1/2003) targeting: a) development of spiritual coping measure,
b) empirical examination of spiritual coping as a predictor of psychosocial adjustment in
the pediatric oncology population

1999-2000 *Adjustment to Childhood Chronic Illness: Prediction of Psychological*
Adjustment with an Investigation into Spiritual Coping, \$300
Graduate Research Development Project Grant, Virginia Tech
Graduate Student Association

Examined spiritual coping and psychosocial adjustment in pediatric cancer and sickle cell
disease patients. Utilized for conduction of thesis research, including travel expenses to
thesis hospital sites. Data served as pilot data for currently funded NCI grant.

PUBLICATIONS

Boeving, C.A., & Finney, J.W. (2003) Parenting the Chronically Ill Child. In T.H. Ollendick and C. Schroeder (Eds.), Encyclopedia of Child Psychology. New York: Guilford Press.

Boeving, C.A., & Brown, R.T. (2003) . Quality of Life with Pediatric Populations. In T.H. Ollendick and C. Schroeder (Eds.), Encyclopedia of Child Psychology. New York: Guilford Press.

Anderson, D., Taylor, L., & Boeving, C.A. (2002) Career and Research Opportunities. In R.T. Brown (Ed.), Handbook of Pediatric Psychology in School Settings. Lawrence Earlbaum, Inc.

Boeving, C.A. & Graves, K.D. (under revision) The physiological and behavioral impact of maternal depression upon the developing child: Dynamic systems perspective on intervention.

Brown, R.T., Boeving, C.A., LaRosa, A., & Arnstein, L. (in press). Adolescent health and chronic illness. In D. Wolfe & E. Mash (Eds.), Behavioral and emotional disorders in adolescents. New York: Guilford Press.

Boeving, C.A. & Finney, J.W. (in progress) A systems examination of coping with pediatric chronic illness: The addition of spirituality as a viable coping response.

CONFERENCE PRESENTATIONS

Boeving, C.A., Bradbury, K., Davis III, T.E., & Finney, J.W. (2001) Virginia's Child Health Investment Partnership (CHIP): Service-delivery Challenges and Opportunities. Paper accepted at Florida Conference on Child Health Psychology.

Boeving, C.A. & Graves, K.D. (2001) The Physiological and Behavioral Impact of Maternal Depression upon the Developing Child. Poster accepted at Florida Conference on Child Health Psychology.

Bradbury, K., Boeving, C.A., Davis III, T.E., & Finney, J.W. (2001) Virginia's Child Health Investment Partnership (CHIP): Provision of Comprehensive Health Services to Low-income Families. Poster accepted at Florida Conference on Child Health Psychology.

Boeving, C.A., Finney, J.W., Rapoff, M., & Varni, J.W. (2000). Preliminary Data regarding Spiritual Coping and Psychosocial Adjustment in Pediatric Oncology Population. Poster presented at the Kansas Conference in Clinical Child Psychology.

Boeving, C.A., & Finney, J.W. (2000). Coping and Adjustment Outcomes with Childhood Chronic Illness Populations. Poster presented at the Virginia Tech Research Symposium.

Boeving, C.A., Finney, J.W., Bradbury, K., & Janicke, D. (1999). Spirituality as a dimension of coping with childhood chronic illness. Poster presented at Florida Conference on Child Health Psychology, Gainesville, FL

Janicke, D.M., Finney, J.W., Boeving, C.A., Bradbury, K., & Riley, A.W. (1999). Determinants of children's primary care use: A prospective analysis. Paper presented at Florida Conference on Child Health Psychology, Gainesville, FL

Boeving, C.A. & Thompson, R. (1997). The Role of Spirituality in Mothers' and Children's Coping with Pediatric Brain Tumors. Poster presented at the Duke University Honors Psychology Conference.

JOURNAL REVIEWER

Journal of Clinical Child Psychology: July 1998 - present

Journal of Gender, Culture, and Health: November 1999 - present

Journal of Pediatric Psychology: September 2000 - present

RESEARCH EXPERIENCE

2001-2003 Principal investigator, *Spiritual Coping and Adjustment in Child Cancer Survivors*, RO3 funded by the National Cancer Institute
Research Sites: Medical University of South Carolina, Children's Mercy Hospital in Kansas City, University of Kansas Medical Center
Supervisors: Jack W. Finney, Ph.D. and Ronald T. Brown, Ph.D.

- Responsible for meeting grant goals including: a) development of child spiritual coping assessment tool (Phase 1), b) employment of developed measure in assessment of child coping and adjustment outcomes in child cancer survivors (Phase 2).
- Specifically, responsible for all phases of project including: a) the recruitment of participating hospitals, b) establishing collaborative relationships with grant consultants, c) hiring, training, and supervising research assistants, d) coordinating with multiple institutional review boards, and e) traveling among sites to ensure the progress of data collection (includes liaison work with oncology health teams). Additionally, I will be responsible for data analysis and presentation of the findings via journal submissions.

