J Child Fam Stud (2017) 26:2016–2025
DOI 10.1007/s10826-017-0711-y

ORIGINAL PAPER

# Maternal and Paternal Influences on Children's Coping with Cancer-Related Stress

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Published online: 17 April 2017


**Abstract** Childhood cancer is a significant source of stress for children and families, and children's coping with cancer-related stress is a key predictor of emotional adjustment. To extend understanding of the determinants of children's coping with cancer-related stress, this study examined whether mothers' and fathers' functioning after their child's diagnosis—including coping and depressive symptoms—is predictive of children's coping over time. Participants included 166 children ($M_{age} = 13.47$, SD = 2.47, 51.2% female), 161 mothers, and 83 fathers. Approximately 2 months post-diagnosis (T1), parents reported on their coping and depressive symptoms. At T1 and approximately 12 months later (T2), children reported on their coping. Results indicated that mothers' coping and depressive symptoms were correlated with children's coping at T1; fathers' coping and depressive symptoms were generally not associated with children's coping at T1. Hierarchical regression analyses revealed that fathers' secondary control coping (i.e., coping aimed at adapting to cancer-related stress) predicted higher levels of secondary control coping in children over time. Mothers' depressive symptoms predicted lower levels of secondary control coping over time in girls, and fathers' depressive symptoms predicted lower levels of secondary control coping over time across sex. Parents' functioning after their child's cancer diagnosis may shape how children cope with cancer-related stress. Parents' coping and depressive symptoms may be important targets for interventions aiming to promote positive adjustment in children with cancer.

**Keywords** Childhood cancer · Coping · Parent depression · Maternal depression

## Introduction

Approximately 15,000 children and adolescents in the U.S. are diagnosed with cancer every year (Ward et al. 2014). The diagnosis of childhood cancer presents families with new and significant sources of stress. Children with cancer experience physical effects of treatment, disruptions in their normal routines and activities, and fears about their health. Parents also face a number of challenges, such as balancing caregiving responsibilities with work and family obligations, making decisions about their child's care, and communicating with their child about cancer (Long and Marsland 2011; Rodriguez et al. 2012). For both children and parents, higher levels of perceived cancer-related stress are associated with emotional distress (Rodriguez et al. 2012), drawing attention to the importance of the ways that children and parents attempt to cope with this stress. Understanding the determinants of children's coping with cancer-related stress, and specifically parental influences on children's coping, can inform prevention and invention efforts to promote positive adjustment in children diagnosed with cancer.

To conceptualize children's coping with cancer-related stress, three forms of coping have been distinguished (Connor-Smith et al. 2000). Primary control coping involves efforts to address the source of stress directly (e.g.,

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problem solving) or one's emotional reactions to stress (e.g., emotional expression). Secondary control coping involves efforts to adapt to stress (e.g., cognitive reappraisal, acceptance, distraction). Finally, disengagement coping involves coping efforts oriented away from stress and one's reactions to stress (e.g., avoidance, denial). This coping framework has been supported by confirmatory factor analyses within diverse samples of adults and children coping with a variety of stressors, including health-related stress (Compas et al. 2006a, b; Connor-Smith et al. 2000; Wadsworth et al. 2004).

Broadly, primary control coping and secondary control coping have been found to be adaptive forms of coping and are associated with better emotional functioning, whereas disengagement coping is associated with poorer emotional functioning (Connor-Smith et al. 2000). According to control-based models of coping, the coping strategies children engage in and the effectiveness of their coping efforts may be influenced by the perceived controllability of a stressor (Band and Weisz 1988, 1990). Primary control coping, which is aimed at changing a stressor or one's emotional reactions, may be particularly effective when a stressor is perceived to be controllable. In contrast, secondary control coping, which is aimed at adapting to stress, may be particularly effective when a stressor is perceived as uncontrollable (Band and Weisz 1988, 1990; Compas et al. 2012).

