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# Relationships between Parenting Self-Efficacy and Distress in Parents with and without Cancer

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Relationships between Parenting Self-Efficacy and Distress  
in Parents with and without Cancer

by

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A thesis submitted in partial fulfillment  
of the requirements for the degree of  
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## **Dedication**

To my mom, Shari, my dad, Bill, and my sisters, Marissa and Piper, whose unconditional love and continual support made this project possible.

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## Abstract

Despite the relatively large number of parents with cancer, relatively little is known about the extent to which having cancer affects the parenting experience. Qualitative studies have identified issues and concerns that create distress among parents with cancer, but quantitative studies have yet to be conducted. Studies demonstrate that parents with cancer experience psychological distress, and that parenting self-efficacy is related to psychological distress among parents without cancer. However, no study to date has examined the relationships between parenting self-efficacy and psychological distress among parents with cancer. This study sought to address these gaps in the literature by comparing parents with cancer to parents without cancer on measures of parenting self-efficacy and psychological distress. It was hypothesized that cancer patients would report lower parenting self-efficacy and higher levels of psychological distress than parents without cancer. This study also sought to explore whether parenting or general self-efficacy mediated the relationship between cancer status and psychological distress. A sample of 57 patients who had been diagnosed with cancer and undergone hematopoietic stem cell transplantation (HSCT), and a control group of 57 parents with no history of cancer were recruited for participation in the study. Patients were recruited during routine outpatient visits or by mail, and controls were recruited using community outreach. Medical record reviews were conducted to assess clinical variables, and participants filled out a standard demographic questionnaire as well as self-report measures of parenting self-efficacy, general self-efficacy, and psychological distress. As hypothesized, results demonstrated that parents with cancer reported less parenting self-efficacy, and more psychological distress than controls (all  $p$ -values  $\leq .05$ ).

Furthermore, findings indicated that both parenting self-efficacy and general self-efficacy mediated the relationship between cancer status and psychological distress. This study fills several gaps in the quantitative literature on parenting with cancer, and suggests that both parenting and general self-efficacy are possible targets for interventions seeking to lessen distress among parents with cancer. Future research should use matched case-control designs to examine longitudinal relationships between parenting self-efficacy and psychological distress, and empirically evaluate interventions aimed at improving parenting and general self-efficacy.



## Introduction

An estimated 14% of cancer survivors have minor children living in their household; this figure equates to 1.58 million people in the United States. (Weaver, Rowland, Alfano & McNeel, 2010). Despite the relatively large number of affected individuals, relatively little is known about the extent to which having cancer affects the parenting experience. Moreover, the possibility that concerns about the ability to parent could influence distress in parents with cancer has not been systematically evaluated. The current study sought to address these issues by assessing parenting self-efficacy and distress in parents with cancer and in a comparison group of parents without cancer. Several lines of research are relevant to the current study. They include research on parenting with cancer, psychological distress in parents with cancer, and parenting self-efficacy.

Parents with cancer may experience distress when they put their own needs before those of their children, or when they do not feel confident in their ability to meet the needs of their children. For example, qualitative studies show that parents are often concerned about their ability to communicate about their illness with family members, and struggle to maintain a normal routine at home (Barnes et al., 2002; Fitch, Bunston & Elliot, 1999). Parents with cancer have reported that they lacked energy to perform daily parenting activities and felt as though their life was out of balance (Helseth & Ulfsaet, 2005). However, these findings only reflect data from qualitative studies, and have yet to be verified using a quantitative approach.

Previous research suggests that parents who have been diagnosed with cancer report higher levels of psychological distress than people of the same age and gender in the general

population. When compared to norms in the general population, the proportion of parents with cancer who scored above clinical cutoffs for anxiety, depression and psychological distress was greater than expected (Compas et al., 1994; Howes, Hoke, Winterbottom & Delafield, 1994; Nelson & While, 2002; Watson et al., 2006). One limitation of these studies is that they compare cancer patients to norms for the general population instead of to a comparison group.

A more rigorous approach would employ a case-control design to compare levels of distress among parents with cancer to parents without cancer. Only one study to date has done this (Hoke, 2001); however, the researchers did not include fathers in the study. As would be expected, this study found that mothers with breast cancer reported worse psychosocial adjustment and greater psychological distress than mothers who did not have breast cancer (Hoke, 2001).

Studies of sociodemographic and clinical correlates of psychological distress among parents with cancer have examined such variables as gender, marital status, time since diagnosis, recurrence, treatment intensity, and type of cancer (Gazendam-Donofrio et al., 2008; Nelson & While, 2002). One study found that type of cancer, recurrence, and cancer treatment intensity were related to distress, such that hematologic cancer, intense treatment, and cancer recurrence were associated with greater distress, but time since diagnosis was not (Gazendam-Donofrio et al., 2008). Another study found that gender and marital status were not associated with distress (Nelson & While, 2002). Only one study to date has investigated the link between psychosocial variables and psychological distress among parents with cancer, and found that higher levels of perceived stress were related to increased depression and anxiety (Compas et al., 1994). One of the aims of this study is to address this gap in the literature by examining the relationship between parenting self-efficacy and psychological distress among parents with cancer.

Parenting self-efficacy (PSE) can be defined as a caregiver's confidence about their ability to successfully raise children (Jones & Prinz, 2005). This construct stems from Bandura's work on personal efficacy and human agency, which theorizes that actions are influenced by perceptions about a person's ability to perform that behavior (Bandura, 2001). When applied to parenting, it can be theorized that caregivers who feel more confident in their ability to parent will be more likely to carry out effective parenting behaviors; this activity should increase the likelihood that their children will succeed socially and psychologically which, in turn, should reinforce these behaviors. PSE can also work in the reverse direction; caregivers who do not feel very confident in their ability to parent may be less likely to engage in positive parenting behaviors, and may tend to give up easily when challenges, such as coping with cancer, arise. This activity, in turn, may reinforce perceptions of low efficacy.

