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When Mom or Dad Has Cancer: Markers of Psychological Distress in Cancer Patients, Spouses, and Children

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This study assessed anxiety/depression and stress response symptoms in adult cancer patients (n = 117), spouses (n = 76), and their children (n = 110, ages 6 to 30 years old) near the patients' diagnoses to identify family members at risk for psychological maladjustment. Patients' and family members' distress was related to appraisals of the seriousness and stressfulness of the cancer but not related to objective characteristics of the disease. Patients and spouses did not differ in anxiety/depression or in stress-response symptoms. Both stress-response and anxiety/depression symptoms differed in children as a function of age, sex of child, and sex of patient. Adolescent girls whose mothers had cancer were the most significantly distressed. Implications for understanding the impact of cancer on the family are highlighted.

Key words: cancer, stress, families, psychological distress

The diagnosis and treatment of cancer are sources of considerable psychological stress for patients and their families. Although treatments have become increasingly effective for a wide range of cancers, the initial diagnosis still involves a threat of loss of life for many patients. Even in those cases in which the prognosis for survival is good, there may be the threat of the loss of some significant aspect of personal functioning, damage to physical appearance, or loss of physical functioning (e.g., Heinrich, Schag, & Ganz, 1984). In addition to its importance in its own right, the diagnosis of cancer represents a prototype of acute, extreme stress that confronts many families. A necessary first step in research on stressors such as cancer is to document levels of psychological distress and identify individual differences among family members in order to set the stage for subsequent research on the processes that may contribute to distress.

Cancer appears to present at least a short-term threat or crisis to patients, as reflected in increased symptoms of depression and anxiety near the time of diagnosis (e.g., Andersen, Andersen, & deProsse, 1989; Derogatis et al., 1983; Heinrich & Schag, 1987; Massie & Holland, 1987; Stanton & Snider, 1993). Distressed mood may subside for many patients in the months following diagnosis, underscoring the need to consider the length of time that has elapsed since the patient's diagnosis (Andersen et al., 1989; Northouse & Swain, 1987). Findings comparing levels of psychological distress of men and women with cancer have been mixed, with some evidence that women experience more emotional distress (e.g., Cella et al., 1987), other findings indicating that men are more distressed and their lives more disrupted by the experience (e.g., Pettingale, Burgess, & Greer, 1988), and still other studies finding no gender differences (e.g., Marks, Richardson, Graham, & Levine, 1986). Researchers have failed to control for normative differences between men and women in symptoms of psychological distress, however (e.g., Nolen-Hoeksema, 1990). Therefore, it is unclear whether differences between male and female patients can be attributed to the diagnosis of cancer per se, above and beyond expected gender differences in the general population.

Fewer studies have investigated the impact of cancer on spouses of patients. Spouses rate cancer in their partners as a significant stressor and report a number of adverse effects of the disease on their marital relationship and daily functioning in the family (e.g., Ell, Nishimoto, Mantell, & Hamovitch, 1988; Given et al., 1993; Hannur, Gresi-Davis, Harding, & Hatfield, 1991; Lewis, Woods, Hough, & Bensley, 1989; Lichtman, Taylor, & Wood, 1987). However, the degree of psychological symptoms experienced by spouses of patients is not well documented and possible gender differences in the responses of spouses are not clear.

The psychological adjustment of children of cancer patients has been the focus of several recent studies but remains even less well understood than that of patients and spouses (e.g., Casselith et al., 1985; Lewis, Ellison, & Woods, 1985; Lewis, Hammond, & Woods, 1993; Northouse, Cracchiolo, & Appel,

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1991; Siegel et al., 1992; Wellisch, Gritz, Schain, Wang, & Siau, 1991, 1992). In one of the most extensive investigations of children of cancer patients (Lewis et al., 1985; Lewis et al., 1993), parental reports indicated that children in these families experienced few behavioral or emotional problems, whereas children's self-reports indicated some negative impact on children's self-esteem and adjustment. However, data on children's adjustment were obtained several years after the parents' diagnoses. Lichtman and Taylor (1986) presented some evidence that young women are adversely affected by the diagnosis of breast cancer in their mothers, but investigations have not been conducted with other age groups or with sons and daughters of mothers and fathers with cancer.

Previous research on stress processes in cancer patients has drawn primarily on cognitive appraisal models of individual responses to stress (e.g., Lazarus & Folkman, 1984). When considering the responses of family members to cancer, however, it is necessary to include interpersonal aspects of stress (e.g., Compas & Wagner, 1991) as well as developmental differences in stress processes (e.g., Compas, Worsham, & Ey, 1992). Research on interpersonal aspects of stress has shown that women tend to be more affected than men by stress in the lives of significant others (e.g., Barnett & Baruch, 1987) and that adolescence is an important period for the emergence of these gender differences (Wagner & Compas, 1990).