When children are diagnosed with cancer, many of the stressors they face are uncontrollable (e.g., treatment side effects, uncertainty about the future; Rodriguez et al. 2012). In this context, aspects of primary control coping (e.g., planful problem-solving, information seeking), may not be helpful for children (for a meta-analysis, see Aldridge and Roesch 2007; cf. Compas et al. 2014), and secondary control coping strategies may be of most benefit. Indeed, during the months following a cancer diagnosis or relapse, secondary control coping accounts for unique variance in concurrent internalizing symptoms, above and beyond associations between other forms of coping and internalizing symptoms (Compas et al. 2012). Notably, these associations are evident across reports from multiple informants (i.e., children, mothers, and fathers; Compas et al. 2014). Furthermore, a year after the diagnosis or relapse of cancer, secondary control coping predicts lower levels of internalizing symptoms in children, controlling for internalizing symptoms near the time of diagnosis or relapse (Compas et al. 2017).

Although the benefits of secondary control coping have been documented, it is unclear what factors lead children to use these coping strategies in response to cancer-related stress. In general, the development of coping responses in children is shaped by social relationships (Skinner and Zimmer-Gembeck 2007), with parents playing an influential role (Power 2004). Kliewer and colleagues' socialization of coping model (2006, 1994) proposes that parents influence children's coping by modeling coping behaviors and by coaching or teaching children how to appraise and cope with stress. This model also proposes that the family context (e.g., parent–child relationships) influences the development of coping. Qualitative research suggests that socialization of coping occurs in families of children of cancer, with parents encouraging and taking efforts to facilitate children's use of specific coping strategies (e.g., cognitive restructuring, relaxation) during treatment (Hildenbrand et al. 2014, 2011). Socialization of coping processes may be largely affected by parents' own functioning after their child's diagnosis, including parents' methods of coping with cancer-related stress and parents' depressive symptoms.

When children experience a diagnosis or relapse of cancer, they may be uncertain about how to manage the new stressors and emotions associated with their diagnosis. They may look to parents to understand how to respond to the challenges, and thus the coping strategies parents model may guide children's coping. Although theoretical models point to the potential influence of parental modeling (Kliewer et al. 2006, 1994), relatively few quantitative studies have investigated whether parents' coping predicts children's coping. Research to date provides modest support for the role of parental modeling; however, some associations between parental and child coping have been documented. For example, among families of adolescents with cancer, parents' and adolescents' use of engagement coping (e.g., problem solving, cognitive restructuring; Sanjari et al. 2008) and disengagement coping (e.g., problem avoidance; Trask et al. 2003) are concurrently associated. In addition to one-to-one correspondence between parents' and children's use of specific coping strategies, there is also evidence of associations across coping strategies, though these associations are not always in the expected direction. For example, in a sample of parents and children coping with children's sickle cell disease, greater parental use of active coping (e.g., planning) and less parental use of reframing (e.g., thinking positively) are associated with more avoidance coping in children (Kliewer and Lewis 1995).

Parental depressive symptoms also may be an important influence on children's coping with cancer-related stress. Prior research indicates that a subset of parents of children with cancer is at risk for emotional distress (Pai et al. 2007), which in turn is associated with poor emotional functioning in children (Fedele et al. 2013; Jobe-Shields et al. 2009; Okado et al. 2014; Trask et al. 2003). Parental depressive symptoms—which tend to be most elevated shortly after diagnosis (Dolgin et al. 2007; Okado et al. 2016)—may impair parents' ability to teach children effective strategies for managing the new cancer-related stressors they face. Although this process has yet to be examined in parents of

