

## Stress and Anxious–Depressed Symptoms Among Adolescents: Searching for Mechanisms of Risk

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This study was an examination of the possible mechanisms of risk among adolescents ( $n = 55$ ) exposed to the stress associated with the diagnosis of cancer in a parent. Girls whose mothers had cancer reported significantly more anxious–depressed symptoms than girls whose fathers were ill or boys whose mothers or fathers had cancer. Increased family responsibilities and the use of ruminative coping were examined as possible mechanisms leading to increased distress in girls with ill mothers. Although girls reported the use of more ruminative coping, rumination did not account for the impact of maternal cancer on girls' distress. Girls whose mothers were ill reported more stressful events reflecting family responsibilities. Furthermore, family responsibility stress fully accounted for the interaction of gender of the ill parent and gender of the adolescent in predicting anxious–depressed symptoms.

A central focus of research in developmental psychopathology is the identification of sources of risk for psychological distress and disorder during childhood and adolescence. Psychosocial stress has been the focus of considerable investigation as one such source of risk. Research has established stressful life events as markers of increased risk for psychological symptoms and disorder during childhood and adolescence in both cross-sectional (e.g., Banez & Compas, 1990; Hodges, Kline, Barbero, & Flanery, 1984) and prospective studies (e.g., Compas, Howell, Phares, Williams, & Giunta, 1989; DuBois, Felner, Brand, Adan, & Evans, 1992; Nolen-Hoeksema, Girgus, & Seligman, 1992).

Having established stress as a marker of increased risk, researchers have begun to search for processes or mechanisms by which stressful events contribute to psychological symptoms. Process-oriented research attempts to explain how or why stressful experiences are related to increased risk for psychological distress and disorder (e.g., Rutter, 1989). Identification of the mechanisms through which stressful events exert their impact on adjustment is important for improving the understanding of the role of stress in the etiology of child and adolescent psychopathology and should provide useful information for the development of interventions to reduce negative outcomes associated with stress.

For examination of the role of a hypothesized mediating mechanism in the relationship between stress and symptoms, several steps are necessary. First, a specific source of stress that has been found to be associated with psychological symptoms must be identified. Focusing on a specific stressor, compared with aggregated stressful experiences, is important as different mechanisms may mediate the impact of different types of stressful events. Second, plausible candidates for the processes or mechanisms that operate in this situation must be identified based on the characteristics of the stressor and the population being studied. Third, associations must be established between the stressor and the hypothesized mechanism (or mediator) and between the mechanism and symptoms (Baron & Kenny, 1986). Finally, it must be demonstrated that at least part of the association between the stressor and symptoms is accounted for by the mediator or mechanism (Baron & Kenny, 1986).

In the present study, the diagnosis of cancer in a parent was chosen as a specific stressful event associated with anxious–depressed symptoms among adolescents. Several studies suggest that children and adolescents whose parents have cancer experience moderate-to-high levels of distress at the time of their parents' diagnosis and treatment (e.g., Buckley, 1977; Lewis, Hammond, & Woods, 1993; Vess, Moreland, & Schwebel, 1988). For example, Siegel et al. (1992) reported increased behavior problems and symptoms of anxiety and depression in

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their sample of school-aged children who had a parent with terminal cancer. Compas et al. (1994) found that effects of parental cancer are moderated by which parent is ill and by the gender and age of the child. Specifically, they found that anxious-depressed symptoms were higher in adolescent than in preadolescent children and highest in adolescent girls whose mothers were diagnosed with cancer. Adolescent daughters whose mothers had cancer had a mean score on a standardized measure of anxious-depressed symptoms that was more than one standard deviation above the normative mean. Means for girls whose fathers were ill and adolescent boys whose mothers or fathers were ill were all within the normal range on this scale (Compas et al., 1994). Compas et al. did not examine, however, the mechanisms that mediate the relationship between maternal cancer and anxious-depressed symptoms in their adolescent daughters. The present study considers the following questions with this sample: Why are girls whose mothers are ill most distressed? What processes underlie the relationship between maternal cancer and distress in these girls?

