Brief Report: Pediatric Cancer, Parental Coping Style, and Risk for Depressive, Posttraumatic Stress, and Anxiety Symptoms

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Objective  According to the stress and coping goodness of fit model, parents’ risk for psychological symptoms was hypothesized to decrease as a function of using emotional regulation and problem appraisal strategies more frequently, and to increase as a function of using problem-solving and avoidant behaviors more frequently to cope with an uncontrollable stressor—pediatric cancer diagnosis. Methods  Parents (N = 150) completed measures of depression, PTSD, anxiety, and coping style. Results  Regression analyses revealed that symptoms decreased as a function of using problem appraisal and an emotional regulation strategy (social support) more frequently; and increased as a function of using problem-solving strategies, avoidant coping (substance use), and another emotional regulation strategy (negative self-blame) more frequently. Conclusions  The findings provide some support for the model but suggest that the method of coping (e.g., social support) might be considered in addition to the focus of the coping strategy (e.g., emotional regulation).

Key words  cancer; coping style; parents; pediatric; posttraumatic stress disorder.

Pediatric cancer is a stressful event for parents because of the threat of death to their child and the sense of helplessness they experience with an uncontrollable event (Patterson, Holm, & Gurney, 2004). Their risk for stress reactions and emotional sequelae ranges from 9% to 40% for depressive, posttraumatic stress disorder (PTSD), and generalized anxiety disorder for up to 3 years postdiagnosis (Brown et al., 1993; Frank, Brown, Blount, & Bunke, 2001; Kazak et al., 2004; Stoppelbein & Greening, 2007). The statistics for adjustment problems vary widely which suggests that not all parents are at risk for psychological sequelae and that coping style might, therefore, contribute to the parents’ risk.

According to the “goodness of fit” model for stress and coping theories, coping strategies that focus on managing one’s emotions and/or appraisals of stressful events are hypothesized to be more therapeutic for coping with uncontrollable events like medical diagnoses than strategies that focus on resolving the presenting problem (Felton & Revenson, 1984; Lazarus & Folkman, 1984). The former strategies focus on modifyable aspects of an uncontrollable event such as emotions and appraisals and should, therefore, yield more adaptive outcomes than using active, problem-solving strategies that focus on managing the uncontrollable event. The therapeutic effects of emotional regulation strategies are predicated on the theory that expressing emotions allows people to release psychological tensions (Boozin, 1997). Cognitive appraisals, on the other hand, allow people to reframe their perceptions of stressful events so that they are less inclined to feel threatened and stressed (Lazarus & Folkman, 1984). Likewise, any strategies that prevent people from dealing with the psychological distress elicited by the event (i.e., avoidant coping strategies) are hypothesized to be countertherapeutic.

Consistent with the goodness of fit model, emotional regulation strategies such as humor and acceptance have been found to reduce mothers’ risk for depressive symptoms 6 months after their child underwent a bone marrow transplant for cancer (Manne et al., 2003); whereas active, problem-solving, and avoidant coping (i.e., substance use) strategies increased their risk. Although applied to depressive and anxiety symptoms,
the goodness of fit model has not yet been extended to parents’ risk for PTSD symptoms, thereby limiting generalizations to more trauma-specific symptoms. In light of recent suggestions to conceptualize pediatric cancer from the posttraumatic stress model and the fact that parents of children with cancer have been found to be at risk for PTSD, it behooves us to investigate moderating factors that might minimize this risk. Hence, the purpose of the present article was to evaluate the stress and coping goodness of fit model to a broader range of symptoms including depressive, PTSD, and anxiety symptoms among parents of children diagnosed with cancer. According to the model, the study hypotheses were that (a) parents’ risk for depressive, PTSD and anxiety symptoms decreased as a function of using emotional regulation and problem appraisal coping strategies more frequently to cope with a pediatric cancer diagnosis, whereas (b) their risk for symptoms increased as a function of using problem management and avoidant coping strategies more frequently. In addition to the theoretical implications, the findings have potential clinical applications including identifying parents who might benefit from preventive clinical services as well as identifying adaptive and maladaptive coping strategies to target for intervention.