children with cancer, a study with a community sample of mothers found that depressed mothers were less likely to suggest adaptive coping strategies (e.g., cognitive restructuring) to children (Monti et al. 2014). When parents experience depressive symptoms, they may also be less available to assist and support children in managing stress. In general, depressed parents tend to be less responsive (Brenning et al. 2012) and more disengaged from children (Lovejoy et al. 2000). They also tend to show unsupportive responses to children's negative emotions (Silk et al. 2011). In families of children with cancer, maternal depressive symptoms are associated with more harsh and withdrawn parent–child communication about cancer (Rodriguez et al. 2016). These parent–child interactions may undermine the development of effective coping. Consistent with this idea, research on other sources of childhood stress indicates that parental responsiveness is associated with greater use of problem-focused coping (e.g., problem solving) among preadolescents with spina bifida (McKernon et al. 2001). In addition, parents' positive responses to children's negative emotions (e.g., accepting and encouraging emotional expression) are associated with greater use of primary and secondary control coping and less disengagement coping in children responding to peer stress (Valiente et al. 2009).

To advance understanding of the determinants of children's coping with cancer-related stress, the current study examined whether parents' functioning is predictive of children's coping over the year following diagnosis or relapse. The primary aim was to examine parental predictors of children's use of secondary control coping over time, and the secondary aim was to examine parental predictors of children's use of primary control coping and disengagement coping over time. We anticipated that parents' use of adaptive coping strategies (i.e., greater use of primary control coping and secondary control coping and less use of disengagement coping) would predict children's use of adaptive coping strategies. In contrast, we expected that parents' depressive symptoms would predict less adaptive coping in children (i.e., less use of primary control coping and secondary control coping and greater use of disengagement coping). We also conducted exploratory analyses examining whether developmental stage and gender moderate the longitudinal associations between parents' coping and depressive symptoms and children's coping.

## Method

### Participants

The current sample included 166 children, 161 mothers, and 83 fathers. In 78 families (47%), both a mother and a father participated. Children had a mean age of 13.47 years at T1 (SD = 2.47), 51.2% were female, and the majority were White/Caucasian (88.6%, 7.8% Black/African American, 3.6% other). Children had diagnoses of lymphoma (33.7%, $n = 56$), leukemia (33.1%, $n = 55$), brain tumor (4.8%, $n = 8$), and other solid tumors (28.3%, $n = 47$), and 10.2% ($n = 17$) of children were recruited into the study following a relapse of their original cancer. The majority of mothers (92.5%, $n = 149$) and fathers (84.3%, $n = 70$) were biological parents, and the majority of mothers (67.1%, $n = 108$) and fathers (80.7%, $n = 67$) were married. On average, mothers were 40.40 years old (SD = 7.54), and fathers were 41.89 years old (SD = 7.53). Families had a range of annual income levels (23.5% earned $25,000 or less, 30.1% earned $25,001 to $50,000, 14.5% earned $50,001 to $75,000, 11.4% earned $75,001 to $100,000, and 16.3% earned over $100,000, 4.2% did not report their family income). Mothers had an average of 13.48 years (SD = 1.80) of education, and fathers had an average of 14.43 years (SD = 2.73) years of education.

### Procedure

Children with cancer and their parents were recruited from pediatric cancer registries at two hospitals in the Midwestern and Southern United States. Families were eligible for participation if they had a child who: (a) was 5- to 17-years old, (b) had been recently diagnosed with a new or relapsed cancer, (c) was receiving treatment through the oncology division, and (d) had no preexisting developmental disability. Of the 386 families invited to participate, 334 (87%) provided data for the study. At T1, approximately 2 months ($M = 1.86$; SD = 1.75 months; range = 0–11 months) after diagnosis or relapse, parents reported on their coping and depressive symptoms. At T1 and T2, approximately 12 months later ($M = 11.64$; SD = 2.97 months after T1; $M = 13.30$, SD = 3.15 months after diagnosis or relapse), children reported on their coping. Self-report measures were administered to children who were 10 years and older. At T1, 158 children completed self-reports. Six children died before T2. Of the eligible participants, those who participated again at T2 ($n = 104$) did not differ from those who participated only at T1 ($n = 48$) with regard to age, whether they were experiencing an initial diagnosis vs. relapse, diagnosis type, coping, anxious-depressive symptoms, parent coping, or parent depressive symptoms ($ps > .31$).