One hypothesized mechanism is that these adolescent daughters are faced with increased family responsibilities that are experienced as burdensome or stressful. This hypothesis is consistent with research on the role of chronic stress or daily hassles as mediators of the relationship between major life events and psychological distress (e.g., Compas, Howell, Phares, Williams, & Ledoux, 1989; Wagner, Compas, & Howell, 1988). Girls whose mothers have cancer may find their lives filled with a greater number of daily hassles, such as caring for younger siblings or performing household chores. Higher levels of daily hassles may account for higher levels of distress among adolescent girls whose mothers have cancer. This hypothesis is consistent with evidence that women and adolescent girls shoulder a greater burden or cost of caring for others (Belle, 1988; Kessler & McLeod, 1984; Wagner & Compas, 1990).

A second possible mechanism may involve the use of ineffective coping responses by adolescent girls whose mothers have cancer. Research suggests that the ways in which adolescents cope with stressful events may account for the adverse effects of stress (Compas, 1987). For example, the work of Nolen-Hoeksema and her colleagues (Nolen-Hoeksema, 1991; Nolen-Hoeksema & Girgus, 1994) suggests that ruminative coping strategies (focusing on negative mood or aspects of self) are associated with increased depressive symptoms, in contrast to distraction (shifting of attention onto external stimuli), which is associated with lowered depressive symptoms. Women engage in more ruminative responses to stress than do men (Nolen-Hoeksema, 1991), which suggests that female cancer patients may engage in more rumination than male patients. Some evidence suggests that mothers are more likely to discuss negative feelings about their cancer with their daughters, perhaps as part of the ruminative process (Lichtman & Taylor, 1986). This practice, in turn, may contribute to more ruminative coping in adolescent girls whose mothers have cancer.

The present study examined processes related to family responsibilities and ruminative coping as mediators of the impact of parental cancer on adolescent adjustment. We hypothesized that family responsibilities would be higher for girls whose mothers were ill and that family responsibilities would account for higher symptoms in these girls. The use of ruminative cop-

ing, as compared with distractive coping, was examined as a second possible mediator. We hypothesized that the use of rumination would be more common among girls whose mothers have cancer and that rumination would account for higher anxious-depressed symptoms in these girls. We further hypothesized that distraction would be associated with lower levels of these symptoms.

## Method

### Participants

Participants were 55 adolescents (33 girls, 22 boys) between the ages of 11 and 18, with a mean age of 14.4 years. Twenty-one girls had mothers diagnosed with cancer, 12 girls had fathers with cancer, 12 boys had mothers with cancer, and 10 boys had fathers with cancer. Fourteen adolescent girls and 21 boys declined to participate. A chi-square analysis indicated a trend for boys to decline more often than girls,  $\chi^2(1, N = 90) = 3.81, p < .10$ .

Parents' cancer diagnoses included, among others, breast cancer, ovarian cancer, leukemia, and Hodgkin's disease. Severity of cancer was considered in two ways. First, the stage of cancer varied in the level of severity, with 36% Stage I, 24% Stage II, 21% Stage III, and 19% Stage IV. Thus, approximately 40% of the sample had advanced (Stage III or IV) cancers. Second, initial prognosis was operationalized as the patients' projected 5-year survival rate. This percentage is derived from statistics collected by the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program and is used to rate cancer severity at the time of diagnosis. Expected survival rates at 5 years post-diagnosis, which can theoretically range from 1% to 99%, are based on both site and pervasiveness of cancer. In this sample, mean projected survival rate for men was 59.9% ( $SD = 28.3$ ) and for women was 62.1% ( $SD = 30.5$ ); that is, 60% of the men and 62% of the women in this sample were expected to be alive in 5 years. Neither stage of cancer nor projected survival rate varied as a function of gender of the patient, gender of the adolescent, or their interaction in this sample. Furthermore, the percentage of mothers who were diagnosed with a sex-linked cancer (i.e., breast or gynecologic cancer) did not differ as a function of gender of adolescent.

### Measures

**Stressful events.** The short form of the Adolescent Perceived Events Scale (APES; Compas, Davis, Forsythe, & Wagner, 1987) was used to assess the number and types of hassles or recurrent stressful events reported by adolescent boys and girls. The short form of the APES includes 100 stressful events that typically affect adolescents, ranging from major life events such as divorce of parents to daily hassles such as taking care of younger siblings. Validity and reliability are well established for the APES (Compas et al., 1987). The APES has been divided into several subscales that reflect stress in important domains of functioning during adolescence, including family, peers, intimate relationships, and school (Wagner & Compas, 1990).