Method
Participants
Families (N = 172) registering for a camp coordinated by a children’s hospital were invited to participate in the study. Children with a history of cancer and ruled medically stable attend the camp. Exclusion criteria for participation included (a) a relapse of cancer (n = 2), (b) diagnosed with brain cancer, (c) patient or immediate family member was diagnosed with another chronic illness (n = 3), and (d) parent has a history of a psychological disturbance or treatment (n = 2). The latter criterion allowed us to examine risk factors that are more specifically related to distress precipitated by the child’s diagnosis. An additional 12 families declined to participate and three did not complete the measures, leaving a total of 150 participants.

The families were, on average, from skilled working class households (Hollingshead M Index score = 2.74, SD = 0.93). The parents were on average 40.26 years old (SD = 6.35; range = 23–58), and most were females (94%) and Caucasian (80%); 20% were African Americans. Sixty percent were married, 18% were never married, and 22% were divorced/separated. The children were on average 11.51 years old (SD = 3.15; range = 6–18) and approximately half were females (53%). The child’s mean age at diagnosis was 7.17 years (SD = 4.27), and the mean length of time since diagnosis was 4.34 years (SD = 3.40). The children were diagnosed with either acute lymphoblastic leukemia (30%), lymphomas (18%), Wilms’ tumor (9%), neuroblastoma (9%), osteosarcoma (6%), rhabdomyosarcoma (5%), or lung cancer (3%); and were treated with either chemotherapy (93%), bone marrow transplant (7%), or radiation treatment below the neck (37%). Most had been hospitalized for treatment (86%) and 25% were still receiving treatment; 47% reported health complications as a result of their treatment (e.g., respiratory difficulties, kidney stones). The mean length of treatment was 24.10 months (SD = 19.48).

Measures
Demographic Questionnaire
Parents indicated their child’s age, gender, length of time since diagnosis, type of cancer, treatment status, and their age, gender, race/ethnicity, occupation, educational and marital status. The Hollingshead Index was used to measure socioeconomic status (SES).

Beck Depression Inventory-II (BDI-II)
The BDI-II is a valid and reliable, 21-item self-report measure of depressive symptoms (Beck, Steer, & Brown, 1996). Respondents rated on a 4-point scale ranging from 0 to 3 the severity of symptoms. Sum scores <14 = minimal symptoms, 14–19 = mild level, 20–28 = moderate level, and >28 = severe range.

Posttraumatic Stress Disorder Reaction Index (PTSD-RI)
The PTSD-RI is a 20-item self-report measure of PTSD (Frederick, 1985). Respondents reported if they had (score = 1) or had not been experiencing (score = 0) a list of symptoms since their child was diagnosed. Cut-off scores for symptom severity are >6 = diagnostic of the disorder, 7–12 = moderate severity, and >12 = marked severity. Internal consistency is high, Cronbach α = .91, and construct validity is supported by correlations with cases of PTSD diagnosed in clinical settings (Frederick, 1985).

State-trait Anxiety Inventory-State Form (STAI-S)
Only the state form of the STAI was used. This form is a 20-item measure of situational anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Respondents rated on a 4-point scale their agreement with statements.

Brief COPE
The Brief COPE is a 28-item self-report measure of coping styles (Carver, 1997). Respondents rated on a 4-point
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escape from the diagnosis. Avoidant strategies because they involved attempts
coping and substance use factors were conceptualized as
cognitive appraisals of the diagnosis, and the avoidant

The religious coping/optimism factor was conceptualized
because they involved attempts to manage the diagnosis.

These factors were used in the present study. Internal
consistency was at least moderate for all, Cronbach
\(\alpha\) = .78 to .85, except for the avoidant factor, \(\alpha\) = .59.
The negative self-blame/affect and social support/advice
seeking factors were conceptualized as emotional regula-
tion coping strategies because they involved attempts
to express emotions; whereas the active coping factor
was conceptualized as problem management strategies
because they involved attempts to manage the diagnosis.
The religious coping/optimism factor was conceptualized
as a problem appraisal strategy because it involved
cognitive appraisals of the diagnosis, and the avoidant
coping and substance use factors were conceptualized as
avoidant strategies because they involved attempts to
escape from the diagnosis.

Procedure

Institutional Review Board (IRB) approval was obtained
prior to data collection and the parents provided written
consent before completing the measures during camp
registration. In accordance with IRB and the American
Psychological Association’s Ethics Code (2002), parents
(27%) who scored in the severe range on the BDI-II
or PTSD-RI or who obtained a T score > 70 on the STAI-S
were given contact information for at least three
community mental health providers for psychological
consultation/treatment.