### Measures

#### *Child and parent coping*

Children and parents completed the Responses to Stress Questionnaire-Pediatric Cancer version (Compas et al.

2014; Connor-Smith et al. 2000; Miller et al. 2009). This measure includes three coping subscales: Primary Control Coping (9 items; e.g., problem-solving, emotional expression), Secondary Control Coping (12 items; e.g., cognitive restructuring, positive thinking, acceptance), and Disengagement Coping (9 items; e.g. denial, avoidance, wishful thinking). The measure also includes two dimensions of involuntary stress responses. Because this study focused on children's coping, only the three coping scales are reported. Children and parents were prompted to think about cancer-related stressors (e.g., for children, missing school, feeling sick from treatment, changes in appearance, concerns about the future; for parents, having less energy for other family members, paying bills, not being able to help child feel better, worry about child's future health). Children and parents rated how often they engaged in various responses on a 4-point scale (*Not at all* to *A lot*). The reliability and validity of the subscales has been established (Connor-Smith et al. 2000). In accordance with the standard scoring of the RSQ (Connor-Smith et al. 2000), proportion scores were computed by dividing the total score for each subscale by the total score on the measure. Higher scores reflect higher levels of each form of coping (for children, αs = .81–.84; for mothers, αs = .74–.76; for fathers, αs = .69–.76).

*Parent depressive symptoms*

Parents completed the BDI-II (Steer et al. 1993), a well-established measure of depressive symptoms. Parents rated depressive symptoms (21 items) on a 4-point scale (0 = *no change/not at all*; 3 = *substantial change/severely*). Scores were computed as the sum of the ratings. The reliability and validity of the BDI-II have been established (Steer et al. 1993). Mean maternal depressive symptoms ($M = 14.25$, $SD = 10.36$; $\alpha = .94$) corresponded to mild depression (scores ≥ 14) and mean paternal depressive symptoms ($M = 11.08$, $SD = 9.57$; $\alpha = .94$) corresponded to minimal depression (scores of 0–13; Beck et al. 1996).

### Data Analyses

To determine concurrent and prospective associations between parents' functioning and children's coping, we examined bivariate correlations between parents' coping and depressive symptoms near the time of diagnosis or relapse and children's coping at the same time point, as well as a year later. To determine if parents' coping and depressive symptoms predict shifts in children's coping over time, two sets of hierarchical multiple regression analyses were conducted. The first set of regression analyses examined parents' T1 coping as predictors of children's T2 coping. The second set of regression analyses examined parents' T1 depressive symptoms as predictors of children's T2 coping. In each analysis, children's T1 coping was entered in the first step of the model, and parents' coping or depressive symptoms were added in the second step of the model. Because many families (53%) had data available from one parent (vs. a mother and a father), separate models were examined for mothers and fathers in order to maintain the maximum analytic sample. Before conducting the central analyses, moderation by child age and gender was tested. Children's T1 coping was entered in the first step of the model, parents' coping or depressive symptoms and child age or gender were entered in the second step, and interactions between parents' coping or depressive symptoms and child age or gender were entered in the third step. In cases where there was not significant moderation by age or gender, these variables and the corresponding interaction terms were removed from the model.

## Results

Table 1 presents the intercorrelations among the study variables. First, concurrent and prospective correlations between parents' coping and children's coping were examined. Within T1, mothers' primary control coping and secondary control coping were each associated with more child primary control coping and with more child secondary control coping. Mothers' disengagement coping was associated with less child primary control coping. For fathers, disengagement coping was associated with less child primary control coping. Across time, mothers' T1 secondary control coping was associated with more child T2 secondary control coping. In parallel, fathers' T1 secondary control coping was associated with more child T2 secondary control coping. Correlations between parents' coping and children's coping reflected small to medium effect sizes (Cohen 1992).

