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Self-Blame and Distress Among Women with Newly Diagnosed Breast Cancer

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This study examined relations between behavioral and characterological self-blame attributions for breast cancer and psychological distress in the year following a diagnosis. One hundred fifteen women with newly diagnosed breast cancer participated. First, we predicted that both forms of self-blame would be associated with distress shortly after diagnosis (i.e., at 4 months). Second, we predicted that only characterological self-blame would be related to distress at 7 and 12 months post-diagnosis because behavioral self-blame would enhance perceptions of control, thereby protecting against distress. Results supported the first hypothesis; both forms of self-blame were related to symptoms of anxiety and depression at 4 months post-diagnosis. Findings did not support the second hypothesis because both forms of self-blame continued to be related to distress at 7 and 12 months post-diagnosis. Furthermore, perceptions of control did not mediate the self-blame/distress relation. Implications for social cognitive processes in adaptation to breast cancer are discussed.

KEY WORDS self-blame; attributions; breast cancer; psychological distress.

INTRODUCTION

Psychological adjustment to stressful life events is influenced by cognitive appraisals of such events. Cognitive appraisals have been conceptualized as a precursor to coping with a stressor (Lazarus and Folkman, 1986; Smith *et al.*, 1993; Smith and Kirby, 2001), and can include social comparison, perceptions of optimism and self-efficacy, and causal explanations or attributions. The search for causal factors to explain a stressor may be especially common for events that do not have clear roots. Cancer, and breast cancer in particular, is one such stressor for which there are few clearly known causes. Many women with breast cancer develop theories to explain their diagnoses and personal, or internal, factors are sometimes implicated in this search for causation (Taylor, 1983). The purpose of this study is to examine relations between one type of explanation involving internal causes, attributions of self-blame, and psychological adjustment in the first 12 months following a diagnosis of breast cancer.

There are competing theories regarding the effects of self-blame attributions on psychological adjustment. Some researchers argue that attributions of self-blame correlate with poorer psychological adjustment, including symptoms of depression. For example, the reformulated learned helplessness model predicts that an internal locus of control for negative events can result in the loss of self-esteem, thereby negatively affecting psychological adjustment (Abramson *et al.*, 1978). On the other hand, Janoff-Bulman and Wortman (1977) suggest that blaming oneself can positively affect adjustment, as was evidenced in their study of paralyzed accident victims. These authors hypothesized that perceptions of control were enhanced when victims blamed themselves for their accidents, as internal causes are perceived as controllable and therefore changeable.

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Janoff-Bulman (1979, 1992) attempted to resolve these contradictory findings by distinguishing between two forms of self-blame. *Behavioral* self-blame is defined as blame that is directed at specific behaviors (e.g., "I did not eat the right foods.") in which the person has engaged. Janoff-Bulman contended that when individuals attribute blame for a current stressor to past behaviors, and when they perceive those past behaviors to be modifiable, perceptions of control over future instances are enhanced. Enhancements in perceptions of control, in turn, positively affect psychological adjustment to the stressor. It is important to note that the beneficial effects of behavioral self-blame are not hypothesized to be immediate. Rather, it is proposed that an individual must incorporate this new information into his/her assumptive world, re-establishing and integrating these new data over time.

On the other hand, *characterological* self-blame is marked by blame that is directed to stable aspects of one's personality and character (e.g., "I am the type of person who has bad things happen to her."). Janoff-Bulman (1979, 1992) contended that this form of self-blame is linked to poor psychological adjustment because of its fatalistic nature. Characterological self-blame is likely to elicit feelings of helplessness and poor psychological adjustment because personality and character are considered unchangeable. Janoff-Bulman proposed that self-blame, as studied within the reformulated learned helplessness model, is likely to represent characterological processes whereby self-esteem and adjustment are negatively affected. At the center of the distinction between characterological and behavioral self-blame are perceptions of control, which Janoff-Bulman (1992) contends mediate the effects of self-blame on adjustment.