On the basis of these perspectives, we examined several factors as possible markers of psychological distress in cancer patients and their family members. First, we examined both the objective characteristics of the disease (length of time since diagnosis, stage, initial prognosis, type of treatment, and functional status) and cognitive appraisals of the seriousness and stressfulness of the disease as possible correlates or markers of patients' and family members' distress. Second, we considered age, sex, and family role of family members as markers of differences in the psychological distress of patients, their spouses, and their children. We did not hypothesize specific differences in levels of psychological distress of men and women with cancer or their husbands and wives, as prior research comparing distress in men and women with cancer and comparing patients and spouses has been unclear. Furthermore, by selecting patients who have children living in the home, the present sample represents adults with cancer who are younger than typical samples of cancer patients reported in the literature (e.g., Cella et al., 1987; Derogatis et al., 1983).

We compared levels of distress among male and female preadolescent, adolescent, and young adult children whose mother or father had cancer. Psychological distress of daughters whose parents have cancer was expected to be greater than distress reported by sons, as girls have been found to perceive events affecting a member of their family as more stressful than boys (e.g., Wagner & Compas, 1990). Furthermore, the work of Lichtman and Taylor (1986) has suggested that distress may be higher in same-sex offspring of patients. Analyses of age differences in distress of children in these families were exploratory, as previous research was not sufficient to develop specific hypotheses. The association of patients' distress with the distress of spouses and children was also examined, as prior research on interpersonal stress processes in families has shown an association between the psychological distress of husbands and wives and between distress of parents and their children (e.g., Compas, Howell, Phares, Williams, & Ledoux, 1989; Given et al., 1993).

We measured psychological distress of cancer patients and their families in two ways. First, we selected symptoms of depression and anxiety as an index of generalized psychological distress of patients and family members. Second, as an index of response to a traumatic event, we used symptoms of a stress response syndrome (Horowitz, Field, & Classen, 1993) or posttraumatic stress disorder (PTSD; American Psychiatric Association, 1987) including unwanted and intrusive thoughts and emotions pertaining to the disease accompanied by efforts to avoid thoughts and reminders of it. Measures were selected to provide comparisons of levels of distress among different family members, as well as to allow for comparison of symptom levels with normative data to understand the clinical significance of these symptoms (i.e., to determine the percentage of individuals who exceed the clinical cut-offs established for each of these measures).

Method

Participants

Participants were 117 cancer patients (72% female; mean age = 41.2 years, *SD* = 8.2), 76 spouses (36% female; mean age = 42.0 years, *SD* = 9.2), 34 young-adult children (62% female; mean age = 22.9 years, *SD* = 3.4), 50 adolescent children (58% female; mean age = 14.6 years, *SD* = 2.2), and 26 preadolescent children (42% female; mean age = 7.8, *SD* = 1.7). All preadolescent and adolescent children lived with their parents, and young adults either lived in their parents' home or had frequent, ongoing contact with the parent diagnosed with cancer. These patients represent 75% of those eligible patients who were approached regarding the study. The number of spouses and children differed from the number of patients, as individual family members were allowed to agree or decline to participate in the study independent of the decision of the patient to participate, and families differed in number and ages of children.

Patients were diagnosed with a variety of different types of cancer including breast cancer (32%; 35 women), gynecologic cancers (21%; 23 women), brain tumors (12%; 7 men, 6 women), lung cancer (7%; 3 men, 5 women), hematologic malignancies (10%; 5 men, 6 women), gastrointestinal cancers (6%; 3 men, 3 women), testicular cancer (5%; 5 men), melanoma (4%; 4 men), and other diagnoses (5%; 3 men, 2 women). Type of diagnosis differed by sex of patient, $\chi^2(8, n = 110) = 56.90, p < .001$, primarily as a result of rates of breast and gynecologic cancers in the female patients. Patients were contacted for the initial data collection on average 2 months after their initial diagnosis (*M* = 8.59 weeks postdiagnosis, *SD* = 5.51). Men (*M* = 8.99 weeks) and women (*M* = 8.45 weeks) did not differ significantly in their time since diagnosis at the first data collection. We used time since diagnosis as a covariate in all analyses.

We considered the severity of patients' cancers in several ways. Stage of cancer varied with 33% Stage I, 28% Stage II, 22% Stage III, and 17% Stage IV. Men and women did not differ in stage, $\chi^2(3, n = 104) = 3.17$, *ns.* Initial prognosis was operationalized as patients' projected 5-year survival rates (i.e., the percentage of patients with a similar prognosis expected to be alive in 5 years) derived from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program (American Cancer Society, 1992). Men (*M* = 50.31%, *SD* = 30.40) and women (*M* = 59.37%, *SD* = 31.16) did not differ significantly in initial prognosis. Men and women did not differ in the frequency of receiving chemotherapy (43.33% and

60.00%, respectively), radiation therapy (66.67% and 61.25%, respectively), or hormonal therapy (0% and 5% respectively). Finally, we assessed degree of functional impairment through the Eastern Cooperative Oncology Group (ECOG) performance status ratings, based on ratings of symptoms and ambulatory status abstracted from medical charts by two research assistants (interrater reliability exceeded 90%). Separate ratings for both the best and worst ECOG performance status near the time of diagnosis ranged from 0 (normal activity, asymptomatic) to 4 (patient 100% bedridden, likely terminal phase of cancer). Male and female patients did not differ significantly in either their best or worst performance status. Both ratings were highly skewed, with 96% of patients receiving a best performance status rating of 0 or 1 and 85% of patients receiving a worst performance status rating of 3. The severity of parents' diagnoses (stage, SEER ratings, performance status) and children's perceptions of the seriousness or severity of their parents' cancer did not differ among children, adolescents, and young adults who participated in the study. All children who participated in the study were aware prior to their participation in the interview that their parent had cancer.