Next, concurrent and prospective correlations between mothers' and fathers' depressive symptoms and children's coping were examined. Within T1, mothers' depressive symptoms were associated with less child primary control coping, less child secondary control coping, and more child disengagement coping. Fathers' depressive symptoms were not concurrently associated with children's coping. Across time, mothers' T1 depressive symptoms were associated with less child T2 secondary control coping. In parallel, fathers' T1 depressive symptoms were associated with less child T2 secondary control coping. Correlations between parents' depressive symptoms and children's coping reflected small to medium effect sizes (Cohen 1992).

**Table 1** Intercorrelations among the study variables ($N = 57$–158)

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Child T1 PCC | – | | | | | | | | | | | | | |
| 2. Child T1 SCC | .28** | – | | | | | | | | | | | | |
| 3. Child T1 DC | −.49*** | −.44*** | – | | | | | | | | | | | |
| 4. Child T2 PCC | .44*** | .38*** | −.30** | – | | | | | | | | | | |
| 5. Child T2 SCC | .21* | .56*** | −.27** | .24* | – | | | | | | | | | |
| 6. Child T2 DC | −.42*** | −.41*** | .42*** | −.61*** | −.43*** | – | | | | | | | | |
| 7. Mother T1 PCC | .19* | .21* | −.11 | .12 | .10 | −.05 | – | | | | | | | |
| 8. Mother T1 SCC | .18* | .19* | −.10 | .12 | .24* | −.16 | .38*** | – | | | | | | |
| 9. Mother T1 DC | −.17* | −.13 | .10 | −.11 | −.08 | .10 | −.67*** | −.54*** | – | | | | | |
| 10. Father T1 PCC | .18 | .16 | −.03 | .16 | .09 | −.20 | .36** | .23* | −.31** | – | | | | |
| 11. Father T1 SCC | .10 | .10 | −.01 | .16 | .37** | −.13 | .22* | .28* | −.25* | .36** | – | | | |
| 12. Father T1 DC | −.27* | −.08 | .13 | −.19 | −.20 | .05 | −.40*** | −.13 | .28* | −.53*** | −.49*** | – | | |
| 13. Mother T1 depressive symptoms | −.20* | −.22** | .19* | −.15 | −.22* | .07 | −.48*** | −.65*** | .41*** | −.19 | −.26* | .22 | | |
| 14. Father T1 depressive symptoms | −.09 | −.03 | .04 | −.03 | −.30* | .11 | −.22 | −.31** | .22* | −.54*** | −.72*** | .42*** | .30** | – |

*PCC* primary control coping, *SCC* secondary control coping, *DC* disengagement coping

*$p < .05$; **$p < .01$; ***$p < .001$

**Table 2** Hierarchical regression models predicting children's T2 secondary control coping as a function of mothers' and fathers' T1 coping

| Predictor variable | Mother ($N = 99$) | | | Father ($N = 54$) | | |
|---|---|---|---|---|---|---|
| | *B*(SE) | $\beta$ | $\Delta R^2$ | *B*(SE) | $\beta$ | $\Delta R^2$ |
| Step 1 | | | .27*** | | | .22*** |
| Child T1 SCC | .48(.08) | .52*** | | .41(.11) | .47*** | |
| Step 2 | | | .02 | | | .13* |
| Parent T1 PCC | .02(.18) | .01 | | −.23(.18) | −.17 | |
| Parent T1 SCC | .18(.12) | .16 | | .33(.13) | .34* | |
| Parent T1 DC | .23(.29) | .10 | | −.21(.30) | −.10 | |

*PCC* primary control coping, *SCC* secondary control coping, *DC* disengagement coping

*$p < .05$; **$p < .01$; ***$p < .001$

## Parental Contributions to Children's Coping

Regression analyses indicated that parents' coping and depressive symptoms did not account for a significant portion of the variance in children's primary control coping and disengagement coping after adjusting for children's initial levels of coping ($\Delta R^2 = .00$–$.06$, $ps \geq .15$). Results of the final regression models predicting children's secondary control coping from parents' coping and depressive symptoms are presented in Tables 2 and 3, respectively.