Most pertinent to the hypotheses of the present study is a subscale reflecting family responsibilities and role strains. This scale includes the following items: *doing household chores, pressures or expectations by parents, obligations at home, change in privileges or responsibilities at home, taking care of younger brothers and sisters, and helping other people*. Two independent raters achieved 100% agreement in identifying items from the APES that reflect family responsibility stressors. Internal consistency on the family responsibility subscale was adequate ( $\alpha = .70$ ). A second question related to this hypothesis was whether the mediational role of recurrent stress was unique to family responsibilities and burdens. Therefore, subscales of academic, peer, and intimate rela-

relationship stressors were also examined. The reliability of these other subscales of the APES have been found to be adequate (Wagner & Compas, 1990).

**Coping.** To test the role of coping as a mediator of the stress of parental cancer, we examined adolescent responses to the following statement.

Now, I'd like to ask you some questions about how you've handled your mother's (or father's) cancer. What are all the things you've thought, done or felt to make things easier or better for you? I'd like you to list everything you have done—whether it worked well or not.

This question was part of a larger structured interview addressing the participants' perceptions of and ways of coping with their parents' cancer.

Responses were coded as representing either rumination or distraction (Nolen-Hoeksema, 1991) by two independent raters who had not been informed of the status of the participants. Examples of ruminative coping responses reported by participants included "I sit around in my room—it just lets me think about it," and "Spending some time alone—it lets me sort out what was going on inside of me, but I couldn't get any answers." Examples of distractive coping included "Keep busy so I don't think about it," and "Just work a lot so I'll keep my mind off of it." Independent raters, who had not been informed of the gender of adolescent and patient, achieved an inter-rater agreement of 86% in coding coping responses as either rumination or distraction.<sup>1</sup>

### Anxious–Depressed Symptoms

We used the Anxious–Depressed subscale of the Youth Self-Report (YSR; Achenbach, 1991; Achenbach & Edelbrock, 1986) to measure adolescents' psychological symptoms. The YSR includes 119 behavior items that adolescents rate on a 3-point scale as *not true* (1), *somewhat or sometimes true* (2), or *very true or often true* (3) of themselves. The Anxious–Depressed subscale represents an empirically derived syndrome reflective of mixed anxiety and depressive symptoms of negative affect (Compas, Ey, & Grant, 1993) that are not necessarily equivalent to categorical diagnoses of anxiety or depression (cf. Kendall, Hollon, Beck, Hammen, & Ingram, 1987). Items from the Anxious–Depressed subscale include, *I feel nervous or tense, I feel worthless or inferior, I am too fearful or anxious, I feel sad, unhappy, or depressed, and I cry a lot*. Normative data for the YSR are based on a nationally representative sample of nonreferred adolescents, with separate norms for boys and for girls. The use of separate normalized *T* scores ( $M = 50$ ,  $SD = 10$ ) for boys and girls in the present study allowed for examination of gender differences in response to parental cancer beyond normative gender differences in anxious–depressed symptoms. Reliability and validity of the YSR are well established (Achenbach, 1991).

### Procedures

Cancer patients and their families were contacted by nurses or physicians near the time of their initial diagnosis. If a patient indicated a willingness to participate, he or she was contacted by a member of the research team who fully explained the goals and expectations of the study. Participation by each family member was completely voluntary. Within any family, each individual may (or may not) choose to participate. Approximately 75% of those who were approached agreed to participate.

Each family member participated in individual structured interviews and completed written questionnaires. On average, interviews were conducted 2 months after the patients' diagnosis ( $M = 8.6$  weeks,  $SD = 5.5$ ).<sup>2</sup> The interviews assessed each family member's perception of the stressfulness of the disease, his or her appraisal of the cause of the dis-

ease, and the ways in which he or she coped and helped family members cope with the cancer and treatment. After the interview, each participant was given several questionnaires to complete at his or her convenience and return by mail in stamped addressed envelopes provided by the interviewer. On completion of each set of interviews and questionnaires, each family received \$10.