2001-2003 Pediatric Psychology, Medical University of South Carolina
Supervisor: Ronald T. Brown, Ph.D.

- Intern research project: Examining coping as a predictor of physiological variables in pediatric oncology population following a psychoneuroimmunology model.
- Participate as member of multidisciplinary research team. Pediatric populations targeted for study include oncology, sickle cell disease, and cystic fibrosis.

Supervisor: Deborah Anderson, Ph.D.

- Co-writing grant application to fund community intervention projects associated with the 100 Black Men of Charleston service organization. Additional focus is upon program outcome evaluation.

2000-2001 Pediatric Psychology Team, Virginia Tech

Supervisor: Jack W. Finney, Ph.D.

- Principal investigator on grant proposal submitted to National Cancer Institute (funded January 2001). Role on grant included conceptualization and design of project, researching funding mechanisms, planning, and writing of grant proposal.
- Co-Investigator in research projects collaborating with state-funded program for the improvement of child health outcomes (Virginia's Child Health Investment Partnership: CHIP). This research involved assessment of CHIP program efficacy, acting as consultant in identifying areas of needed improvement in service delivery, and co-investigator in a collaborative health outcomes study in the Roanoke valley pediatric asthma population.

1999-2000 Pediatric Psychology Team, Virginia Tech

Supervisor: Jack Finney, Ph.D.

- Completed multi-site thesis project on coping in the pediatric oncology population, examining relationship between spirituality, approach/avoidant coping, and psychosocial outcomes.
- Actively involved in initiating and maintaining a collaborative relationship between pediatric psychology team and a state-funded program for the improvement of child health outcomes (Virginia's Child Health Investment Partnership: CHIP).

Summer 1999 Research Externship, Children's Hospital –University of San Diego

Supervisor: James W. Varni, Ph.D.

- Assisted in module creation for the Pediatric Quality of Life Inventory (PedsQL™). This involved data collection, item development, and meeting with physicians to negotiate patient access for research.
- Participated on multiple grant projects targeting the prostate cancer population as well as the Neonatal Intensive Care Unit.

1998-1999 Pediatric Psychology Team, Virginia Tech

Supervisor: Jack Finney, Ph.D.

- Conducted research in newly identified coping strategies of highly stressed children (children with a severely ill parent, chronically ill children)
- Generated team research project on student utilization of student health center services.

1997-1998 Pediatric Psychology Team, Virginia Tech

Supervisor: Jack Finney, Ph.D.

- Participated in team research project on adherence to medical regimen.
- Assisted advanced student with thesis project focusing on peer-influenced injuries.

1996-1997 Research Project: Coping in the Pediatric Brain Tumor Population,

Duke Medical Psychology

Supervisors: Robert Thompson, Ph.D.; Melanie J. Bonner, Ph.D.

- Conducted interviews with pediatric brain tumor patients and their mothers targeting issues of esteem, depression, peer relationships, and family environment. Assisted doctoral student with research in this area.
- Independently designed, conducted, and defended an honors thesis on topic of spiritual coping and psychosocial adjustment in the pediatric brain tumor population.

- Attended weekly multidisciplinary team meeting in oncology clinic; Observed assessments conducted by the neurooncology team; attended weekly rounds.

1996-1997 FAST Track Prevention Program, Durham, NC Research Assistant

- Managed data: organization and entry of subject scores on administered measures. Gathered data from secondary sources.
- Researched aspects of prevention pertaining to issues at FAST Track; performed library searches.
- Organized interviews' materials. Prepare measures for analysis.

1994-1996 Rhine Research Institute, Durham, NC Research Assistant

- Assisted researchers in subject recruitment.
- Organized and maintained institute's library.
- Aided in planning and execution of major research project.

CLINICAL EXPERIENCE

2002-2003 Medical University of South Carolina, Clinical Internship Supervisors: Ron Brown, Ph.D., Deborah Anderson, Ph.D., Dan Smith, Ph.D., training director

- Pediatric Psychology: six month rotation with experience in hematology/oncology, asthma, neurology, autism.
- Crime Victims Center: six month rotation with experience with childhood trauma and neglect

2001-2002 Medical University of South Carolina, Developmental Pediatrics Supervisor: Deborah Anderson, Ph.D.

- Provide brief consults to pediatric oncology clinic.
- Clinical interviewing and psychosocial assessment with child and adolescent cancer patients as component of a research protocol
- Attend weekly pediatric oncology team meetings, consult/liaison team meetings, psychological assessment clinic team meetings, and didactic instruction.