Although the number of studies focusing on PSE has increased over the years, there is no preferred method for measuring this construct. Three types of measures exist: those that measure general PSE; those that measure task-related PSE; and those that measure domain-specific PSE. General measures of PSE, such as the Parenting Sense of Competence scale (PSOC) and the Parenting Self-Agency Measure (PSAM), have a broad focus on parents' overall confidence in the parenting role. In contrast, task-related measures, such as the Self-Efficacy for Parenting Tasks Index (SEPTI), assess perceptions of efficacy for specific tasks, such as taking care of a child's physical health or disciplining the child. Domain-specific measures of PSE, such as the Difficult Behavior Self-Efficacy scale, focus on perceptions in one parenting domain, such as communication or learning. This type of measure will not be used in the current study, because it is hypothesized that having cancer will affect parents' perceptions of efficacy in multiple domains. Studies comparing the different types of instruments have led to debates about which

type of measure should be used to assess PSE (Whittaker & Cowley, 2006). Due to the unresolved nature of this debate, this study will include both general and task-related measures of PSE, but not domain-specific measures.

Studies assessing the reliability and validity of the two most commonly used instruments for assessing general PSE, the PSOC (Johnston & Mash 1989) and the PSAM (Dumka, Stoerzinger, Jackson & Roosa, 1996) have yielded mixed results. One study (Coleman & Karraker, 2000), concluded that the PSAM was a purer measure of PSE due to the fact that it was more highly correlated with a task-related measure, the SEPTI, than the PSOC. However, all three measures were significantly correlated with each other ( $r = 0.49-0.78, p < .001$ ) (Coleman & Karraker, 2000). Another study comparing scores on the efficacy subscale of the PSOC to those on the SEPTI also found that the two measures were significantly correlated ( $r = 0.48, p < .001$ ) (Coleman & Karraker, 2003). Acceptable levels of reliability (Cronbach's alpha = .0.75-0.88) have been shown for the PSOC and it has been found to be associated with parent reports of child behavior problems and a secure attachment style (Johnston & Mash, 1989; Lovejoy et al., 1997; Ohan et al., 2000; Gilmore & Cuskelly, 2008). However, other research has yielded weak support for the convergent and discriminant validity of the PSOC due to the high overlap between scores on this measure and measures of negative affect, response style, and social desirability (Lovejoy, Verda, & Hays, 1997). In the absence of a consensus about which of the commonly used measures offer optimal validity and reliability, both the PSOC and the PSAM will be used to assess general PSE in this study. The SEPTI will be used to assess task-related PSE, as it has been the most commonly used measure in the parenting literature and has been established as a valid and reliable measure. (Coleman & Karraker, 2000; 2003).

Research has demonstrated a robust relationship between PSE and positive parenting practices such as parental involvement, responsiveness, monitoring, and limit-setting (Bogenschneider, Small & Tsay, 1997; Dumka, Stoerzinger, Jackson, & Roosa, 1996; Shumow & Lomax, 2002). Intervention studies also provide support for this relationship by demonstrating that PSE can be increased through family interventions designed to promote positive parenting practices, and that increases in PSE are associated with more positive parenting behaviors (Evans et al., 2003; Hoza et al., 2000; Spoth, Redmond, Haggerty & Ward, 1995).

Although no studies to date have examined the relationship between PSE and psychological distress in cancer patients, PSE has been associated with psychological distress in other populations. Cross-sectional and longitudinal studies have shown an inverse relationship between PSE and depression, such that lower levels of PSE are related to higher levels of depressive symptoms (Cutrona & Troutman, 1986; Damato, Anthony & Maloni, 2009; Gross et al., 1999; Ngai, Chan & Ip, 2010; Porter & Hsu, 2003).

In summary, gaps in the literature exist regarding the effects of having cancer on parents' PSE and psychological distress. Qualitative studies have identified issues and concerns that create distress among parents with cancer, but quantitative studies have yet to be conducted. Studies demonstrate that parents with cancer experience psychological distress, and that PSE is related to psychological distress. However, no study to date has examined the relationships between PSE and psychological distress among parents with and without cancer. This study sought to address these gaps in the literature.

## **Aims of the Current Study**

The overall purpose of the current study was to determine if parents with cancer experience more psychological distress and lower PSE than parents who do not have cancer. If a relationship is observed between cancer status and psychological distress, a secondary aim was to explore whether PSE accounted for the relationship. In order to achieve this goal, self-report questionnaires assessing PSE and psychological distress were administered to a group of parents diagnosed with cancer and a control group of parents with no history of cancer.

**Aim 1.** To determine the relationship of cancer status with PSE and psychological distress.

*Hypothesis 1.* It was hypothesized that cancer patients would report lower PSE than their peers.

*Hypothesis 2.* It was hypothesized that cancer patients would report higher levels of psychological distress than their peers.

**Aim 2.** To determine the relationship between PSE and psychological distress.

*Hypothesis 3.* It was hypothesized that lower PSE would be related to higher levels of distress.

**Aim 3.** To explore whether PSE mediates the relationship between cancer status and psychological distress.

## Methods

### Participants

Participants were parents who had been diagnosed with cancer and undergone hematopoietic stem cell transplantation (HSCT), and a control group of parents with no history of cancer. Participants in both the patient and control groups met the following eligibility criteria: 1) having at least one child between 5 and 18 years of age living in the household for whom they are involved in parenting, 2) being able to read and speak English, 3) being able to provide informed consent, and 4) being 18 years of age or older. Additionally, participants in the patient group were required to have completed HSCT within the past 2-48 months. Participants in the control group were required to have no history of cancer except non-melanoma skin cancer.

### Measures

**Demographic characteristics.** The following demographic characteristics were assessed using a standardized self-report form: age, gender, race, ethnicity, marital status, income, employment status, and education. In addition, family structure, and each child's age, sex, and relationship to the participant were assessed.

**Clinical characteristics.** The following clinical characteristics were assessed for the patient group by conducting a medical chart review: type of cancer, date of diagnosis, date of HSCT, type of transplant (autologous or allogeneic), and current disease status.

**Parenting involvement.** Parenting involvement in childcare was assessed by asking participants, “What percentage of all the child care and things that have to be done for the children in your household do you do?” This item was used previously in a study examining parental involvement and family adjustment (Ross & Van Willigen, 1996).