Data Analyses

Mean scores and percentage rates for scores on adjust-
ment measures that fell in the clinical range were
calculated. Zero order correlations were performed with
coping strategies, depressive, PTSD, and anxiety symp-
toms, and continuous demographic/illness variables that
have been found to be significant correlates of parents’
adjustment and coping strategies in past research
(i.e., parental age, child’s age, SES, and length of
time since diagnosis). Point biserial correlations were
performed to evaluate correlations between categorical
(limited to two categories) demographic/illness variables
(e.g., parent’s gender, ethnicity—African-American or
Caucasian, treatment status—on or off) and continuous
coping and adjustment variables. A Bonferroni correction
\(p < .0002\) was applied to the correlations. Hierarchical
regression analyses predicting the BDI-II, PTSD-RI, and
STAI-S scores were then performed. Demographic/illness
covariates were planned to be included in the first step,
followed by the coping strategies in the second step.
Changes in the \(R^2\)’s were planned to be examined to
determine if coping styles accounted for a significant
proportion of the variance in adjustment above and
beyond the variance explained by demographic/illness
variables.

Results

Preliminary Analyses

The parents’ mean BDI-II \((M = 9.67, SD = 8.89)\),
PTSD-RI \((M = 4.91, SD = 3.60)\), and STAI-S \((M = 43.67,
SD = 23.24)\) scores fell in the nonclinical range. Less
than 1%, 15%, and 7% scored in the clinical range on the
BDI-II, PTSD-RI, and STAI-S, respectively; 4% reported
comorbid depressive, PTSD, or anxiety symptoms in the
severe range. None of the demographic/illness variables
were significantly correlated to adjustment or coping.
The BDI-II, PTSD-RI, and STAI-S were all positively
related to each other, \(r = .57 – .74, p < .0001\), and to
negative self-blame/affect, \(r = .45 – .67\), and substance
use, \(r = .37 – .50, p < .0001\). The correlation between the
PTSD-RI and avoidant coping was marginally signifi-
cant, \(r = .28, p = .0007\); and the STAI-S was negatively
related to religious coping/optimism, \(r = -.34, p < .0001\).
Examinations for intercorrelations among the coping
variables revealed that negative self-blame/affect was
positively related to substance use and avoidant coping,
\(r = .57\) and \(.34, p < .0001\), respectively. In addition,
social support, religious coping/optimism, and active
coping were all positively related to each other, \(r = .35 – .55, p < .0001\).

Test of Hypotheses

Demographic/illness variables were not included as
covariates in regression analyses because none were
related to adjustment or coping variables. Correlations
among the adjustment and coping variables were < .80,
suggesting that multicollinearity was not a concern.
Other indicators of multicollinearity including tolerance
detect significant relations. Sample size may have restricted the statistical power to after applying the Bonferroni correction. The small to the STAI-S among the African American parents None of the coping variables were significantly related to the STAI-S.

Substance use did not emerge as a significant predictor of (6, 143)

analyses. The equation was statistically significant, $F(3, 146) = 42.87$, $R^2 = .48$, for BDI-II, and $F(3, 146) = 21.46$, $R^2 = .31$, for PTSD-RI, $p < .0001$. Negative self-blame/affect ($\beta = .57$ for BDI-II and .22 for PTSD-RI, $p < .01$) and substance use ($\beta = .20$ for BDI-II and .36 for PTSD-RI, $p < .01$) emerged as significant predictors, suggesting that using these strategies was positively related to depressive and PTSD symptoms, respectively. Avoidant coping was observed to be marginally related to PTSD-RI only, $\beta = .13$, $p = .09$.

All the coping variables were included in the regression equation predicting the STAI-S score because they were found to be significant correlates in preliminary analyses. The equation was statistically significant, $F(6, 143) = 17.05$, $p < .0001$, $R^2 = .43$. Negative self-blame/affect and active coping emerged as significant predictors, $\beta$s = .44 and .22, respectively, $p < .01$, indicating that using these strategies was positively related to state anxiety symptoms. Religious coping/optimism and social support/advice seeking were inversely related to the STAI-S, $\beta$s = -.34 and -.22, respectively, $p < .01$. Substance use did not emerge as a significant predictor of the STAI-S.