### Results

The results are presented in four steps. First, scores on the Anxious–Depressed scale of the YSR as a function of the gender of the parent with cancer and the gender of the adolescent are summarized. Second, correlations among subtypes of stress, coping, and anxious–depressed symptoms are reported. Third, analyses of variance (ANOVAs) to determine whether the hypothesized mediators of stress and coping differed as a function of the gender of the ill parent and the gender of the adolescent are reported. Finally, hierarchical multiple regression analyses to determine whether stress and coping factors mediated the association between risk markers and anxious–depressed symptoms are summarized.<sup>3</sup>

Means and standard deviations on the Anxious–Depressed scale of the YSR were analyzed as a function of gender of the adolescent and gender of the parent with cancer. The variance for boys was restricted, compared with that for girls, and the cell sizes were unequal.<sup>4</sup> For the YSR Anxious–Depressed scale, an ANOVA indicated a significant main effect for gender of adolescent,  $F(1, 51) = 12.64$ ,  $p < .001$ , and a significant interaction of Gender of Adolescent  $\times$  Gender of Ill Parent,  $F(1, 51) = 5.42$ ,  $p < .02$ .<sup>5</sup> Adolescent girls whose mothers' had cancer ( $M$

<sup>1</sup> This method of measuring ruminative coping does not represent an exact replication of the method used by Nolen-Hoeksema and her colleagues. Specifically, we included responses that involved rumination about the stressor itself, whereas Nolen-Hoeksema (1991) has focused on rumination about one's mood and aspects of the self.

<sup>2</sup> It is important that sufficient time had passed since the parents' diagnosis for shifts in family responsibilities to have occurred. All but one of the participants were interviewed at least 3 weeks after their parents' diagnosis; the one exception was interviewed 11 days postdiagnosis.

<sup>3</sup> Because of missing data on the APES and the Coping Interview, the sample sizes for the analyses varied somewhat. Complete data were available from 46 participants for analyses of the APES and the YSR and from 50 participants for analyses of the interview and YSR. Main effect variables (adolescent gender and patient gender) were included as predictor variables to control for the confounding which commonly results from unequal *n*s.

<sup>4</sup> The variance for the Anxious–Depressed syndrome is truncated at the lower end, as all scores at or below the median (a raw score of 5.2 for boys and 6.5 for girls) are set to a *T* score of 50 (Achenbach, 1991). Because most of the boys whose fathers were ill scored at or below the median, the variance for this group was constrained. It can be shown algebraically, however, that when the small sample sizes go with small variances, and large sample sizes with larger variances, the test will be conservative (e.g., Boneau, 1960; Howell, 1992). Because the smallest variance in the present sample came from a cell with a relatively small sample size (boys whose fathers had cancer), and because the largest variance came from a cell with the largest sample size (girls whose mothers had cancer), this represents a conservative test of the hypotheses.

<sup>5</sup> It is plausible that the effects of having an ill parent were manifested in symptoms other than anxious–depressed symptoms. Specifically, adolescent boys may have been more likely to respond with externalizing

= 63.9,  $SD = 10.7$ ) reported significantly more anxious-depressed symptoms than did girls whose fathers were ill ( $M = 55.5$ ,  $SD = 6.3$ ) or boys whose mothers ( $M = 50.2$ ,  $SD = 0.6$ ) or fathers ( $M = 53.0$ ,  $SD = 4.8$ ) had cancer (see Compas et al., 1994).<sup>6</sup> The clinical range for the YSR syndromes is defined by the upper 5% of the normative sample ( $T > 67$ ). Within this sample, 6 girls (18%) and none of the boys scored within the clinical range on the Anxious-Depressed syndrome. The percentage of girls in the clinical range is significantly higher than would be expected based on the normative sample,  $\chi^2(1, N = 33) = 25.8$ ,  $p < .01$ . Of the girls whose mothers had cancer, 5 (24%) scored in the clinical range, also a higher proportion than expected on the basis of the norms,  $\chi^2(1, N = 21) = 12.9$ ,  $p < .01$ . Moreover, of the 6 adolescents in this sample who scored in the clinical range, 5 were girls whose mothers had cancer.

Correlations among variables that were used in testing the two hypotheses are summarized in Table 1. After a Bonferroni correction ( $p < .004$ ), the mean number of family responsibility stressors was correlated with adolescent gender ( $r = .56$ ,  $p < .001$ ), with anxious-depressed symptoms ( $r = .60$ ,  $p < .001$ ), and marginally with distraction coping ( $r = .40$ ,  $p < .01$ ). Ruminative coping was marginally correlated with adolescent gender ( $r = .33$ ,  $p < .01$ ); however, it was not significantly correlated with psychological symptoms. Furthermore, distraction coping was not correlated with adolescent gender or with anxious/depressed symptoms.