Procedure

We recruited participants through the Medical Oncology, Radiotherapy, and Gynecologic Oncology cancer clinics of the Vermont Cancer Center, University of Vermont. A member of the medical staff contacted patients who had children either living in the home or living outside the home but in frequent contact with the family. A member of the research team obtained written consent to participate from the patient, spouse, and children over the age of 18, and written assent from children under 18 years of age. Each consenting family member participated in individual interviews of 1 to 2 hours (in person or over the telephone) and completed sets of questionnaires.

Measures

Perceptions of severity and stressfulness of cancer. Perceptions of the patients' cancer were assessed for each family member during individual interviews as an index of cognitive appraisals of the cancer as a stressor (cf. Davis & Compas, 1986). In response to the question "How serious do you think the cancer is at this time," patients, spouses, and young adults rated the severity of the cancer on a 4-point Likert scale ranging from "not at all serious" to "extremely serious." Preadolescent children and adolescents were asked "How bad do you think your parent's illness is," and responded to a 4-point scale ranging from "not bad" to "very bad." In response to the question "How stressful is your experience with the cancer at this time," the stressfulness of the cancer was rated by patients, spouses, and young adults on a 4-point scale ranging from "not at all stressful" to "extremely stressful." Preadolescent children and adolescents were asked "How upsetting is your parent's illness for you right now," and provide responses ranging from "not upsetting" to "extremely upsetting."

Anxiety/depression symptoms. Because there is no measure of symptoms of anxiety/depression that is appropriate for use across the age range of participants, we selected age-appropriate measures for preadolescents, adolescents, young adults, patients, and spouses. Preadolescents (6–10 years old) completed the Children's Depression Inventory (CDI; Kovacs, 1980) and the Revised-Children's Manifest Anxiety Scale (R-CMAS; Reynolds & Richmond, 1978); adolescents (11–18 years old) completed the Youth Self-Report (YSR; Achenbach, 1991); and patients, spouses, and young adults completed the Brief Symptom Inventory (BSI; Derogatis & Spencer, 1982).[1]

The CDI is a 27-item self-report measure of symptoms of depression over the previous 2 weeks.[2] The CDI has good internal consistency, distinguishes children with general emotional distress from nondistressed children, and corresponds well with self-report measures of self-concept (e.g., Saylor, Finch, Spirito, & Bennett, 1984). Norms for the CDI were drawn from a nonreferred sample of 1,463 children (Finch, Saylor, & Edwards, 1985).

The R-CMAS is a 37-item self-report questionnaire (28 anxiety items and 9 Lie scale items) of the presence or absence of a variety of anxiety-related symptoms in the previous 2 weeks. *Yes*-responses on the anxiety items are summed to yield a total anxiety score, and responses to the Lie scale items are summed to provide an index of socially desirable responses. The R-CMAS has acceptable internal consistency and test–retest reliability, and correlates with other measures of children's anxiety (e.g., Finch & Rogers, 1984). Norms for the R-CMAS were drawn from a sample of 329 nonreferred children (Reynolds & Richmond, 1978). In the present sample the CDI and R-CMAS were moderately correlated, $r = .50, p = .003$.

The YSR is a checklist of 102 behavior problem items rated by the respondent as *not true, somewhat or sometimes true,* or *very true or often true* during the past 6 months. Test–retest reliability over 1 week is excellent, and validity has been established through differentiation of referred and nonreferred youth (Achenbach, 1991). Normative data are available for the YSR in the revised 1991 profiles based on a nationally representative sample of 1,315 nonreferred youth. We used the Anxious/Depressed syndrome that includes 16 symptoms of anxiety and depression in the present analyses.

The BSI (Derogatis & Spencer, 1982) is a self-report inventory of 53 items describing a variety of emotional and somatic complaints. Test–retest and internal consistency reliabilities are adequate (Derogatis & Spencer, 1982). We focused on the Depression (6 items) and Anxiety (6 items) scales for the present analyses. Separate community (nonpatient) norms for men and women ($N = 974$) were used to generate T scores (Derogatis & Spencer, 1982). The Anxiety and Depression scales of the BSI were significantly correlated ($p < .001$) for patients ($r = .64$), spouses ($r = .71$), and young adults ($r = .67$).