Analyses examining if associations between mothers' and fathers' coping and children's secondary control coping were moderated by child age revealed non-significant effects of age (Bs = .01–.02, SEs = .01, $\beta$s = .08–.21, $ps \geq .10$) and non-significant interactions between mothers' and fathers' coping and child age (Bs = −.01–.02, SEs = .01–.02, $\beta$s = −.09–.25, $ps \geq .24$). Similarly, analyses examining if associations between mothers' and fathers' coping and children's secondary control coping were moderated by gender revealed non-significant effects of gender (Bs = .01–.02, SEs = .01, $\beta$s = .08–.14, $ps \geq .26$) and non-significant interactions between mothers' and fathers' coping and gender (Bs = −.02–.02, SEs = .01–.02, $\beta$s = −.21–.31, $ps \geq .14$). Thus, age, gender, and the corresponding interaction terms were removed from the models. After adjusting for children's T1 secondary control coping, mothers' T1 coping did not significantly predict children's T2 secondary control coping. Fathers' T1 secondary control coping significantly predicted greater child T2 secondary control coping.

Analyses examining if associations between mothers' and fathers' depressive symptoms and children's secondary control coping were moderated by age revealed non-significant interactions between mothers' and fathers' depressive symptoms and age (Bs = −.02–.01, SEs = .01, $\beta$s = −.22–.10, $ps \geq .18$). Analyses examining moderation

**Table 3** Hierarchical regression models predicting children's T2 secondary control coping as a function of mothers' and fathers' T1 depressive symptoms

| Predictor variable | Mother ($N = 99$) | | | Father ($N = 54$) | | |
|---|---|---|---|---|---|---|
| | $B$(SE) | $\beta$ | $\Delta R^2$ | $B$(SE) | $\beta$ | $\Delta R^2$ |
| Step 1 | | | .28*** | | | .22*** |
| T1 Child SCC | .50(.08) | .53*** | | .41(.11) | .47*** | |
| Step 2 | | | .01 | | | .07* |
| Parent T1 depressive symptoms | −.01(.01) | −.10 | | −.00(.00) | −.27* | |
| Child gender | .00(.01) | .04 | | – | | |
| Step 3 | | | .05** | | – | |
| Parent T1 depressive symptoms × Child gender | .03(.01) | .30** | | – | | |

*SCC* secondary control coping

*$p < .05$; **$p < .01$; ***$p < .001$

by gender revealed a significant interaction between mothers' depressive symptoms and gender, and a non-significant interaction between fathers' depressive symptoms and gender ($B = .01$, SE = .01, $\beta = .17$, $p = .26$). To decompose the maternal depressive symptoms × gender interaction, the regression model was run re-centering gender at values corresponding to girls and boys. These analyses indicated that mothers' T1 depressive symptoms significantly predicted lower child T2 secondary control coping ($B = -.02$, SE = .01, $\beta = -.29$, $p = .01$) among girls, but not boys ($B = .01$, SE = .01, $\beta = .17$, $p = .20$). For the model examining fathers' depressive symptoms, gender and the corresponding interaction were removed from the model. After adjusting for child T1 secondary control coping, fathers' T1 depressive symptoms significantly predicted lower child T2 secondary control coping.

## Discussion

The diagnosis and treatment of childhood cancer is a significant source of stress for children and their parents (Long and Marsland 2011; Rodriguez et al. 2012). Prior research indicates that children's coping with cancer-related stress is an important predictor of children's emotional adjustment. Specifically, secondary control coping strategies, such as reframing stress in a positive light and focusing on growth, help children adapt to the uncontrollable stressors associated with cancer and are associated with lower levels of internalizing symptoms (Compas et al. 2014, 2017). In order to identify children at risk for maladjustment and to develop effective intervention programs, it is essential to understand the determinants of children's coping with cancer-related stress. This study investigated whether parents' functioning, including parents' coping and depressive symptoms, is predictive of children's coping over time. The results of this study provide evidence of concurrent associations between parents' functioning and children's coping, as well as evidence of longitudinal associations between parents' functioning and changes in children's coping across the year following the diagnosis or relapse of cancer.