Subtypes of stress on the APES and use of rumination and distraction coping as a function of gender of adolescent and gender of parent with cancer are presented in Table 2. Comparisons of subtypes of stress indicated a main effect of gender of the adolescent for family responsibility stress,  $F(1, 42) = 20.95$ ,  $p < .001$ , but not for academic stress, peer stress, or intimacy stress. Girls reported more family responsibility stress than did boys. Furthermore, the interaction of Gender of Ill Parent  $\times$  Gender of Adolescent was significant only for family responsibility stress,  $F(1, 42) = 6.89$ ,  $p < .01$ . Girls whose mothers had cancer reported more family responsibility stress than did girls whose fathers had cancer or boys whose mothers or fathers were ill. With regard to coping responses, there was a main effect of gender of adolescent for ruminative coping, with girls reporting more rumination,  $F(1, 46) = 4.85$ ,  $p < .03$ ; however, the interaction of Gender of Ill Parent  $\times$  Gender of Adolescent was not significant for rumination. There were no main effects or interactions for use of distraction coping.

A series of multiple regressions to test for potential mediation effects were performed. As recommended by Baron and Kenny (1986) the following regression equations were estimated: (a)

as opposed to internalizing symptoms. To test this possibility, we examined scores on the Aggressive syndrome of the YSR as a function of gender of adolescent and gender of the ill parent. The ANOVA revealed a significant main effect for gender of adolescent,  $F(1, 51) = 16.42$ ,  $p < .001$ , with adolescent girls reporting more aggressive symptoms (mean  $T = 59$ ) than boys (mean  $T = 52$ ). The interaction of Gender of Adolescent  $\times$  Gender of Ill Parent was not significant for aggressive symptoms,  $F(1, 51) = 0.17$ . These findings suggest that boys did not manifest distress through increased aggression and that the distress of girls whose mothers were ill was most pronounced in anxious-depressed symptoms.

Table 1  
Correlations of Participant Characteristics, Stress, Coping, and Anxious-Depressed Symptoms

Variable	1	2	3	4	5	6
1. Gender of adolescent	—					
2. Gender of patient	.09	—				
3. Cancer severity	.03	.00	—			
4. Family stress	.56**	.27	-.23	—		
5. Rumination	.33**	.04	.15	.00	—	
6. Distraction	.05	.10	-.12	.40**	-.10	—
7. Anxious-depressed	.48**	.22	-.01	.60**	.06	.10

<sup>a</sup> Not significant after Bonferroni correction.

\*  $p < .01$ . \*\*  $p < .001$ .

regression of the mediator (family responsibility stress or rumination coping) on the independent variables (adolescent gender and gender of ill parent), (b) regression of the dependent variable (anxious-depressed symptoms) on the independent variables, (c) regression of the dependent variable on both the independent variable and the mediator (family responsibility stress or rumination coping).

Multiple regression analyses performed on the mean number of family responsibility stressors revealed the following predicted relationships. First, the relationship between the independent variable (the Adolescent Gender  $\times$  Patient Gender interaction term) and the mediator (mean number of family responsibilities) was significant,  $F(1, 42) = 6.89$ ,  $p < .01$ ,  $R^2 = .47$ . Second, the relationship between the independent variable (the Adolescent Gender  $\times$  Patient Gender interaction) and the dependent variable (Anxious-Depressed symptoms) was significant,  $F(1, 42) = 5.81$ ,  $p < .02$ ,  $R^2 = .40$ . Third, the relationship between the mediator (family responsibilities stress) and Anxious-Depressed symptoms remained significant once the independent variable (Adolescent Gender  $\times$  Patient Gender interaction) was included in the equation,  $F(2, 41) = 4.30$ ,  $p < .04$ ,  $R^2 = .45$ ;  $r^2 = .06$ . Fourth, there was a decrease in the variance accounted for by the independent variable once the mediator was included in the equation. In fact, the independent variable no longer predicted a significant amount of the variance once the mediator was included in the equation,  $F(2, 41) = 2.38$ ,  $p < .13$ . Thus, the results of these analyses support the hypothesis that family responsibilities mediate the relationship between the Adolescent Gender  $\times$  Patient Gender interaction and symptoms.