Several studies have investigated the role played by self-blame attributions in adjustment to cancer. Most of these studies have been cross-sectional, have not distinguished between behavioral and characterological self-blame, and, not surprisingly, findings have been inconsistent (e.g., Gotay, 1985; Houldin *et al.*, 1996; Lowery *et al.*, 1993; Newsom *et al.*, 1996; Taylor *et al.*, 1984). However, a few studies to date have tested the specific relations between behavioral and characterological self-blame and adjustment to breast cancer. Timko and Janoff-Bulman (1985) found that perceived invulnerability to breast cancer recurrence mediated the link between behavioral self-blame and symptoms of depression. That is, cross-sectionally, behavioral self-blame was positively associated with invulnerability, which, in turn, was negatively related to symptoms of depression. Therefore, although there was no direct link between behavioral self-blame and depressive symptoms, this form of self-blame seemed to enhance appraisals of invulnerability to future instances of breast cancer, supporting the protective effect of behavioral self-blame proposed by Janoff-Bulman (1979). In a prospective study, Malcarne *et al.* (1995) found that characterological self-blame was unrelated to distress immediately after a diagnosis, but was associated with greater distress 4 months post-diagnosis in a mixed sample of cancer patients, including women with breast cancer. By contrast, behavioral self-blame was unrelated to distress immediately following a diagnosis, as well as 4 months later. Glinder and Compas (1999), also using a prospective design, reported that behavioral self-blame was linked to poor adjustment near the time of a breast cancer diagnosis and that characterological self-blame was linked to poor adjustment 6 months and 1 year post-diagnosis.

There are several methodological factors that may explain the divergent results of these studies. First, the measurement of attributions of self-blame has varied across studies; whereas some studies simply document the presence or absence of blame attributions (e.g., Newsom *et al.*, 1996), others measure self-blame indirectly through questions concerning responsibility (e.g., Taylor *et al.*, 1984; Timko and Janoff-Bulman, 1985). Second, only some of these studies have distinguished between characterological and behavioral self-blame. Third, outcome measures of adjustment and distress differ widely among studies. Fourth, the samples have been heterogeneous with regard to type and stage of cancer and time since diagnosis. Finally, few studies have examined perceptions of control as a mediator of the relation between self-blame and adjustment. The present study builds on previous studies by measuring both characterological and behavioral self-blame, perceptions of control, and distress in a sample that is homogeneous in type of cancer (i.e., breast cancer) over the first year following a diagnosis. This study extends previous work by exploring relations between self-blame and two distinct forms of psychological distress, symptoms of anxiety and symptoms of depression.

The first set of hypotheses deals with the nature of the relations between behavioral and characterological self-blame and symptoms of distress. According to Janoff-Bulman (1979, 1992), behavioral self-blame is expected to enhance perceptions of control over time, thereby positively affecting

adjustment to breast cancer. On the other hand, characterological self-blame is expected to negatively affect psychological adjustment as a consequence of causal attributions to stable factors such as personality and character (i.e., factors that are not modifiable). Recent studies have found that both behavioral and characterological self-blame are related to psychological distress near the time of a cancer diagnosis, but only characterological self-blame may be related to continued distress in subsequent months (e.g., Glinder and Compas, 1999; Malcarne *et al.*, 1995). Based on these findings, we hypothesized that: (a) shortly following a breast cancer diagnosis (i.e., 4 months), both behavioral self-blame and characterological self-blame will be positively related to symptoms of anxiety and depression, whereas (b) over time (i.e., 7 and 12 months post-diagnosis), only characterological self-blame will be positively associated with symptoms of anxiety and depression.

The second set of hypotheses examines the possible mediating role of perceptions of control on the relations between the two forms of self-blame and psychological distress. Whereas behavioral self-blame is predicted to enhance perceptions of control, and thus over time may improve adjustment to stressful life events, characterological self-blame is thought to elicit feelings of helplessness because control over stressors is deemed not possible, thereby translating into poor psychological adjustment (Janoff-Bulman, 1979, 1992). Therefore, we hypothesized that (a) behavioral self-blame will be positively associated with perceptions of control over cancer recovery and control over cancer recurrence at 7 and 12 months post-diagnosis, which, in turn, will be negatively related to symptoms of anxiety and depression. Conversely, we hypothesized that (b) characterological self-blame will be negatively associated with perceptions of control over cancer recovery and control over cancer recurrence at 7 and 12 months post-diagnosis, which, in turn, will be negatively related to symptoms of anxiety and depression.