Mothers' coping shortly following diagnosis or relapse was concurrently associated with children's coping, whereas fathers' coping was generally not associated with children's coping at this time. In longitudinal regression models that adjusted for children's initial coping, fathers' secondary control coping, but not mothers' secondary control coping, predicted more secondary control coping in children over time. The predictive significance of mothers' secondary control coping for changes in children's secondary control coping over time may be weak due to the initial concurrence between mothers' and children's coping. During cancer treatment, parents often reallocate family responsibilities such that mothers assume caregiving responsibilities for the sick child while fathers manage sibling care and other household responsibilities (for a review, see Long and Marsland 2011). Associations between mothers' and children's coping may emerge earlier than associations between fathers' and children's coping due to mothers' more intensive involvement in children's direct care during treatment. Thus, it is possible that both mothers' and fathers' coping has an influence on children's coping, but the effect of mothers' coping is more immediate, whereas fathers' coping contributes to changes in children's coping that unfold over time.

Mothers' depressive symptoms shortly following diagnosis or relapse were concurrently correlated with less adaptive coping in children, whereas fathers' depressive symptoms were not associated with children's coping at this time. After adjusting for children's initial coping, mothers' initial depressive symptoms predicted lower levels of secondary control coping among girls over time, and fathers' depressive symptoms predicted lower levels of

secondary control coping over time for both sons and daughters. These results are in line with research on maternal depression which links higher levels of maternal symptoms with lower levels of secondary control coping among adolescents (Jaser et al. 2011, 2008). Moreover, the moderating effect of gender in this study parallels research indicating that the detrimental effects of maternal depression on child adjustment are stronger for girls than boys (Goodman et al. 2011). These results suggest that fathers' depressive symptoms have detrimental effects for children's coping that emerge over time, but these effects do not differ by child gender.

Mothers' and fathers' mean depressive symptoms scores on the BDI-II (14.24 and 11.08, respectively) fell close to cutoffs for mild depression (i.e., a score of 14). These scores were similar or slightly higher than those reported by other samples of mothers of children with cancer ($M$s = 12.00–13.33; Dolgin et al. 2007; Roddenberry and Renk 2008) and one small sample of fathers of children with cancer ($M = 9.31$; Roddenberry and Renk 2008). Although the mean depressive symptoms score for this sample was not highly elevated, the results indicate that variability in parents' symptoms nonetheless contribute to variability in children's secondary control coping.

Kliewer and colleagues' (2006, 1994) socialization of coping model points to several mechanisms that may underlie the effects of parents' functioning on children's coping, including parental modeling, parental coaching, and the family context. The prospective associations between parents' and children's secondary control coping are consistent with parental modeling. Following the diagnosis or relapse of cancer, children may look to parents to understand how to cope with the new stressors they face and adopt the coping behaviors that parents display in response to cancer-related stress. Parental depressive symptoms may contribute to lower levels of secondary control coping in children due to the influence of parental depressive symptoms on parental coaching and the family context. When parents experience depressive symptoms, they may be less capable of coaching children to use secondary control coping strategies such as reframing negative events to find positive meaning as these strategies may require a degree of optimism (Monti et al. 2014). Parents' coping suggestions, in turn, guide children's coping efforts in response to a range of stressors (Abaied and Rudolph 2011; Kliewer and Lewis 1995; Kliewer et al. 2006). Parental depressive symptoms also contribute to a negative family context, which may undermine the development of secondary control coping. Indeed, maternal depressive symptoms are associated with more harsh and withdrawn parent–child communication about cancer (Rodriguez et al. 2016). In broader contexts, depressed parents tend to be less supportive of children's negative emotions (e.g., Silk et al. 2011), which is associated with less frequent use of adaptive coping in children (Valiente et al. 2009).