Raw symptom scores on the BSI, YSR, CDI, and R-CMAS were transformed into T scores ($M = 50$, $SD = 10$) based on separate normative data for men and women available on each scale. Differ-

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[1] There is considerable correspondence in item content across the measures of anxiety and depression symptoms used for adults (BSI), adolescents (YSR), and children (CDI and R-CMAS). Six items are common to the measures for all three age groups (sad or dysphoric affect, loneliness, worthlessness, suicidal ideation, nervousness, and fearfulness). Of the 12 items on the BSI Depression and Anxiety scales, 6 were on both the adolescent and child measures, 5 others appeared on at least one other age group measure, and 1 item appeared only on the BSI (spells of terror or panic). Of the 16 items on the Anxious and Depressed Syndrome of the YSR, 6 appeared on the adult and child measures, 6 appeared on at least one other age group measure, and 4 appeared only on the YSR (fears own impulses, needs to be perfect, suspicious, and tries to harm self). Because the CDI and R-CMAS contain many more items than either of the subscales for anxiety or depression on the BSI and YSR, more items appeared only on the child measures than on the adult and adolescent measures. Seven of the 27 items on the CDI appeared on the adult and adolescent measures (loneliness was reflected in 2 items), 6 items appeared on at least one other age group measure, and 14 items appeared only on the CDI. Of the 28 anxiety symptom items on the R-CMAS, 3 appeared on the adult and adolescent measures, 5 appeared on at least one other measure, and 20 items only on the R-CMAS.

[2] The CDI, R-CMAS, YSR, and BSI ask for reports of symptoms over different periods of time. To retain the standard administration of these scales and to allow for comparisons with normative data, these different time frames were retained for this study.

ences that are found as a function of gender and age are therefore more readily interpreted as related to the impact of the cancer. A *T* score of 63 (90th percentile) was used to identify scores in the clinical range on each measure. Because separate anxiety and depression scores are generated for the BSI, CDI, and R-CMAS, a mean *T* score calculated across symptoms of anxiety and depression reflecting negative affect was created for patients, spouses, and young adults on the BSI and for children on the CDI and R-CMAS (no such transformation was needed on the YSR because a combined anxiety/depression score is generated). The BSI, YSR, CDI, and R-CMAS do not allow for determination of diagnoses of clinical depression or anxiety disorders. However, these measures reflect symptoms of depression and anxiety or negative affect at the syndromal level that include fear, anxiety, sadness, and guilt (e.g., Compas, Ey, & Grant, 1993; Watson & Clark, 1984).

Stress response symptoms. Symptoms of a stress-response syndrome were measured in terms of the degree of avoidance and intrusive thoughts and emotions on the 15-item Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979).[3] Eight items assess avoidance (e.g., "I try to remove it from my memory") and 7 items assess intrusive thoughts and emotions (e.g., "I have waves of strong feelings about it"). Patients and spouses responded to the full 15-item scale; young adults, adolescents, and children responded to a shorter set of 8 randomly selected items (5 avoidance items and 3 intrusion items) to shorten their interviews. Participants indicated the frequency of each item with respect to their experience with the cancer in the past 7 days. The IES has been used as an index of stress-response syndrome and PTSD symptoms in cancer patients in previous studies (Horowitz et al., 1993). Internal consistency for the present sample was $\alpha = .80$ for patients, .85 for spouses, .69 for young adults, .67 for adolescents, and .49 for preadolescent children. The low reliability for children indicates that their scores must be interpreted cautiously.

Results

Correlations of Psychological Distress With Disease Variables

Stage of cancer, SEER 5-year survival ratings of the patients' cancers, time since the patients' diagnosis, patients' best and worst ECOG performance status ratings, and perceptions of the seriousness and stressfulness of their cancer were correlated with symptoms of anxiety/depression and stress response syndrome symptoms on the IES for all family members (see Table 1). In general, disease characteristics were not related to symptoms of anxiety/depression or to total stress-response syndrome symptoms on the IES. Stage of patients' cancer was related only to spouses' IES scores, and the SEER projected 5-year survival rate was related to patients', spouses', and adolescents' IES scores. For each of these correlations, a worse prognosis was related to greater distress. Measures of psychological distress and perceptions of the seriousness and stressfulness of the cancer were also generally uncorrelated with the length of time since the patients' diagnosis. The measures of psychological distress were moderately to strongly correlated with perceptions of the seriousness and stressfulness of the patients' cancer. Stress response syndrome symptoms were more consistently associated with disease characteristics and cognitive appraisals than were symptoms of anxiety/depression.

Correlations of Patients' Distress With Family Members' Distress

Patients' combined mean anxiety/depression symptom scores were significantly related to spouses' mean anxiety/depression symptoms ($r = .32$) but not related to anxiety/depression for young adults, adolescents, or children. Patients' scores on the IES were not related to IES scores for spouses or any of the age groups of children. Thus, family members' symptoms of distress were relatively independent of the level of distress reported by patients.