METHOD

Participants

Participants were 115 women with newly diagnosed breast cancer ranging in age from 30 to 75 years, with a mean age of 53 years ($SD =$ 9.4 years). Seventy-five percent were married, whereas 7.8% were single, 7.0% were divorced, 6.1% were partnered, and 4.3% were widowed. The mean years of education reported was 14.7 ($SD = 2.5$ years). Representative of northern New England and northern New York State, from which the sample was drawn, 99% of the participants were Caucasian. Women in the sample were diagnosed with invasive ductal carcinoma (61.4%), ductal carcinoma in situ (17.5%), invasive lobular carcinoma (15.8%), tubular carcinoma (3.5%), lobular carcinoma in situ (.9%), and non-specified types of breast cancer (.9). A majority of women in the sample had Stages 0-I breast cancer (60.7%), whereas 34.8% had Stage II, and 4.5% had Stage III. Patients with Stage IV diagnoses, recurrence of breast cancer, previous diagnoses of other treated cancers, psychotic disorders, and cognitive impairments were excluded from this study.

These participants were drawn from a larger randomized waiting list control study comparing the efficacy of supportive-expressive and cognitive-behavioral group interventions for women with diagnosed breast cancer. In order to examine the relations between self-blame and adjustment independent of the effects of the psychological interventions, the current sample is comprised of patients who were assigned to the "waiting list" condition in the larger study. That is, these patients received one of the two types of group intervention 12 months following diagnosis, whereas their counterparts received the group intervention approximately 4 months post-diagnosis. All data reported here were collected prior to participation in either of the psychosocial interventions. Inclusion in this study was based on availability of interview data (to assess behavioral and characterological self-blame) and complete questionnaire data at two of the three assessments in the study. For participants who were missing one of the three assessments, a common data substitution procedure was used.[6]

[6]There were 25 participants who fell into this category, with missing data accounting for 6.0% of all variables. Before data substitution, we compared the group with complete data to the group with missing data. No significant differences emerged between the groups on the constructs of interest (i.e., self-blame, perceptions of control, symptoms of anxiety and depression) or the demographic variables. Where missing data occurred, we transformed the two available raw data scores to *z*-scores. The average of the two *z*-scores was used for the third time point, the missing variable. This average *z*-score was then transformed back to a raw score and substituted for the missing variable. We then compared, across all variables, the group for whom we had complete data and the group for whom we substituted transformed average z-scores. No significant differences emerged.

Procedure

Participants were recruited from the Breast Care Center at Fletcher Allen Health Care in Burlington, Vermont and the Glens Falls Cancer Center in Glens Falls, New York. Following a diagnosis of breast cancer, women were told about the study by medical and support service staff at the two participating cancer centers. Written consent forms were mailed to prospective participants and interview appointments were made. Interviews were conducted, on average, 14.2 weeks ($SD = 7.4$ weeks) following participants' breast cancer diagnoses.[7] During the appointments (face-to-face or over the telephone), participants completed a structured interview that included questions to assess behavioral and characterological self-blame. Time 1 questionnaires were returned to us, on average, 17.0 weeks ($SD = 6.7$ weeks) post-diagnosis; all questionnaires were returned to us within 1 month of being mailed. Follow-up questionnaires were mailed to participants 3 months (i.e., Time 2) and 8 months (i.e., Time 3) after Time 1. That is, self-reports were collected at 4, 7, and 12 months post-diagnosis.

Measures

Self-Blame Attributions

Based on a protocol used by Glinder and Compas (1999), during the structured interview developed for this study participants were asked about their degree of behavioral and characterological self-blame for breast cancer:

> We have found that some women blame themselves for their breast cancer and some women don't blame themselves at all. I'd like to ask you two questions about whether, and how much, you blame yourself for your cancer. On a scale of 1 (not at all) to 4 (extremely), how much do you blame yourself for the kinds of things you did (in other words, for having engaged in any specific behaviors that you feel led to your cancer)? On a scale of 1 to 4, how much do you blame yourself for the kind of person you are (in other words, for being the kind of person who has bad things like cancer happen to them)?

Symptoms of Anxiety

Participants completed the Beck Anxiety Inventory (BAI; Beck and Steer, 1990) to measure the degree to which they experienced symptoms of anxiety. The BAI presents 21 common symptoms of anxiety such as "unable to relax" and "fear of losing control." Respondents were asked to report the frequency they experienced these symptoms along a 4-point scale (0 = *not at all*; 3 = *severely*). Scores range from 0 to 63, with high scores reflecting high symptoms of anxiety.