**Child psychological or behavioral problems.** Child psychological or behavioral problems was assessed by asking participants, “Has this child been referred to or seen by a mental health professional, such as a licensed psychologist or psychiatrist, in the past six months?”

**General self-efficacy.** The Generalized Self-Efficacy Scale (GSE) was used to assess general self-efficacy. The scale is comprised of ten items rated on a four-point Likert scale from 1 = *not at all true*, to 4 = *somewhat true* (Schwarzer & Jerusalem, 1995). This scale has demonstrated excellent internal consistency reliability (Cronbach’s alpha 0.75-0.94) in numerous studies (Rimm and Jerusalem, 1999; Luszczynska, Scholz & Schwarzer, 2005) and has been found to be positively related to self-esteem and optimism (Luszczynska, Scholz & Schwarzer, 2005). In the present study, this measure demonstrated adequate internal consistency reliability ( $\alpha = .85$ ).

**Parenting self-efficacy.** Parenting self-efficacy (PSE) was assessed using three standardized measures—one task-related measure and two general measures, and a new cancer-related measure created for this study.

The Self-Efficacy Parenting Tasks Index (SEPTI) is a 36-item scale measuring parenting self-efficacy for tasks in five domains: achievement, recreation, discipline, nurturance, and health (Coleman & Karraker, 2000; 2003). Items are rated on a six-point Likert scale, ranging from 1 = *strongly disagree* to 6 = *strongly agree*. This measure has demonstrated excellent



reliability (Cronbach's alpha = .91) and it has been found to be associated with mothers' perceptions of their child's sociability, degree of experience with children other than their own, and scores on other measures of parenting self-efficacy (Coleman & Karraker, 2000; 2003). In the present study, the total SEPTI scale ( $\alpha = .91$ ) and the five subscales ( $\alpha$ s = .78 - .85) demonstrated adequate internal consistency reliability.

The Parental Sense of Competence (PSOC) scale is composed of 16 items and focuses on perceptions of general parenting competency (Mash & Johnston, 1983). This scale contains three subscales: 1) parental satisfaction, 2) parenting efficacy and 3) parenting interest (Gilmore & Cuskelly, 2008). Items are rated on a six-point Likert scale ranging from 1 = *strongly disagree* to 6 = *strongly agree*. The measure has demonstrated acceptable internal consistency reliability (Cronbach's alpha = 0.75-0.88) in numerous studies (Johnston & Mash, 1989; Lovejoy et al., 1997; Ohan et al., 2000; Gilmore & Cuskelly, 2008). Higher PSOC scores are inversely correlated with parent reports of child problem behavior and positively associated with a secure attachment style (Johnston & Mash, 1989; Lovejoy et al., 1997). In the present study, the total PSOC scale ( $\alpha = .86$ ) and the two subscales ( $\alpha$ s = .77 - .81) demonstrated adequate internal consistency reliability.

The Parenting Self-Agency Measure (PSAM) is a 10-item self-report measure of general parenting self-efficacy (Dumka et al., 1996). Respondents rate each item using a five-point Likert scale ranging from 1 = *never* to 5 = *always*. This measure has demonstrated adequate reliability (Cronbach's alpha = 0.68-0.81) in previous studies (Dumka et al., 1996; Coleman & Karraker, 2000; Whittaker & Cowley, 2006). The validity of this scale has been shown by correlations with parents' coping and parenting practices, as well as with their scores on the SEPTI (Dumka et al., 1996; Coleman & Karraker, 2000; Whittaker & Crowley, 2006). In the

present study, the total PSAM scale demonstrated adequate internal consistency reliability ( $\alpha = .80$ ).

A new measure, the Cancer-Related Parenting Self-Efficacy Scale (CaPSE), was created to assess PSE for tasks that were thought to be particularly relevant to cancer patients. This 24-item scale asks parents to rate, on a scale from 1 = *strongly disagree* to 6 = *strongly agree*, how confident they feel about their ability to perform certain tasks, such as physically caring for their child or monitoring their child's whereabouts. In the present study, the total CaPSE scale demonstrated excellent internal consistency reliability ( $\alpha = .94$ ). Additionally, the CAPSE demonstrated excellent convergent validity, as it was highly correlated (all  $p$ 's < .001) with other measures of PSE, the SEPTI ( $r = -.67$ ), PSOC ( $r = .61$ ), and PSAM ( $r = .60$ ).

**Psychological distress.** General psychological distress was assessed using the 53-item Brief Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983). Respondents rated each item on five-point scale of distress ranging from 0 = *not at all* to 4 = *extremely*. The BSI yields scores for nine subscales: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. The BSI also yields scores for three global indices of stress: the Global Severity Index (GSI), Positive Symptom Distress Index (PSDI), and the Positive Symptom Total (PST). For the purpose of this study, the GSI was used to indicate the intensity of perceived distress. The scale has been normed, validated, and acceptable internal consistency reliability has been established for all nine subscales and the global indices, with Cronbach's alpha ranging from 0.71 to 0.85 (Derogatis & Melisaratos, 1983). In the present study, the total BSI scale demonstrated excellent internal consistency reliability ( $\alpha = .93$ ).

## Procedure

**Patients.** A list of patients who underwent HSCT in the past 2-48 months was obtained from the Moffitt Cancer Center Blood and Marrow Transplant (BMT) Clinic. Medical records for these patients were reviewed to determine if they met eligibility criteria. Potential participants were approached during a scheduled follow-up visit in the BMT Clinic to have the study protocol explained. If eligible and interested, participants signed a written informed consent form. They were then given the option of filling out the study measures during their outpatient visit or taking them home and returning the completed measures in a self-addressed stamped envelope. They were asked to fill out the questionnaires in regard to one child within the age range of 5-18 years; if they had more than one child in that age range, they were asked to complete the measures for the child whose first name comes first in alphabetic order. Patients not scheduled to come in for a follow-up appointment within the next three months were contacted by phone to determine if they were eligible and interested in participating in the study. Those who verbally agreed to participate were mailed a packet containing an informed consent form, a study questionnaire, and a postage paid return envelope. Participants in the patient group were asked to provide the name and contact information for up to five friends who might be willing to participate and have a child between the ages of 5 and 18. Patients were informed that their name would be disclosed to their friend to let the friend know who nominated them for the study. Patients were paid \$20 for their time and effort upon successful completion of the study.