Patients' and Spouses' Symptoms of Psychological Distress

Perceived seriousness of the cancer varied as a function of the interaction of sex and family role, $F(4, 180) = 5.38, p = .022$. Wives of patients perceived the cancer as more serious ($M = 2.97$) than either husbands whose wives were ill ($M = 2.47$), male patients ($M = 2.56$), or female patients ($M = 2.31$). Perceived stressfulness of the cancer varied as a function of sex of patient, $F(4, 180) = 4.72, p = .044$, and family role, $F(4, 180) = 5.75, p = .026$. Women ($M = 3.36$) perceived their experience with cancer as more stressful than men did ($M = 3.01$), and spouses ($M = 3.38$) perceived the cancer as more stressful than patients did ($M = 2.99$).

Means of the combined *T* scores for symptoms of anxiety/depression reported by patients and spouses on the BSI and for total symptoms on the IES are presented in Table 2. These scores correspond to moderate levels of anxiety/depression symptoms, with the means approximately one-half standard deviation above the normative mean. The total scores on the IES are higher than those reported in a previous study of recently diagnosed cancer patients (Horowitz, 1982), $t(160) = 9.87, p < .001$, indicating moderate levels of stress-response syndrome scores. We conducted two-way analyses of covariance (ANCOVAs) with sex and family role (patient vs. spouse) as the independent variables, time since diagnosis as the covariate, and *T* scores for anxiety/depression and total stress response syndrome symptoms as the dependent variables. Because scores for patients and their spouses cannot be assumed to be independent, family role was treated as a repeated measure. Neither the main effects, the covariate, or the interactions were significant in the ANCOVA for anxiety/depression. There were no significant effects for sex or family role or their interaction in the ANCOVA for stress-response symptoms on the IES. We conducted additional analyses with the Avoidance and Intrusion scales of the IES as separate

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[3] The IES provides an approximation of the diagnostic criteria for PTSD in the revised third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1987). Specifically, Criterion A (presence of a stressor outside the range of usual experience), Criterion B (presence of intrusive thoughts and emotions related to the stress), and Criterion C (efforts to avoid stimuli associated with the stressor) are reflected in the IES. Criterion D (persistent symptoms of increased arousal) and Criterion E (duration of at least one month) are not represented in the IES. Therefore, we have chosen to refer to the IES as an index of a stress response syndrome (Horowitz et al., 1993) rather than as an index of PTSD symptoms per se.

Table 1.
Correlations of Anxiety/Depression Symptoms and Stress Response Symptoms on the IES

	Measurement						
Characteristic	Stage	SEER 5-Year survival rate	ECOG worst	ECOG best	Time since diagnosis	Perceived serious	Perceived stress
Patients							
Anxiety/depression	−.08	−.08	.11	.03	−.18	.14	.41***
IES	.14	−.17*	.02	−.09	.06	.27**	.56***
Spouses							
Anxiety/depression	−.02	−.14	.11	.02	−.11	.25*	.15
IES	.31**	−.43***	.11	−.04	.05	.55***	.47***
Young adults							
Anxiety/depression	−.01	−.08	−.32	.26	−.42*	.26	.09
IES	.14	−.10	−.10	−.25	−.25	.32*	.68***
Adolescents							
Anxiety/depression	−.03	−.01	.00	−.07	−.15	.03	.31*
IES	.20	−.36**	−.02	−.01	.04	.36**	.63***
Children							
Anxiety/depression	−.25	.09	—	.41*	.22	.09	.34
IES	−.20	−.02	—	.27	−.12	.23	.36

Note. The correlation between worst ECOG performance status and children's anxiety/depression and IES symptoms was indeterminant, as there was no variance in performance status for the parents of the 27 children for whom these data were available. IES = Impact of Event Scale; SEER = National Cancer Institute Surveillance, Epidemiology, and End Results prognosis; ECOG worst = Eastern Cooperative Oncology Group worst performance status rating; ECOG best = Eastern Cooperative Oncology Group best performance status rating.
$^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

dependent variables; we found no significant effects for sex, family role, or their interaction.

Analyses of the numbers of male and female patients in the clinical range on the BSI were conducted separately for anxiety and depression symptoms. Eight male patients (36%) and 16 female patients (21%) had T scores of above 63 on anxiety near time of diagnosis. These proportions are greater than the percentage of patients (10%) expected to exceed the cutoff by chance for men, $\chi^2(1, N = 22) = 16.99, p < .001$, and for women, χ^2 $(1, N = 74) = 11.10, p < .01$. Analyses of the Depression scale revealed that more male patients ($N = 7$, 32%) and more female patients ($n = 17$, 23%) were in the clinical range than was expected, $\chi^2(1, n = 22) = 11.64, p < .001$, and $\chi^2(1, n = 74) = 13.84, p < .01$, respectively.

On the Anxiety scale, more male ($n = 14$, 35%) and female ($n = 9$, 35%) spouses were in the clinical range on anxiety symptoms than would be expected, $\chi^2(1, N = 40) = 27.78, p < .001$, and $\chi^2(1, N = 26) = 17.50, p < .001$, respectively. The distribution for husbands and wives did not differ from one another. Analyses of the Depression scale indicated that more male spouses ($n = 9$, 23%), $\chi^2(1, N = 40) = 6.94, p < .01$, and more female spouses (23%) were in the clinical range than would be expected by chance, $\chi^2(1, N = 26) = 4.94, p < .05$.