Symptoms of Depression

Depressive symptoms were measured with the Beck Depression Inventory-II (BDI-II; Beck *et al.*, 1996). The BDI-II asks participants to rate their degree of agreement on 21 items tapping symptoms of depression such as sadness, loss of pleasure, and fatigue. Respondents rated their degree of experience on these items along a 4-point scale (e.g., 0 = *I do not feel sad*; 3 = *I am so sad or unhappy that I can't stand it*). Possible scores range from 0 to 63, with high scores reflecting high depressive symptoms.

Perceptions of Control

Two items from the Breast Cancer Perceived Control Scale (Glinder *et al.*, 2004) were used to measure perceptions of control over breast cancer recovery and breast cancer recurrence: "How much personal control do you think you have over the outcomes of your breast cancer including recovering from your current cancer?" and "How much personal control do you think you have over the outcomes of your breast cancer including preventing breast cancer from coming back?" Both items were scored on a 4-point scale (1 = *no control at all*; 4 = *a great deal of control*), with high scores indicating high amounts of perceived control.

Demographic Information

Several demographic variables, including age, education, ethnicity, and marital status were

[7] Participants enrolled in the study shortly after breast cancer diagnoses and were randomly assigned to an immediate intervention or wait list group. However, data (interviews and self-administered questionnaires) were not collected until a set number of women comprised one of the two groups (i.e., intervention or wait list). That is, we did not begin data collection until a woman's randomly assigned group was comprised of 7 other women.

collected from participants during the structured interviews.

Medical Variables

Medical chart reviews provided data on cancer diagnoses, cancer stages, and treatment.

Statistical Power

A power analysis was conducted to determine the size of effects that could be adequately detected with the current sample size. Given an alpha level of .05, power of .80, and using multiple regression analysis with at most seven independent variables (number of variables in prospective regression models predicting distress), an effect size of .35 (i.e., medium) could be detected with the current sample (Cohen and Cohen, 1983).

RESULTS

Table I provides correlations, means, standard deviations, and, where appropriate, coefficient alphas for all variables.[8]

Descriptive Analyses

Participants in this study reported relatively low levels of self-blame for their breast cancer diagnoses. The mean reported levels of behavioral and characterological self-blame were between 1 (*not at all*) and 2 (*somewhat*). These means are comparable to other studies investigating self-blame among newly diagnosed breast cancer patients (e.g., Glinder and Compas, 1999). However, there was adequate variance in these variables (behavioral self blame $SD = .78$; characterological self-blame $SD = .61$) to detect effects from the regression and correlation analyses presented below. Specifically, 36.5% of the sample fell between 2 (*somewhat*) and 4 (*extremely*) on their reported levels of behavioral self-blame, and 24.3% of the sample fell between 2 and 4 in their reported levels of characterological self-blame. A good degree of perceived control over cancer recovery and perceived control over cancer recurrence was reported by the participants, as well. At Times 1, 2, and 3, the mean levels of perceived control over cancer recovery were 3.03, 3.00, and 2.94, respectively. At these same time points, participants reported similar, but slightly lower, mean levels of perceived control over cancer recurrence (2.41, 2.33, and 2.24, respectively). Overall, then, participants perceived "moderate" control over their recovery from breast cancer, and they assigned between "a little bit" and "moderate" control over breast cancer recurrence. Finally, the mean levels of depressive symptoms decreased across the three assessments (11.50, 10.53, and 9.35), at each point reflecting mild/normal levels. The mean levels of symptoms of anxiety also decreased over the course of the study (10.00, 9.62, and 8.99), with these means reflecting mild levels, as well.