**Controls.** Participants in the control group could be recruited via two methods: patient nomination and community outreach. Patients nominated by participants in the patient group were contacted by phone to determine if they were eligible and interested in participating in the study. Potential controls were informed of who nominated them. Those who agreed to participate

were mailed a packet containing an informed consent form, a study questionnaire, and a postage paid return envelope. Participants were asked to fill out the questionnaires in regard to one child within the age range of 5-18 years; if they had more than one child in that age range, they were asked to complete the measures for the child whose first name comes first in alphabetic order. Recruitment of control participants via community outreach occurred in local community settings. A flyer providing information and contact information for the study was posted in community settings, and e-mailed to the staff of community organizations. The research staff approached the potential community control participants in the same manner as the patients and patient nominated controls. Upon successful completion of the study, control participants were paid \$20 for their time and effort.

## **Statistical Analyses**

**Preliminary analyses.** Descriptive statistics were computed for demographic, clinical and psychological characteristics. In addition, independent samples *t*-tests or chi-square tests were performed to determine whether or not the groups differ on demographic and clinical variables assessed. If the groups differed significantly on a variable ( $p \leq .05$ ) and the variable was significantly related to parenting self-efficacy or distress, then it was included as a covariate in subsequent analyses.

**Hypothesis testing.** In order to determine the relationship of cancer status with PSE and distress (Aim 1), two types of analyses were performed. The first tests the hypothesis that patients will report lower PSE than their peers. This hypothesis was tested using analysis of covariance (ANCOVA) to compare mean levels of PSE between patients and controls on all four

measures of PSE after controlling for relevant covariates. If any of the measures did not show a difference, it was dropped from subsequent analyses.

The second hypothesis asserts that patients would report higher levels of psychological distress than their peers. Again, ANCOVA was used to determine if there were mean level differences between groups in psychological distress as measured by the GSI of the BSI after controlling for relevant covariates.

The second aim was to determine the relationship between PSE and distress. It was hypothesized that lower PSE would be related to higher levels of distress. A partial correlation was calculated to determine if there was a significant ( $p \leq .05$ ) association between distress and PSE after controlling for relevant covariates.

The final aim was to explore whether PSE mediates the relationship of cancer status on psychological distress. Mediation analyses were performed using Baron and Kenny's (1986) criteria and bootstrapping. In order to determine if Baron and Kenny's criteria for mediation were met, a series of regression analyses were conducted. First, a regression equation was computed to determine if cancer status was significantly related to psychological distress. Next, separate regression equations were computed to examine relations between cancer status and PSE, and PSE and psychological distress. A final regression equation was computed to determine if the magnitude of the relationship between cancer status and psychological distress was reduced when controlling for PSE. If this was the case, it would suggest that the relationship between cancer status and psychological distress is mediated by PSE. The mediational model was then confirmed using bootstrapping. While Baron and Kenny's criteria for mediation has been the most commonly used in the literature, the bootstrapping method is advantageous because it provides an estimate of the indirect effect and does not require assumptions of

normality to be met (Hayes, 2009). An SPSS macro created by Preacher & Hayes was used to obtain estimates of the indirect effect. A bootstrap sample was generated using random sampling with replacement, and the regression coefficients and indirect effect estimates were calculated based on this sample. Using 5,000 resamples, a mean of the 5,000 estimates was calculated with a 95% confidence interval for the estimate. If a zero is not included in the confidence interval, it was concluded that the indirect effect is statistically significant. A second mediational model was tested using the same procedure to determine if general self-efficacy mediates the relationship between cancer status and distress.

A power analysis was conducted to determine the number of participants needed to obtain power of .80 using an independent samples *t*-test with an alpha = .05 (two-tailed) to detect a medium expected effect size of  $d = .50$ . Using Power and Precision 2.0, it was determined that 60 participants per group would be needed (Borenstein, et al., 2000). A second power analysis was conducted based on the proposed correlational analysis to determine how many participants would be needed to detect a Pearson's  $r = 0.25$  with a power of 80% and an alpha = .05 (two-tailed). Using Power and Precision 2.0, it was determined that a total sample size of 120 participants would be needed (Borenstein et al., 2000). Therefore, the target recruitment goal of the current study was to enroll and obtain data on 120 participants (60 patients and 60 controls). With the consent of the thesis committee, analyses were conducted with data from 114 participants (57 patients and 57 controls).

## Results

### Participants

Patient participant flow is shown in Figure 1. One thousand four hundred twenty-four patients were screened for this study; of these, 1,169 were ineligible based on medical record reviews (e.g., no children between the ages of 5-18, children not residing in the home). The remaining 255 participants were approached for participation; of these, 114 were unable to be contacted by phone, 46 refused to participate, and 95 agreed to participate (67% of those able to be contacted). Of those who agreed to participate, 36 never completed the study measures and could not be reached again, and 2 were found to be ineligible after they participated. Thus, analyses were conducted on the 57 patients who had evaluable data. Because control participants were self-nominated, the participation rate could not be calculated for this group. All fifty-seven control participants were recruited via community outreach.

Participant demographic and clinical characteristics are shown in Table 1. Patients ranged in age from 31 to 63 years ( $M = 45.56$ ;  $SD = 7.94$ ). The majority of the patients were college-educated (81%), not currently employed (65%), male (51%), married (86%), and White (79%). Among patients, the focus children ranged in age from 5 to 18 years ( $M = 12.56$ ;  $SD = 3.96$ ), and were mostly female (51%). Only one focus child (2%) had been referred to a mental health professional in the past 6 months. Fifteen patients (26%) were diagnosed with non-Hodgkin's lymphoma, fourteen (25%) were diagnosed with multiple myeloma, twelve (21%) were diagnosed with acute myeloid leukemia, and ten (17%) were diagnosed with Hodgkin's

lymphoma. On average, patients were 52.81 months ( $SD = 62.11$ ) from their original cancer diagnosis, and 18.71 months ( $SD = 11.98$ ) from HSCT. Twenty-eight patients (49%) had an autologous HSCT, twenty-three (40%) had an allogeneic transplant, and six (11%) had an HSCT using cord blood. Three patients (5%) had a recurrence of their cancer following HSCT.