<sup>6</sup> The greater distress of adolescent girls whose mothers were ill may have been attributable to a subgroup of girls whose mothers had gender-linked cancers (breast or gynecologic cancers), as these girls may have felt more threatened by the perception that they were personally at risk for cancer. To test this possibility, we compared girls whose mothers had a gender-linked cancer ( $n = 10$ ) with those whose mothers' cancer was not gender-linked ( $n = 11$ ). These groups did not differ on anxious-depressed symptoms ( $M = 64.7$  vs.  $M = 61.6$ , respectively,  $t(20) = 0.59$ ,  $n.s.$ ). Thus, the increased distress of adolescent girls whose mothers had cancer was not attributable to the presence of a gender-linked cancer.

Multiple regression analyses performed on the mean percentages of rumination coping responses revealed the following relationships. First, the relationship between the independent variable (Adolescent Gender  $\times$  Patient Gender interaction term) and the mediator (mean percentage of ruminative coping responses) was not significant,  $F(1, 49) = 1.34, ns$ . Second, the relationship between the independent variable (Adolescent Gender  $\times$  Patient Gender interaction term) and the dependent variable (anxious–depressed symptoms) was significant,  $F(1, 49) = 5.42, p < .02, R^2 = .33$ . Third, the relationship between the mediator (ruminative coping) and the dependent variable (anxious–depressed symptoms) was not significant when the independent variable was included in the equation,  $F(1, 48) = 0.18$ . In fact, analyses revealed that the mediator was not related to the dependent variable, even when the independent variable was removed from the equation,  $F(1, 49) = 0.21$ . Thus, these analyses do not support the hypothesis that ruminative coping mediates the relationship between adolescent gender and anxious–depressed symptoms.

Finally, as distraction coping was unexpectedly correlated with family responsibility stressors, regression analyses were conducted to test whether distraction served as a mediator of the relationship between maternal cancer and adolescents' psychological symptoms. Distraction coping was not related to either the independent variable (Adolescent Gender  $\times$  Patient Gender interaction) or the dependent variable (anxious–depressed symptoms), and the interaction of Adolescent Gender  $\times$  Patient Gender remained a significant predictor of anxious–depressed symptoms when distraction was included in the regression equation.

Discussion

Previous research has shown that there are substantial individual differences in the psychological adjustment of children within the first few months after their parents are diagnosed with cancer (Compas et al., 1994). Specifically, adolescent girls whose mothers are ill are significantly more distressed than girls whose fathers are ill or boys whose mothers or fathers are ill. The gender of the ill parent and gender of the child, therefore, serve as markers of in-

creased risk for psychological distress. The present study explored how and why adolescent daughters whose mothers have cancer are at increased risk for anxious/depressed symptoms (i.e., primarily as a result of increased family responsibility stressors). Girls in this sample whose mothers were ill reported more stressful events related to increased family responsibilities than girls whose fathers were ill or boys, and these family responsibilities accounted for the higher occurrence of anxious–depressed symptoms in these girls.

These findings build on two literatures related to stress processes. First, the present results are consistent with previous studies that have shown that minor or daily stressors mediate the association between major life events and psychological distress (e.g., Compas et al., 1989; Wagner et al., 1988). Because these previous studies relied on aggregate measures of life events and daily stressors, however, they were limited in the degree of specificity they could convey about how minor events mediate the impact of major life events. The present study was able to clarify these processes by focusing on a specific major event (the diagnosis of parental cancer) and by examining several specific domains of minor stressors as possible mediators. Girls in families whose mothers were ill assumed some of the responsibilities that may have typically been carried by their mothers, including caring for younger siblings and household chores.