Correlational Analyses

Correlational analyses were conducted to examine the bivariate relations between self-blame, perceptions of control, and psychological distress. As shown in Table I, behavioral self-blame was significantly related to symptoms of anxiety and depression at Time 1 ($r = .24$ and $r = .25$, respectively) and at Time 3 ($r = .25$ and $r = .22$, respectively); no significant relations emerged between behavioral self-blame and symptoms of anxiety and depression at Time 2 ($r = .12$ and $r = .15$, respectively). We compared the correlations between behavioral self-blame and distress at Time 1 and Time 2, as well as between behavioral self-blame and distress at Time 2 and Time 3, using a test for non-independent samples. The correlations at all three time periods did not significantly differ from each other; that is, correlations between behavioral self-blame and symptoms of anxiety at Time 1 and Time 2 did not significantly differ ($t = 1.61$, n.s.), nor did correlations between behavioral self-blame and anxiety at Time 2 and Time 3 ($t = 1.61$, n.s.). In addition, correlations between behavioral self-blame and symptoms of depression at Time 1 and Time 2 did not significantly differ ($t = 1.46$, n.s.), nor did correlations between behavioral self-blame and symptoms of depression at Time 2 and Time 3 ($t = 1.20$, n.s.). Thus,

[8]Data transformations were utilized for normality purposes. Squared transformations were calculated for appraisals of control over recovery at Times 1 and 2, and for appraisals of control over recurrence at Time 1. Log transformations were calculated for symptoms of anxiety at Times 1, 2, and 3, and for behavioral and characterological self-blame. Square root transformations were calculated for symptoms of depression at Times 1, 2, and 3. All analyses reported reflect data with these transformations.

Table I. Correlations, Means, Standard Deviations, and Coefficient Alphas for All Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Behavioral S.B	—													
2. Charact. S.B	.31***	—												
3. Recovery Cont, T1	−.05	−.05	—											
4. Recurr. Cont, T1	−.22*	−.15	.55***	—										
5. Anxiety, T1	.24*	.11	−.27**	−.27**	—									
6. Depression, T1	.25**	.39***	−.26**	−.29**	.59***	—								
7. Recovery Cont, T2	−.03	−.11	.46***	.36***	−.31***	−.19*	—							
8. Recurr. Con., T2	−.04	−.11	.37***	.46***	−.31***	−.17	.55***	—						
9. Anxiety, T2	.12	.15	−.26**	−.12	.67***	.46***	−.29**	−.26**	—					
10. Depression, T2	.15	.32***	−.30***	−.27**	.50***	.72***	−.23*	−.25**	.60***	—				
11. Recovery Cont, T3	−.07	−.08	.38***	.40***	−.26**	−.20*	.56***	.47***	−.29**	−.35***	—			
12. Recurr. Cont, T3	−.05	−.01	.27**	.35***	−.24**	−.12	.40***	.52***	−.13	−.21*	.49***	—		
13. Anxiety, T3	.25**	.15	−.15	−.19*	.69***	.42***	−.32***	−.27**	.61***	.42***	−.33***	−.29**	—	
14. Depression, T3	.22*	.32***	−.23*	−.23*	.54***	.73***	−.20*	−.19*	.54***	.80***	−.31***	−.27**	.55***	—
Mean	1.52	1.30	3.03	2.41	10.00	11.50	3.00	2.33	9.62	10.53	2.94	2.24	8.99	9.35
Standard deviation	.78	.61	.88	.99	8.37	8.32	.94	1.03	7.76	8.62	.89	.93	8.23	8.10
Coefficient alpha	—	—	—	—	.90	.91	—	—	.86	.92	—	—	.89	.92

Note. Behavior S. B.: Behavioral Self-Blame; Charact. S. B.: Characterological Self-Blame; Recovery Cont.: Perceptions of Control over Cancer Recovery; Recurr. Cont.: Perceptions of Control over Cancer Recurrence; Anxiety: Symptoms of Anxiety; Depression: Symptoms of Depression.

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

although the bivariate relations between behavioral self-blame and symptoms of distress were not significant at Time 2, these associations did not differ from the significant relations found at Times 1 and 3. The overall pattern suggests that behavioral self-blame is negatively linked to symptoms of distress, both anxiety and depression, in the first year following a breast cancer diagnosis.

For characterological self-blame, Table I shows that it was significantly associated with symptoms of depression at all three assessment points ($r = .39$, $r = .32$, and $r = .32$, respectively), but that it was unrelated to symptoms of anxiety ($r = .11$, $r = .15$, $r = 15$, respectively). Given the relatively robust correlations between symptoms of anxiety and depression at Times 1, 2, and 3 ($r = .59$, $r = .60$, and $r = .55$, respectively), we compared the relations between characterological self-blame, symptoms of anxiety, and symptoms of depression using a test for non-independent samples. There were significant differences at all three times such that the correlations between characterological self-blame and symptoms of depression at Times 1, 2, and 3 significantly differed from the correlations between characterological self-blame and symptoms of anxiety at Times 1, 2 and 3 ($t = -3.60$, $p = .001$; $t = -2.13$, $p = .02$; and $t = -2.00$, $p = .02$, respectively). Thus, results suggest that characterological self-blame is negatively associated only with depressive symptoms in the year following a breast cancer diagnosis.