Control participants ranged in age from 29 to 54 years ( $M = 40.12$ ;  $SD = 6.62$ ). The majority of the control participants were college-educated (98%), currently working (93%), female (68%), married (86%), and White (91%). Among control participants, the focus children ranged in age from 5 to 18 years ( $M = 9.46$ ;  $SD = 4.21$ ), and were mostly male (53%). Only three focus children (5%) had been referred to a mental health professional in the past 6 months.

Comparisons were made between patient and control groups to determine if they differed in demographic characteristics (see Table 1). The groups differed on age, gender, years of education, current employment, annual gross income, and focus child age (all  $p$  values  $\leq .05$ ), such that patients were older, more likely to be male, less educated, less likely to be employed, had a lower income, and had a focus child who was older than controls. Correlations were conducted to determine if any of these variables was significantly associated with either parenting self-efficacy or distress. Participant age was correlated with parenting self-efficacy as measured by the CaPSE, PSAM, PSOC, and SEPTI (all  $p$  values  $\leq .05$ , see Table 2). Focus child age was associated with parenting self-efficacy as measured by the CaPSE, PSAM, and SEPTI (all  $p$  values  $\leq .05$ , see Table 2). Therefore, participant age and focus child age were included as covariates in subsequent analyses.



## **Comparing Patients and Controls on Parenting Self-Efficacy and Psychological Distress**

To address the first hypothesis in Aim 1, comparisons were made using ANCOVA between patients and controls on parenting self-efficacy measures. Only one of the four measures, the CaPSE, demonstrated a group difference ( $p = .05$ ), such that patients reported less parenting self-efficacy than controls (see Table 3). Although no hypothesis was offered regarding general self-efficacy, an analysis was conducted which indicated that patients reported less general self-efficacy than controls ( $p = .02$ , see Table 3). To address the second hypothesis in Aim 1, comparisons were made between patients and controls on distress. As expected, group differences were found in distress, such that the patients reported more distress than the controls ( $p = 0.009$ , see Table 4).

## **Determining Relationships between Parenting Self-Efficacy and Distress**

To address Aim 2, partial correlations were conducted to determine if parenting self-efficacy and distress were related. For the sample as a whole, all four measures of parenting self-efficacy were associated with distress in the expected direction (all  $p$  values  $\leq .01$ , see Table 5). As hypothesized, lower parenting self-efficacy was related to higher levels of distress. Additionally, it was found that lower general self-efficacy was associated with higher levels of psychological distress ( $p \leq .01$ , see Table 5). Exploratory analyses examined the relationship of general and parenting self-efficacy with distress by group by calculating similar partial correlations. Among patients, significant relationships were found between all measures of parenting self-efficacy and psychological distress (all  $p$  values  $\leq .05$ ), but not between general self-efficacy and distress (see Table 5). Among controls, parenting self-efficacy as measured by

the CaPSE, PSOC, and general self-efficacy were all related to distress (all  $p$  values  $\leq .05$ ), but parenting self-efficacy as measured by the PSAM was not (see Table 5).

### **Mediational Analyses**

Exploratory mediational analyses were conducted to determine whether the relationship between cancer status (patients versus controls) and psychological distress was mediated by parenting self-efficacy or general self-efficacy. In the first model, which focused on parenting self-efficacy, the CaPSE was used as the sole measure of PSE because it was the only PSE measure related to cancer status. Findings were consistent with the view that PSE as measured by the CaPSE mediates the relationship between cancer status and psychological distress. As shown in Figure 2: a) cancer status was related to parenting self-efficacy ( $p \leq .05$ ), b) parenting self-efficacy was related to distress ( $p \leq .05$ ) and c) cancer status was related to distress ( $p \leq .05$ ). Also as shown in Figure 2, after controlling for parenting self-efficacy, the path between cancer status and distress while still statistically significant ( $p \leq .05$ ), but decreased in magnitude. Analyses based on bootstrapping (see Table 6) confirmed the finding that parenting self-efficacy has an indirect effect on distress.

A second model, with general self-efficacy as the mediator, was examined in order to determine the extent to which mediation was specific to parenting aspects of self-efficacy or also extends to general perceptions of self-efficacy. Findings were consistent with the view that general self-efficacy mediates the relationship between cancer status and psychological distress. As shown in Figure 3: a) cancer status was related to general self-efficacy ( $p \leq .05$ ), b) general self-efficacy was related to distress ( $p \leq .01$ ) and c) cancer status was related to distress ( $p \leq .05$ ). Also as shown in Figure 3, after controlling for general self-efficacy, the path between

cancer status and distress remained statistically significant ( $p \leq .05$ ), but decreased in magnitude. Analyses based on bootstrapping (see Table 6) confirmed the finding that general self-efficacy has an indirect effect on distress.

Because parenting self-efficacy and general self-efficacy each demonstrated an indirect effect on distress, a multiple mediational model was conducted to determine if each mediator accounted for unique variance in the relationship between cancer status and distress. When both parenting self-efficacy and general self-efficacy were entered simultaneously in the mediation model, the pattern of results was consistent with the view that each variable had an independent indirect effect on distress (see Table 6).