2000-2001 Graduate Clinician, Psychological Services Center Virginia Polytechnic Institute and State University

Supervisor: Lee D. Cooper, Ph.D.

- Senior member of student practicum team.
- Direct client contact duties included individual, family, and couple psychotherapy; child and adult integrated assessments. Extensive family and adolescent work.
- Supervised therapy work of less advanced students via direct observation, tape review, and individual supervision meetings.

Summer 2000, 2001 Psychology Extern, University of Kansas School of Summer Medicine

Supervisor: Michael A. Rapoff, Ph.D.

- Assisted pediatric oncology physicians and nurses during medical procedures. Tasks included teaching pain-management strategies to children, educating parents regarding “coaching” with their children, and providing brief consults and assessments with hospitalized children and families.

**1998-1999 Graduate Clinician, Psychological Services Center
Virginia Polytechnic Institute and State University**

Supervisors: Angela Scarpa, Ph.D. and Richard Eisler, Ph.D.; Thomas Ollendick, Ph.D. (Summer 1998)

- Duties included individual and family psychotherapy, child and adult assessments, and school-based anger management groups. The groups met twice weekly and were comprised of high school males referred by school personnel for a history of suspension or aggression at school.
- Time commitment during Summer 1998 approximated 25 hours per week.

**1998-1999 Child Assessment Team, Child Study Center
Virginia Tech**

Supervisor: Thomas Ollendick, Ph.D.

- Provided psychoeducational assessments for children referred for learning problems, attentional difficulties, emotional issues, or externalizing behaviors.
- Responsible for educational outreach activities with local area schools regarding assessment services.
- Assessments involved intelligence and educational testing, assessments of psychosocial adjustment, computerized testing for attention and inhibition difficulties, classroom visitation, and conduction of interviews with parents and teachers.

1998 Carilion Community Hospital in Roanoke

Supervisor: Dr. David Hamilton

- Provided psychological services to inpatients and families, focusing on coping with hospitalization and chronic illness.
- Consulted with Child Life director regarding child and parent services offered in the hospital and at the local Ronald McDonald House. Assisted with parent support group.
- Integrated research activities with clinical services.

1997-1998 Graduate Clinician, Psychological Services Center

Virginia Polytechnic Institute and State University

Supervisors: Robert Stephens, Ph.D. and Angela Scarpa, Ph.D.

- Duties included individual and family psychotherapy and adult/child assessments.

1996-1997 Butner Mental Hospital, Butner, NC

- Activity therapy with patients.
- Provided alternative forms of recreation.
- Studied conditions of the patients.

**1996-1997 E. Elementary School, Durham, NC
Tutor**

- Worked one-on-one with a seven year old child targeted for behavioral and academic intervention.
- Designed social/educational program for student in conjunction with clinical child coursework.
- Provided skills training for adaptive behavior.

**1995-1996 Eating Disorders Therapy Group, Duke University
Co-Facilitator**

- Facilitated discussion among women with anorexia nervosa and bulimia nervosa.
- Designed therapeutic activities for the group.
- Researched origins and presenting symptoms of the disorders.

**1995-1996 Counseling and Psychological Services, Duke University
Peer Facilitator**

- Designed programs dealing with student issues.
- Presented programs to student groups.
- Assisted psychology interns with weekly planning sessions targeting the special intellectual, social, and health needs of college students.

**1995-1996 Women's Center, Duke University
BASES Mentor**

- Mentored a group of first year women; oriented group to women's resources at Duke.
- Assisted with adjustment issues to college life and new environment.
- Facilitated interactions between groups of mentees to aid them in developing a women's support network.

AWARDS AND HONORS

Distinction in Psychology, Duke University, May 1997

Psychology Honors by Honors Project, Duke University, May 1997

- "The Role of Spirituality in Mothers' and Children's Coping with Pediatric Brain Tumors". Independently designed and conducted honors project under mentorship of Robert Thompson, Jr., Ph.D.

Resident Advisor Scholarship, Office of Student Development, Duke University, 1996-1997

- Worked with the Office of Student Development to facilitate adjustment for first-year students. Attended extensive workshops in conflict resolution, sexual relationships, diversity, alcohol policy, and bereavement.
- Lived in the dormitory with assigned first-year students as their primary resource for mediation, safety issues, campus information, guidance, and discipline.
- Planned educational and social programs for the dormitory each semester.

Dean's List 1995, 1996, 1997

TEACHING EXPERIENCE

1997-1998 Graduate Teaching Assistant: Dept. of Psychology, Virginia Tech

- Instructor for two recitation sections of Introductory Psychology. Facilitated class discussions of assigned readings, assigned and provided feedback on writing over class material.