Young Adults', Adolescents, and Children's Symptoms of Psychological Distress

The means for symptoms of anxiety/depression from the age-appropriate measures and total stress-response symptoms on the IES for young adults, adolescents, and children whose parents had cancer are presented in Table 3. The ANCOVA for symptoms of anxiety/depression revealed a significant main effect for age, $F(2, 82) = 10.57, p < .001$, and a borderline significant interaction of age and sex, $F(2, 82) = 2.84, p = .068$ (no other main or interaction effects were significant). With regard to the main effect for age, children's mean anxiety/depression T score ($M = 45.06$) was significantly lower ($p < .05$, Newman–Keuls test) than the mean T scores for adolescents ($M = 56.93$) or young adults ($M = 56.26$). Because of the effect for age and the borderline interaction of age and sex, we examined simple effects by conducting separate 2 (sex of patient) × 2 (sex of child) ANCOVAs for each age group. There were no effects for sex of patient or child for preadolescent children. For adolescents, there was a significant effect for sex of the adolescent, $F(1, 39) = 11.74, p = .001$, and an interaction of sex of adolescent and sex of patient, $F(1, 39) = 5.80, p = .02$. Specifically, adolescent girls ($M = 60.44$) re-

Table 2
Cancer Patients' and Spouses' Symptoms of Anxiety/Depression and Stress Response Symptoms on the IES

	Women		Men	
	M	*SD*	*M*	*SD*
Anxiety/depression symptoms				
Patients	54.26	9.80	56.00	7.60
Spouses	54.41	10.76	54.81	10.70
IES				
Patients	31.79	7.50	29.92	8.28
Spouses	31.36	9.11	28.35	8.42

Note. IES = Impact of Event Scale.

Table 3.
Young Adults', Adolescents', and Children's Symptoms of Anxiety/Depression and Stress Response Symptoms on the IES

	Patient mother				Patient father			
	Male		Female		Male		Female	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Anxiety/depression								
Young adults	57.60	10.91	56.93	10.10	56.75	10.96	52.00	10.86
Adolescents	50.20	0.63	63.88	10.70	53.00	4.80	55.45	6.31
Children	46.90	6.13	42.00	7.68	43.86	7.07	48.36	8.80
IES								
Young adults	6.89	6.88	12.37	6.34	17.67	4.73	17.33	11.50
Adolescents	10.17	3.95	19.53	6.96	12.63	3.25	12.18	5.29
Children	19.50	5.73	18.00	7.25	17.00	4.24	15.00	9.42

Note. IES = Impact of Event Scale.

ported higher symptoms of anxiety/depression than boys ($M = 51.35$), and girls whose mothers had cancer reported more symptoms than all other groups of adolescents.[4] Finally, for young adults whose parents had cancer, there were no significant main effects or interactions.

The ANCOVA for stress-response symptoms on the IES revealed a significant main effect for age, $F(1, 94) = 3.11, p = .049$; an interaction of age and patient sex, $F(1, 94) = 4.44, p = .014$; and an interaction of sex of respondent and sex of patient, $F(1, 94) = 4.67, p = .033$ (no other main or interaction effects were significant). A Newman–Keuls test showed that the main effect for age was the result of higher IES scores for children ($M = 17.91$) than adolescents ($M = 14.56$) and young adults ($M = 11.82$); the latter two groups did not differ. The interaction of sex of respondent and sex of patient resulted from higher IES scores for sons whose fathers were ill ($M = 14.46$) and daughters whose mothers were ill ($M = 16.34$) than sons of ill mothers ($M = 11.72$) or daughters of ill fathers ($M = 13.67$). Because of the significant differences as a function of age and the interaction of age and patient sex, we conducted separate 2 × 2 ANCOVAS for each age group. There were no effects for preadolescent children. For adolescents, there was a significant main effect for sex of adolescent, $F(1, 45) = 5.24, p = .027$, and a significant interaction of sex of patient and sex of adolescent, $F(1, 45) = 8.61$, $p = .005$. Adolescent girls reported more symptoms on the IES ($M = 15.68$) than adolescent boys ($M = 11.91$). Furthermore, adolescent girls whose mothers had cancer reported more stress-related symptoms on the IES than girls whose fathers were ill or boys whose fathers or mothers were ill. The ANCOVA for young adults revealed a main effect for patient sex, $F(1, 29) = 5.87, p = .022$. Young adults whose fathers were ill ($M = 17.50$) reported more symptoms on the IES than those whose mothers were ill ($M = 10.61$).