Table 1

*Participant demographic and clinical characteristics*

Characteristic	Patients (N = 57)	Controls (N = 57)
Age in years, Mean, SD*	45.56 (7.94)	40.12 (6.62)
Gender, % female*	49	68
Race, % white	79	91
Ethnicity, % Non-Hispanic	77	86
Marital status, % married	86	86
Years of education, % *		
12 or less	19	2
13 to 16	63	49
17 or more	18	49
Current employment, % *		
Working	28	93
On leave	7	0
Not employed	65	7
Annual gross income, % *		
< \$40,000	53	14
\$40,000-\$100,000	25	60
>\$100,000	19	16
Parenting involvement, % Mean SD	66.75 (28.23)	68.58 (24.34)
Focus child age, Mean, SD*	12.54 (3.96)	9.46 (4.21)
Focus child sex, % female	51	47
Relationship with child's father/mother, %		
Romantic	74	83
Friendly	18	7
Hostile	4	0
None	4	4
Other	2	7
Child referred for treatment, % yes	2	5
Cancer diagnosis, %		
Multiple myeloma	25	--
Acute myeloid leukemia	21	--
Acute lymphocytic leukemia	5	--
Chronic lymphocytic leukemia	4	--
Chronic myeloid leukemia	2	--
Non-Hodgkin's lymphoma	26	--
Hodgkin's lymphoma	17	--
Time since diagnosis, months Mean SD	52.81 (62.11)	--
Transplant type, %		
Autologous	49	--
Allogeneic, matched related donor	14	--
Allogeneic, matched unrelated donor	21	--
Allogeneic, mismatched unrelated donor	5	--
Cord blood	11	--
Time since transplant, months Mean, SD	18.71 (11.98)	--
Recurrence since transplant, % yes	5	--

\* $p \leq .05$  Based on *t*-tests for continuous variables and chi-square tests for categorical variables.

Table 2

*Correlations of demographic characteristics with the Brief Symptom Inventory Global Severity*

*Index and measures of parenting self-efficacy*

<b>Demographics</b>	<b>CaPSE</b>	<b>PSOC</b>	<b>SEPTI</b>	<b>PSAM</b>	<b>BSI</b>
Age	-.30***	-.20*	.27**	-.26**	.14
Gender	.13	.06	-.11	-.03	.04
Current employment	-.10	.08	-.02	-.07	.14
Annual gross income	-.09	-.08	-.02	-.04	.06
Years of education	.04	.03	-.02	.17	-.12
Focus child age	-.19*	-.07	.27**	-.24*	.03

\*  $p \leq .05$ , \*\* $p \leq .01$ , \*\*\*  $p \leq .001$

Note: CaPSE = Cancer-Related Parenting Self-Efficacy Scale; PSOC = Parenting Sense of Competency Scale; SEPTI = Self-Efficacy Parenting Tasks Index; PSAM = Parenting Self-Agency Measure; BSI = Brief Symptom Inventory

Table 3

*Group differences in parenting and general self-efficacy*

<b>Measure</b>	<b>Patients <i>M (SD)</i></b>	<b>Controls <i>M (SD)</i></b>	<b><i>F</i></b>	<b><i>p</i></b>
CaPSE	126.33 (16.68)	133.95 (9.93)	3.80	.05
PSOC	72.86 (12.74)	73.35 (11.66)	.003	.96
SEPTI	75.81 (24.61)	69.92 (19.49)	.019	.89
PSAM	39.91 (5.83)	41.95 (3.75)	1.29	.26
GSE	36.42 (5.40)	38.75 (3.86)	5.67	.02

Note: CaPSE = Cancer-Related Parenting Self-Efficacy Scale; PSOC = Parenting Sense of Competency Scale; SEPTI = Self-Efficacy Parenting Tasks Index; PSAM = Parenting Self-Agency Measure; GSE = General Self-Efficacy Scale

Table 4

*Group differences in psychological distress*

<b>Psychological distress</b>	<b>Patients <i>M (SD)</i></b>	<b>Controls <i>M (SD)</i></b>	<b><i>F</i></b>	<b><i>p</i></b>
BSI GSI	0.41 (.36)	0.24 (.26)	7.15	.009

Note: BSI GSI = Brief Symptom Inventory Global Severity Index

Table 5

*Partial correlations of the Brief Symptom Inventory Global Severity Index with measures of parenting and general self-efficacy controlling for age and focus child age*

<b>Measure</b>	<b>Full Sample (N = 114)</b>	<b>Patients (N = 57)</b>	<b>Controls (N = 57)</b>
CaPSE	-.46 <sup>†</sup>	-.42***	-.52 <sup>†</sup>
PSOC	-.34 <sup>†</sup>	-.44***	-.30*
SEPTI	.36 <sup>†</sup>	.47 <sup>†</sup>	.25
PSAM	-.29**	-.34**	-.25
GSE	-.32***	-.22	-.36**

\*  $p \leq .05$ , \*\*  $p \leq .01$ , \*\*\*  $p \leq .001$ , <sup>†</sup>  $p \leq .0001$

Note: CaPSE = Cancer-Related Parenting Self-Efficacy Scale; PSOC = Parenting Sense of Competency Scale; SEPTI = Self-Efficacy Parenting Tasks Index; PSAM = Parenting Self-Agency Measure; GSE = General Self-Efficacy Scale



Table 6

*Indirect effects of mediation analyses*

<i>Mediator</i>	<i>Bootstrap Estimate</i>	<i>SE</i>	<i>95% CI Lower</i>	<i>95% CI Upper</i>
Parenting self-efficacy: Indirect effect	.053	.027	.004	.110
General self-efficacy: Indirect effect	.043	.024	.008	.110
Multiple mediation model				
Parenting self-efficacy: Indirect effect	.052	.027	.005	.112
General self-efficacy: Indirect effect	.041	.022	.010	.101