With regard to the relations between behavioral and characterological self-blame and perceptions of control, neither form of self-blame was significantly associated with control perceptions at Times 2 and 3. One significant correlation emerged between self-blame and Time 1 control perceptions: behavioral self-blame was negatively related to perceptions of control over cancer recurrence ($r = -.22$). These results lend little support to the hypothesis that behavioral self-blame is associated with enhancements in control appraisals.

Multiple Regression Analyses

A series of regression models was estimated to assess cross-sectional and prospective relations between both types of self-blame and symptoms of anxiety and depression. All regression analyses controlled for participant age, education, and stage of breast cancer (see Table II for relations between control variables and all other study variables). In addition, the time span between interviews (when self-blame was measured) and the baseline measures of anxiety and depressive symptoms was entered into each model as a control variable because the range of time between these two data collection periods varied. Behavioral and characterological self-blame were entered into each regression model simultaneously to account for unique variance explained for

Table II. Correlations of Self-Blame, Distress, and Perceptions of Control with Demographic and Medical Variables

	Cancer Stage	Age	Education	Time from diagnosis to Time 1
Behavioral Self-Blame	.07	−.30**	.18	.09
Characterological Self-Blame	−.03	−.18	−.01	.10
Control over Recovery, Time 1	−.09	.01	−.03	.03
Control over Recurrence, Time 1	−.04	.11	−.08	.05
Symptoms of Anxiety, Time 1	.03	−.16	−.12	.20*
Symptoms of Depression, Time 1	.11	−.22*	−.04	.23*
Control over Recovery, Time 2	−.08	.01	−.05	.06
Control over Recurrence, Time 2	−.07	.09	.03	.05
Symptoms of Anxiety, Time 2	.10	−.02	−.19*	.11
Symptoms of Depression, Time 2	.33***	−.12	−.15	.17
Control over Recovery, Time 3	−.20*	−.07	.18	−.10
Control over Recurrence, Time 3	−.09	.08	.10	.10
Symptoms of Anxiety, Time 3	−.04	−.05	−.09	.09
Symptoms of Depression, Time 3	.23**	−.10	−.14	.15

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

by each of these constructs. Although behavioral and characterological self-blame were moderately correlated ($r = .31$), the VIF statistics associated with each self-blame independent variable in each regression model were all low enough (i.e., less than 10.00) not to warrant concern over multicollinearity.

Table III provides results of the regression models. Results show that behavioral self-blame significantly predicted symptoms of anxiety at Time 1 ($\beta = .27$), whereas characterological self-blame was unrelated to Time 1 symptoms of anxiety ($\beta = .07$). Characterological self-blame significantly predicted symptoms of depression at Time 1 ($\beta = .41$), whereas behavioral self-blame was unrelated to symptoms of depression ($\beta = .09$). Therefore, at approximately 4 months post-diagnosis, making behavioral self-blame attributions was related to symptoms of anxiety, whereas making characterological self-blame attributions was linked to symptoms of depression.

In the prospective analyses (see Table III), characterological self-blame significantly predicted symptoms of anxiety at Time 2 ($\beta = .16$) after controlling for symptoms at Time 1, but behavioral self-blame was unrelated to Time 2 anxiety symptoms. Furthermore, neither form of self-blame was significantly related to symptoms of depression at Time 2. Results presented in Table III also show that behavioral self-blame significantly predicted symptoms of anxiety at Time 3 ($\beta = .20$) after controlling for Time 1 symptoms, but that characterological self-blame was unrelated to anxiety. In addition, neither form of self-blame affected symptoms of depression 12 months post-diagnosis. Thus, findings demonstrate that making characterological self-blame attributions shortly after diagnosis is related to increased symptoms of anxiety 3 months later, and that making behavioral self-blame attributions shortly after diagnosis is related to increased symptoms of anxiety 8 months later.