Second, the present study builds on findings that females are more likely to be faced with interpersonal stress and the burdens of caring for the needs of others (e.g., Belle, 1988). Studies have shown that adult women carry a greater burden in interpersonal relationships than do men, in part through providing care for others in times of stress (e.g., Kessler & McLeod, 1984). The present study suggests that adolescent girls may be exposed to similar levels of caretaking responsibilities near the time of the parent's cancer diagnosis. These responsibilities may be especially detrimental for adolescent girls because they may not have developed adaptive capacities to cope with the role of caring for others. Alternatively, adolescents may be especially vulnerable to increased family responsibilities because they come in conflict with other developmentally appropriate goals (e.g., school achievement, relationships with friends, increased autonomy outside the family).<sup>7</sup>

Several cautions in interpreting these data must be raised as a result of the use of a cross-sectional design. First, we could not determine whether the number of family responsibility stressors reported on the APES actually increased since the diagnosis of cancer in a parent. It is plausible, however, that adolescent girls whose mothers had cancer found themselves taking on a greater number of family responsibilities. On average, families were interviewed 2 months after the parents' diagnosis, allowing sufficient time for a redistribution of family roles to take place. Second, we cannot rule out the possibility that anxious–depressed symptoms preceded increased stressful events and family responsibilities rather than vice versa. It may be, for example, that adolescent girls who are most distressed about their mother's cancer are most likely to try to do something to make their mothers feel better and, therefore, take on additional household responsibilities. We also cannot discount the possibility that family responsibilities and symptoms were caused by a third variable not included in this study. Future research using a prospective design from the time of

Table 2  
Mean Scores for Subtypes of Stress and Rumination and Distraction Coping for Adolescent Boys and Girls Whose Mothers and Fathers Had Cancer

Subtypes of stress and coping	Boys		Girls	
	Mother	Father	Mother	Father
<b>Subtypes of stress</b>				
Family responsibilities	0.00	0.22	2.20	0.82
Intimacy	1.27	0.56	1.87	0.91
Academic	1.73	1.11	2.07	1.64
<b>Coping</b>				
Rumination	0.18	0.02	0.35	0.27
Distraction	0.19	0.20	0.18	0.10

Note. Stress scores are mean number of stressors; coping scores are percentages of total coping responses coded as rumination or distraction.

<sup>7</sup> We are grateful to Susan Crockenberg for this suggestion.

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the diagnosis will be helpful in more fully delineating the temporal sequence of these events. Third, it is possible that girls who were highly distressed were more likely to recall and report that they had experienced a greater number of family responsibilities as a result of a negative reporting bias. If such a bias existed, however, we would expect it to influence the number of stressful events and hassles reported in other domains as well. This was not the case, as girls did not report greater numbers of stressors involving academic achievement, peers, or intimate relationships. Finally, the present sample was relatively small and warrants replication with larger sample.

The second hypothesis explored in this study met with mixed results. As expected, girls in this sample reported a greater percentage of ruminative coping responses than did boys, consistent with studies reporting similar gender differences in adult samples (e.g., Nolen-Hoeksema, 1991). However, these differences in coping styles were not related to psychological symptoms, and there was no Adolescent  $\times$  Patient Gender interaction effect. There are several possible explanations for these results. The first is that ruminative coping is unrelated to symptoms during adolescence. It may be that gender differences in coping that are detrimental to mental health during adulthood are still in the process of developing during adolescence (Nolen-Hoeksema & Girgus, 1994) and are not yet associated with symptoms of anxiety and depression. A second possible explanation is that the effects of ruminative coping are not observable with cross-sectional analyses at the time of patient diagnosis. Nolen-Hoeksema (1991) argued that ruminative coping does not cause symptoms, but that it can serve to maintain or increase symptoms. Thus, in this sample, perhaps initial symptom levels are unrelated to coping styles. It may be, however, that over time adolescents who ruminate about their symptoms and about the events that have led to their symptoms are more likely to maintain their symptoms. This hypothesis should be tested with a similar sample using a prospective design. Third, our measure of ruminative coping included rumination about the stressor itself; this may have a less negative effect on depressed mood than rumination that focuses exclusively on the self and one's mood.

The hypothesized relationship between distraction and lower levels of psychological symptoms was not supported. As with ruminative coping, it may be that distraction is unrelated to psychological symptoms in this sample, or it may be that the effects of distraction are not observable with cross-sectional analyses. The tendency for adolescent boys to be more likely than girls to decline to participate may have also contributed to our failure to find significant effects for distraction. Finally, the significant correlation between distraction and family responsibilities was unexpected. It may be that this relationship reflects the fact that some adolescents reported engaging in household tasks to distract themselves from their parents' cancer. Although significantly correlated with one another, these constructs are distinct in their relationship with psychological distress.

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