Note: *SE* = Standard error

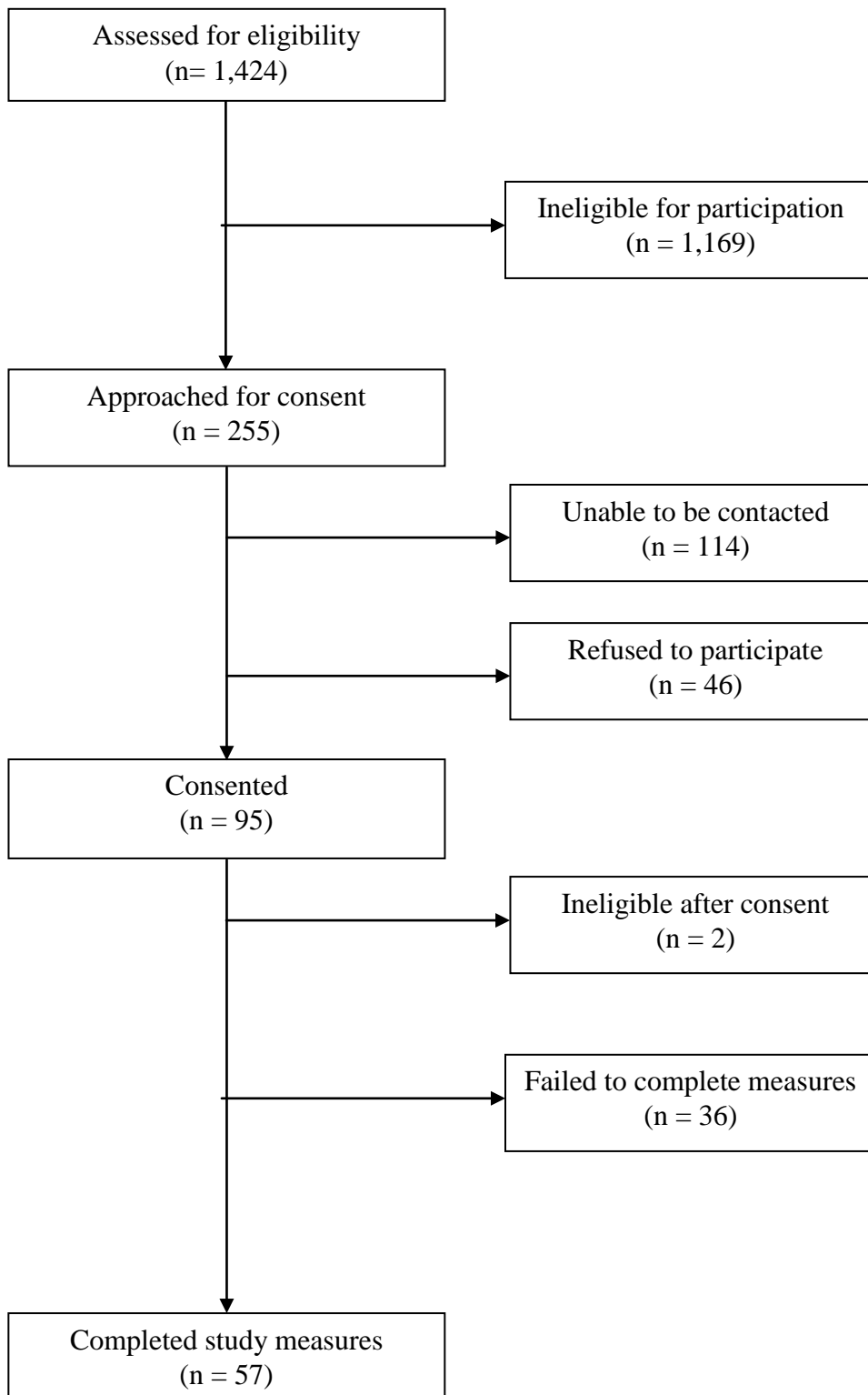


Figure 1. Patient participant flow chart

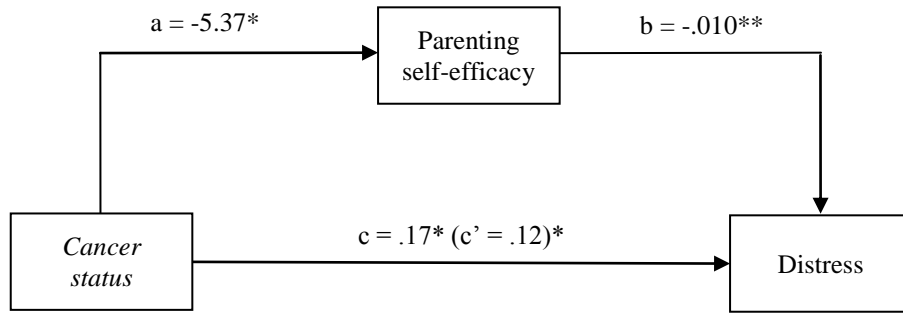


Figure 2. Path diagram for the indirect effect of cancer status on distress through parenting self-efficacy

\*  $p \leq .05$ , \*\*  $p \leq .0001$

Note: Unstandardized regression coefficients for the relationship between cancer status and distress as mediated by general self-efficacy. The unstandardized regression coefficient between cancer status and distress controlling for general self-efficacy is in parentheses.

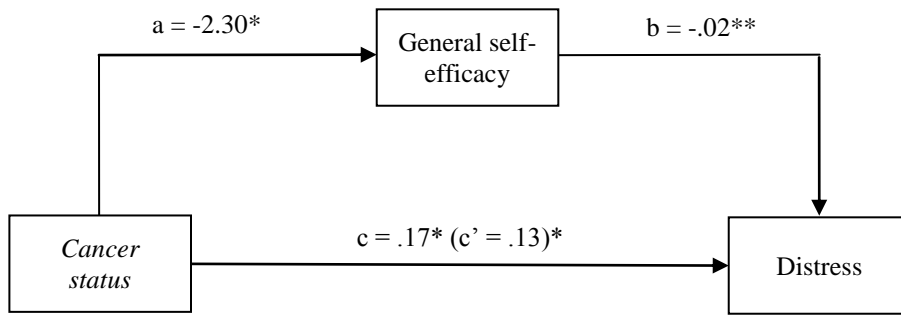


Figure 3. Path diagram for the indirect effect of cancer status on distress through general parenting self-efficacy

\*  $p \leq .05$ , \*\*  $p \leq .01$

Note: Unstandardized regression coefficients for the relationship between cancer status and distress as mediated by general self-efficacy. The unstandardized regression coefficient between cancer status and distress controlling for general self-efficacy is in parentheses.

## Discussion

The primary purpose of this study was to determine if parents with cancer experience more psychological distress and lower parenting self-efficacy than parents who do not have cancer. This study also aimed to explore whether parenting self-efficacy mediated the expected relationship between cancer status and psychological distress.

As hypothesized, results showed that parents with cancer reported more psychological distress than parents who do not have cancer. The effect size observed in this study corresponds to a medium size ( $d = .54$ ). This is consistent with studies demonstrating that parents with cancer report higher levels of psychological distress as compared to general population norms (Compas et al., 1994; Howes, Hoke, Winterbottom & Delafield, 1994; Nelson & While, 2002; Watson et al., 2006), and compared to parents without cancer (Hoke, 2001).