Regression analyses were repeated for mothers, and African-American and Caucasian parents, but the findings were only replicated for mothers and Caucasian parents. None of the coping variables were significantly related to the STAI-S among the African American parents after applying the Bonferroni correction. The small sample size may have restricted the statistical power to detect significant relations.

**Discussion**

Contrary to the stress and coping goodness of fit model, parents’ risk for depressive, PTSD and anxiety symptoms increased as a function of using emotional regulation strategies (i.e., negative self-blame/affect) to cope with an uncontrollable stressor—pediatric cancer diagnosis—more often. Nevertheless, this finding is consistent with more recent findings reported in the literature (Norberg, Lindblad, & Boman, 2005) and we replicated the palliative effects of emotional regulation strategies on anxiety symptoms when we examined the role of social support in parents’ adjustment. The opposite effects observed for negative self-blame/affect and social support suggest that the method of coping (e.g., social support versus emotional expression) needs to be considered in addition to the focus of coping (e.g., regulating emotions versus solving presenting stressor) in future models. Why did social support relate to anxiety symptoms and not to depressive and PTSD symptoms? Perhaps depressive and PTSD symptoms are elicited by factors other than anxiety-provoking stimuli (e.g., negative attributions, self-blame, or fear) that are best ameliorated by other coping strategies. The parents’ risk for anxiety symptoms decreased as a function of using religious coping/optimism more frequently, which yielded partial support for the palliative effect of problem appraisal strategies as hypothesized by the goodness of fit model.

As hypothesized, the parents’ risk for depressive and PTSD symptoms increased as a function of using avoidant coping strategies, namely substance use, more frequently. Although people may escape from stress by using substances, it is important to note that people with PTSD and depressive symptoms may use substances to medicate themselves, which in turn exacerbates psychological symptoms that are already present (Chilcoat & Breslau, 1998). Interestingly, avoidant coping strategies accounted for more variance in PTSD symptoms than in depressive and anxiety symptoms as revealed by the $\beta$s, suggesting that avoidant coping may pose symptom-specific risks. This finding is consistent with theories that avoidant coping interferes with resolving traumatic experiences and thus increases the risk for PTSD. It is noted, however, that the marginally significant relation observed between avoidant coping and PTSD symptoms raises questions about the clinical significance of this finding. Hence, further research is warranted before drawing conclusions.

Anxiety symptoms increased as a function of using active coping strategies, which yielded partial support for the hypothesized relation between problem management coping strategies and psychological symptoms when coping with an uncontrollable event. Problem-solving strategies typically require confronting the stressor which can be anxiety provoking. This link poses important clinical implications including identifying unproductive active coping strategies and restricting parents from relying on them.

**Clinical Implications**

Coping strategies were found to account for 31–48% of the variance in parents’ psychological symptoms and thus offer some clinical implications. Specifically, parents who engage in negative self-blame and/or substance use might
be targeted for psychological services early in their child’s medical treatment so as to prevent further distress. Additionally, utilizing cognitive appraisal strategies and social support networks could aid with binding their anxiety while they confront aspects of the child’s treatment.

Methodological Limitations
The study’s cross-sectional design precludes causal inferences. In addition, using more reliable measures of avoidant coping, multiple informants, and standardized interviews are recommended for future studies. It is noted that the sample’s demographic characteristics are biased toward mothers, Caucasians, and lower/middle class families. However, income was not a confound in other studies (Stoppelbein, Greening, & Elkin, 2006), and mothers were likely over-represented because they are typically responsible for children’s healthcare (Manne, DuHamel, & Redd, 2000) and are most likely available at camp registration. Finally, camp populations may be less distressed families; yet, the findings are consistent with community and clinical populations (Frank et al., 2001; Manne et al., 2003).

Conclusion
Pediatric cancer is a traumatic event that elicits a range of coping strategies. Most parents cope well yet some may be vulnerable to psychological sequelae (Brown et al., 1993; Kazak et al., 1998, 2004). Teaching parents to use specific adaptive coping strategies and to abstain from using maladaptive strategies to cope with an uncontrollable stressor might help reduce their risk for more enduring and specific types of symptoms.

Conflict of interest: None declared.

References