We conducted separate analyses of the numbers of male and female young adults in the clinical range on the BSI for anxiety and depression symptoms. More young adult men whose fathers had cancer ($n = 2$, 50%) and more young adult women whose mothers had cancer ($n = 6$, 43%) were in the clinical range on anxiety than expected, $\chi^2(1, N = 4) = 7.11, p < .01$, and $\chi^2(1, N = 16) = 16.79$, $p < .001$, respectively. The percentages of young adults in the clinical range on depression symptoms did not exceed the level expected by chance.

The number of adolescents in the clinical range on the Anxious/Depressed scale revealed that only 1 of the boys (10%) whose fathers had cancer and none of the boys whose mothers had cancer were in the clinical range. Two of the girls (6%) whose fathers had cancer were in the clinical range, and 7 of the girls (25%) whose mothers had cancer were clinically elevated on this scale. Only the proportion of girls whose mothers had cancer exceeded the expected distribution, $\chi^2(1, N = 17) = 18.36, p < .001$.

Examination of the numbers of children in the clinical range on the R-CMAS and the CDI indicated that this sample had low levels of distress compared with normative data for these scales. Only 2 girls and 1 boy exceeded a *T* score of 63 on the R-CMAS; none of the children exceeded a *T* score of 63 on the CDI. It is noteworthy, however, that 12 of the 34 children (35%) scored above the 90th percentile on the Lie scale on the CMAS-R, indicating that this sample tended to present themselves in a favorable or socially desirable manner, $\chi^2(1, N = 34) = 24.17, p < .001$.

Discussion

Cancer patients, their spouses, and their children are confronted with considerable stress at the time of diagnosis. This stress was reflected in the present sample in the symptoms of anxiety/depression and levels of intrusive thoughts and avoidance associated with a stress-response syndrome re-

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[4] The greater distress of adolescent girls whose mothers were ill may have been attributable to a subgroup of girls whose mothers had sex-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 sex-linked cancer ($n = 10$) with those with mothers whose cancer was not sex linked. These groups did not differ on anxiety or depression symptoms ($M = 64.7$ vs. $M = 61.6$, respectively; $t = 0.59$, *ns*) or on stress response syndrome symptoms ($M = 17.0$ vs. $M = 17.2$, respectively; $t = 0.04$, *ns*). Thus, the increased distress of adolescent girls whose mothers had cancer was not attributable to the presence of a sex-linked cancer.

ported by patients and family members. The present findings indicate that patients and their spouses are relatively similar in the levels of distress that they report. The levels of psychological symptoms in this sample of children differed, however, as a function of whether a mother or father had cancer and the individual's age and sex. Distress was strikingly high among adolescent girls whose mothers were diagnosed with cancer.

A first step in understanding the levels of distress in cancer patients and their families is to examine the relationship between distress and objective characteristics of the patients' disease. It is noteworthy that objective data reflecting the severity of patients' cancers were for the most part only moderately related to levels of anxiety/depression symptoms in this sample. Only stress-response symptoms were related to poorer prognosis for patients, spouses, and adolescents; they were also related to a worse stage of cancer for spouses. Perceptions of the seriousness and stressfulness of the patient's cancer were related to both indices of distress for patients, spouses, young adults, and adolescents, although these associations were more consistent with stress-response syndrome symptoms than with anxiety/depression symptoms.

Prior research has produced mixed results concerning the relation between disease characteristics and psychological distress in patients, with a number of studies finding an association between disease parameters and psychological distress, and others not finding an association (e.g., Cella et al., 1987; Marks et al., 1986; Pettingale et al., 1988). Psychological distress has typically been more closely related to patients' self-reports of their disease symptoms (e.g., Given et al., 1993) than to objective indices of disease severity. The independence of anxiety/depression symptoms and disease characteristics in the present sample may have resulted from several factors, including limited variance in several of the disease parameters, the use of a symptom checklist as opposed to indices of current mood used in many prior studies, the relatively young age of the patients in this sample, the assessment of psychological distress near the time of diagnosis rather than at a later point in their patients' experience with the disease, and differences among family members in their awareness of the nature of the parent's cancer. In spite of these issues, the present findings suggest that psychosocial factors may be as important as disease characteristics in understanding symptoms of depression and anxiety and stress-response syndrome symptoms in cancer patients. The data are consistent with models of stress that emphasize the role of cognitive appraisals in determining the meaning and level of threat in explaining individual differences in psychological distress (e.g., Lazarus & Folkman, 1984; Taylor, 1983). Because both cognitive appraisals and psychological distress were measured through self-reports, however, the contribution of shared method variance to these associations is unclear.

Patients' symptoms of anxiety/depression and stress-response syndrome were generally unrelated to family members' distress. With the exception of a moderate correlation between patients' and spouses' reports of anxiety/depression symptoms, the distress of spouses and children were not correlated with that of patients. These data do not suggest that families respond in a similar manner to the diagnosis of cancer in a parent, at least as it is manifested in the levels of psychological distress experienced by family members. Rather, the findings suggest that families may be best characterized by differences among members in their response to the diagnosis, with individuals' cognitive appraisals of the seriousness and stressfulness of the cancer as an important correlate of levels of distress.