We did not find evidence that parental predictors of children's coping are moderated by age. Prior theory and research suggest that there are developmental changes in children's ability to use complex coping strategies (Skinner and Zimmer-Gembeck 2007), and that coping becomes increasingly dispositional by adulthood (Wadsworth et al. 2005). It may seem to follow that parental influences would be stronger for younger children who have less stable coping responses or who require parental assistance to use complex coping strategies. However, in the context of childhood cancer, parental influences may not differ by age because the diagnosis or relapse of cancer is a novel source of stress for children of all ages. Children's coping in this context may be more differentiated and responsive to the specific stressors presented by a cancer diagnosis and treatment, and thus susceptible to parental influence regardless of age. Parents may also have similar effects on coping across developmental stages because children and adolescents both spend large amounts of time with parents during treatment. Adolescents with cancer may spend less time with peers than adolescents who do not have cancer, and therefore have fewer influences on their coping outside of their family. Alternatively, it is possible that parents do have a stronger influence on children's coping at earlier developmental stages but the current sample did not include children young enough to detect this effect.

There are several limitations to this study that point to directions for future research. Because fathers are underrepresented in pediatric research (for a review, see Phares et al. 2005), the inclusion of fathers is a strength of this study. However, the number of participating fathers was small and may or may not be representative of the broader population (Costigan and Cox 2001). The current sample also had limited racial diversity. Thus, additional studies are needed to determine the generalizability of these results. After adjusting for the stability of children's coping over time, parents' coping and depressive symptoms accounted for significant variance in children's coping, yet a notable portion of the variance was not explained. There may be additional predictors of children's coping not identified in this study, such as parents' posttraumatic stress symptoms and coping assistance following acute medical events (Marsac et al. 2014). It is also possible that parental contributions to children's coping depend on factors not considered in this study, such as whether a parent is a primary caregiver or whether a parent and child live together during treatment. Parental influences may also differ depending on the severity of stress children face. We examined children's coping shortly after diagnosis or relapse and 12 months later, but children's cancer-related stressors may have varied at these assessments. For example, at the second

assessment, some children were receiving treatment while other children were off treatment. Future research may benefit from examining parental predictors of children's coping at distinct points in treatment or from examining whether parental influences are heightened in times of more severe stress.

The results of this study suggest that the functioning of children with cancer should not be considered in isolation as parents' own coping and emotional functioning may contribute to children's ability to adapt to cancer-related stress. Thus, parent-focused interventions may be important to promoting better parent and child adjustment. Several interventions for mothers of children with cancer have received empirical support and may be effective avenues for enhancing parental coping and emotional functioning. For example, problem-solving skills training, which teaches mothers how to engage in constructive coping, has been found to improve mothers' problem-solving skills and depressive symptoms (Sahler et al. 2013, 2005). An interdisciplinary intervention also has been developed which, in part, targets mothers' appraisals and cognitions about cancer and mothers' coping with uncontrollable aspects of cancer. Pilot results indicate that this intervention promotes better emotional functioning in mothers (Mullins et al. 2012), as well as in children (Fedele et al. 2013). In the future, intervention efforts may benefit from specifically targeting secondary control coping in families, such as by teaching parents to use this form of coping, helping parents foster this form of coping in their children, and building parenting skills that support children's coping. Such an approach has been used successfully in enhancing coping skills and parenting skills in parents with depression and their children (Compas et al. 2010, 2015; Watson et al. 2014). This model holds promise for interventions for children with cancer and their parents. It is also important to note that the current study provided evidence of both maternal and paternal influences on children's coping. It will be important for parent-focused interventions, which have largely focused on mothers, to also give attention to the role of fathers in children's adjustment to cancer.

**Funding** This work was supported by the National Cancer Institute R01CA118332; a gift from Patricia and Rodes Hart; and intramural funding from The Research Institute at Nationwide Children's Hospital. K. H. Watson was supported by the National Institute of Mental Health T32-MH18921.

**Compliance with Ethical Standards**

**Conflict of Interest** The authors declare they have no competing interests.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from all individual participants included in the study.

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