Consistent with the study hypothesis, results also showed that cancer patients reported lower levels of parenting self-efficacy than their peers on a cancer-related measure of parenting self-efficacy (CaPSE). The effect size observed in this study corresponds to a medium size ( $d = .56$ ). It should be noted, however, that no differences were detected on three other measures of parenting self-efficacy. One possible explanation for this finding is that the CaPSE is a task-related measure of parenting self-efficacy which asks specifically about parents' confidence in their ability to do certain parenting tasks unlike the SEPTI, PSOC and PSAM which have a broader focus on parents' overall abilities in the parenting role. For example the CaPSE asks parents to rate their confidence in their ability to "communicate effectively with my child" and

“discipline my child.” While another task-related measure of parenting self-efficacy, the SEPTI, was also used, it does not directly ask about the parent’s confidence in their ability to do certain tasks like the CaPSE does. Instead, the SEPTI asks parents to rate their level of agreement with statements such as, “I have trouble expressing my affection for my child,” and, “I don’t get involved with my child’s recreation.” Another possible explanation for this finding is that the CaPSE was developed with cancer patients in mind, whereas the other measures were not. Consequently, it included items that asked about parenting tasks that might be particularly challenging for cancer patients, especially those undergoing a treatment as disruptive as HSCT. For example, the CaPSE asks parents to rate their confidence in their ability to “managing my own life and my child’s life at the same time,” and “follow through with my childcare responsibilities at home.” As can best be determined, there are no previous published quantitative studies examining parenting self-efficacy among parents with cancer. Thus, this is the first study to examine parenting self-efficacy among parents with cancer. Findings are consistent with the view that the experience of being diagnosed with a form of cancer that required treatment with HSCT interferes with parents’ confidence in their ability to engage in child-rearing.

As hypothesized, findings demonstrated that parenting self-efficacy was related to psychological distress. This relationship was generally evident as well in both the patient and control groups when examined separately. These findings indicate that parenting self-efficacy is related to distress, regardless of whether or not a parent has cancer. Furthermore, the finding is consistent with studies in other populations. For example, a study of mothers at risk for depression found that lower levels of parenting-self efficacy were related to higher levels of

depressive symptoms (Cutrona & Troutman, 1986; Damato, Anthony & Maloni, 2009; Gross et al., 1999; Ngai, Chan & Ip, 2010; Porter & Hsu, 2003).

Based on the pattern of results obtained, additional analyses were conducted to determine if parenting self-efficacy, as measured by the cancer-related instrument, mediated the relationship between cancer status and distress. At the same time, a mediational analysis was also conducted with a general measure of self-efficacy to determine the extent to which mediation is specific to parenting aspects of self-efficacy or, instead, simply reflects general perceptions of self-efficacy. Study findings showed that both parenting self-efficacy and general self-efficacy by themselves demonstrated indirect effects on distress. When examined simultaneously, study results showed that parenting self-efficacy and general self-efficacy each had an independent, indirect effect on distress. This pattern is interesting given that Bandura's theoretical work on self-efficacy posits that general self-efficacy is not a useful construct in that it is too general, and has limited predictive ability in terms of specific behaviors (Bandura, 2012). However, studies among cancer patients have shown that decreased general-self efficacy is related to worse anxiety, greater fear of disease progression, and poorer quality of life (Melchior et al., 2013; Mystakidou et al., 2013). Together, this suggests that both parenting and general self-efficacy are potential targets for interventions seeking to alleviate distress among parents with cancer.

The current study had a number of strengths. These include the use of a case-control design that compared parents with cancer to parents without cancer. To date, only one previous study of psychosocial adjustment among mothers with breast cancer has done this (Hoke, 2001); however, the samples were limited to women with breast cancer and female controls, and the study only looked at psychosocial adjustment. In contrast, this study included both fathers and

mothers, making its findings generalizable to parents of both genders, and it examined parenting self-efficacy as a potential mediator for the relationship between cancer status and distress. There were also, however, a number of limitations in the current study. First, this study used a cross-sectional design. This limits the conclusions that can be drawn regarding a causal relationship between parenting self-efficacy and distress. Second, due to the homogeneity of the sample in regard to race and ethnicity, results may not generalize to more diverse populations of cancer patients. Third, the groups were not matched on relevant demographic characteristics. While analyses controlled for age and focus child age, a more rigorous approach would have been to match the control group to the comparison group on these demographic characteristics. To address these issues, future research should use longitudinal research designs, recruit more heterogeneous samples of cancer patients, and match patients and controls on relevant demographic variables, such as parent and child age.

Findings from the current study have several implications for clinical practice. First, these findings suggest that oncologists and mental health professionals treating cancer patients should discuss parenting concerns with their patients prior to transplant. In particular, they should discuss the possibility that the disruptive nature of HSCT to parenting may lead to greater psychological distress among patients with children. Second, this study has implications for helping these patients. Both parenting self-efficacy and general self-efficacy are potential targets for interventions aimed at decreasing psychological distress among parents with cancer. Increasing patients' confidence in their ability to carry out childrearing tasks and reach goals during transplant by adequately preparing patients, setting realistic expectations for parenting, and providing ample social support during transplant could lead to less distress. Consistent with this view, a pilot study examining the impact of a family intervention for mothers with breast



cancer and their children found beneficial effects for both mothers and their children on psychosocial adjustment (John, Becker & Mattejat, 2013). This family intervention included 90-minute group sessions and one joint session for mothers and their children aimed at teaching relaxation techniques, learning coping and communication skills, and providing a forum for discussing fears regarding the mothers' illness (John, Becker & Mattejat, 2013). Additionally, intervention studies among other populations of parents, such as those who have children with behavioral problems, have shown that family interventions designed to promote positive parenting practices can increase parenting self-efficacy (Evans et al., 2003; Hoza et al., 2000; Spoth, Redmond, Haggerty & Ward, 1995). Accordingly, conducting research to empirically evaluate the efficacy of interventions aimed at improving parenting and general self-efficacy among parents with cancer should be considered a high priority.

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