Male and female patients and spouses did not differ in symptoms of anxiety/depression or stress-response syndrome. Both patients and spouses reported moderate levels of anxiety/depression and stress-response syndrome symptoms. These findings are similar to those reported by Given et al. (1993), who found that patients and caregivers (primarily spouses) did not differ in self-reported depressive symptoms and that their depressive symptoms were moderately correlated. The percentage of participants who exceeded the normative cutoff for clinical levels of symptoms of anxiety and depression was significantly greater than expected on the basis of normative data for both patients and spouses, and the mean total score on the IES was substantially higher than in a previous study of cancer patients (Horowitz et al., 1993). Thus, the diagnosis of cancer appears to be an equally significant stressor for patients and their spouses. Furthermore, the use of T scores on the BSI that were normed separately for men and women indicates that men and women in the present sample did not differ in anxiety/depression symptoms, once expected sex differences are taken into account. Thus, female patients and spouses were relatively no more distressed than males.

The data on young adult, adolescent, and preadolescent children of these patients suggest that psychological distress is influenced by their age and sex and whether their mother or father is ill. Measures of anxiety/depression symptoms provide somewhat different pictures of distress in children as compared with stress-response symptoms. Based on scores that were transformed using separate norms for each age group, anxiety/depression symptoms were higher for adolescents and young adults than for children. In contrast, total stress-response syndrome scores on the IES were greater for children than for adolescents and young adults. These data are open to two possible interpretations. First, there may be developmental differences in responses to the stress associated with a severe illness in a parent, with younger children more likely to manifest symptoms of a stress-response syndrome than symptoms of negative affect. Previous research has found that intrusive thoughts and emotions and avoidance are distinct from symptoms of generalized anxiety in children exposed to traumatic stress (Pynoos et al., 1987). This pattern may be reflected in the present sample of young children as well. Second, these seemingly contradictory findings may be the result of a response bias in the younger children. A substantial portion of young children (35%) scored above the 90th percentile on the Lie scale from the R-CMAS, indicating a tendency to try to present themselves in a socially desirable light. This may account for their relatively lower endorsement of anxiety/depression symptoms. Because the IES contained a majority of items (5 of 8) that reflected avoidance of their parents' cancer and reminders of it, children's relatively higher scores on this scale may also represent an attempt to minimize or deny the significance of their parents' disease. However, the low reliability of the children's responses on the IES indicates that these findings must be interpreted with caution. Further research on the characteristics of young children's adjustment to parents' cancer is needed.

The findings from both the anxiety/depression symptom measures and the IES indicate that adolescents' and young adults' distress varied as a function of the interaction of the sex of the ill parent and the sex of the child. Stress response syndrome symptoms on the IES were greatest for daughters whose mothers were ill and sons whose fathers were ill. The strongest effect on this measure was found for adolescent girls whose mothers were ill, as they reported the highest levels of stress-response symptoms. Similarly, adolescents' anxiety/depression symptoms differed as a function of sex of adolescent and sex of the patient, with girls whose mothers were ill again reporting the highest symptoms. These findings are consistent with reports of the concerns of daughters of women with breast cancer patients (e.g., Lichtman & Taylor, 1986; Wellisch et al., 1991, 1992), and identify adolescent girls as a highly vulnerable subgroup.

Adolescent girls may be especially vulnerable to the presence of severe disease in a parent for several reasons. Adolescents may be more cognitively aware than younger children of the meaning of the disease as a stressor for the parent with cancer and the family as a whole (cf. Compas et al., 1989). Parents may also be more willing to share information regarding the nature of their cancer with their adolescent as opposed to preadolescent children. Compared with young adults however, adolescents may be less able to cope with the threats associated with parental cancer. Adolescent girls in particular may have been faced with increased stress associated with greater caretaking responsibilities in the family, they may have perceived an increased sense of personal vulnerability to cancer for themselves, or they may have been coping in maladaptive ways. These hypotheses warrant further investigation.

The clinical significance of these findings is evident in the greater than expected proportions of patients and family members in the clinical range for anxiety and depression symptoms. Approximately one third of male patients, male and female spouses, young adult women whose mothers had cancer, and adolescent girls whose mothers had cancer reported significant levels of distress. Although these scores cannot be interpreted as reflective of diagnostic levels of depression or anxiety, they indicate that the impact of cancer on patients and their families is meaningful and may warrant interventions in the form of short-term support services. Clinicians will need to attend to symptoms characteristic of anxiety and depression, as well as those associated with PTSD.

Factors that further elucidate these differences in vulnerability to distress in cancer patients and their families will be important in developing intervention programs targeting those family members in greatest need of psychological support. The present data, combined with those from prior studies, establish that cancer is a marker of risk for patients and their families. Moreover, the diagnosis of cancer in a parent offers an important model for studying stress and adaptation in families exposed to conditions of extreme, acute stress. The processes and mechanisms through which the stress of cancer exacts a toll, including ongoing stress with the family and maladaptive coping responses, now need to be examined.

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