Mediational Analyses

The second hypothesis deals with the possible mediating effect of perceptions of control on the relations between self-blame and symptoms of anxiety and depression; that is, we hypothesized that, at 7 and 12 months post-diagnosis, behavioral self-blame would be positively associated with perceptions of control whereas characterological self-blame would be negatively associated with control perceptions. The first step in testing for mediation is to establish a significant relation between the independent and dependent variables (Baron and Kenny, 1986). Results of the regression analyses of behavioral self-blame (see Table III) showed that it significantly (and positively) predicted symptoms of anxiety 12 months following a breast cancer diagnosis ($\beta = .20$). Although this association is positive (instead of negative, as predicted), we examined it for mediation by perceptions of control. With regard to characterological self-blame, results showed that it positively predicted symptoms of anxiety at Time 2 ($\beta = .16$).

Table III. Regression Models Predicting Distress from Self-Blame

Model	β	p-value
Model 1: Symptoms of Anxiety, Time 1[a]		
Breast Cancer Stage	.06	n.s.
Age	−.06	n.s.
Education	−.15	.10
Time from Diagnosis to Time 1 Questionnaire	.16	.09
Behavioral Self-Blame	.27	.01
Characterological Self-Blame	.07	n.s.
Model 2: Symptoms of Depression, Time 1[b]		
Breast Cancer Stage	.16	.06
Age	−.08	n.s.
Education	−.03	n.s.
Time from Diagnosis to Time 1 Questionnaire	.17	.05
Behavioral Self-Blame	.09	n.s.
Characterological Self-Blame	.41	.001
Model 3: Symptoms of Anxiety, Time 2[c]		
Symptoms of Anxiety, Time 1	.63	.001
Breast Cancer Stage	.13	n.s.
Age	.12	n.s.
Education	−.06	n.s.
Time from Diagnosis to Time 1 Questionnaire	−.01	n.s.
Behavioral Self-Blame	.00	n.s.
Characterological Self-Blame	.16	.05
Model 4: Symptoms of Depression, Time 2[d]		
Symptoms of Depression, Time 1	.64	.001
Breast Cancer Stage	.30	.001
Age	.07	n.s.
Education	−.11	.08
Time from Diagnosis to Time 1 Questionnaire	.01	n.s.
Behavioral Self-Blame	.00	n.s.
Characterological Self-Blame	.09	n.s.
Model 5: Symptoms of Anxiety, Time 3[e]		
Symptoms of Anxiety, Time 1	.65	.001
Breast Cancer Stage	−.03	n.s.
Age	.08	n.s.
Education	−.07	n.s.
Time from Diagnosis to Time 1 Questionnaire	−.09	n.s.
Behavioral Self-Blame	.20	.02
Characterological Self-Blame	.06	n.s.
Model 6: Symptoms of Depression, Time 3[f]		
Symptoms of Depression, Time 1	.63	.001
Breast Cancer Stage	.19	.01
Age	.09	n.s.
Education	−.12	n.s.
Time from Diagnosis to Time 1 Questionnaire	−.02	n.s.
Behavioral Self-Blame	.07	n.s.
Characterological Self-Blame	.09	n.s.

[a] $F(6, 105) = 3.19$, $p < .01$, $R^2 = .11$.
[b] $F(6, 106) = 6.99$, $p < .001$, $R^2 = .25$.
[c] $F(7, 101) = 12.00$, $p < .001$, $R^2 = .43$.
[d] $F(7, 106) = 23.13$, $p < .001$, $R^2 = .59$.
[e] $F(7, 101) = 15.18$, $p < .001$, $R^2 = .50$.
[f] $F(7, 106) = 17.64$, $p < .001$, $R^2 = .52$.

The second step outlined by Baron and Kenny (1986) is to establish a significant association between the independent variable and the mediator; in this case, the second step was to establish significant relations between behavioral and characterological self-blame and perceptions of control over cancer recovery and control over cancer recurrence. First, two regression models were estimated to test for the

effect of behavioral self-blame on control perceptions at Time 3, controlling for perceptions of control at Time 1. Results showed that the regression models predicting perceptions of control over cancer recovery and control over cancer recurrence were statistically significant (F [2, 114] = 9.75, $p < .001$, $R^2 = .15$; F [2, 114] = 5.89, $p < .01$, $R^2 = .12$; respectively). However, behavioral self-blame did not significantly predict Time 3 perceptions of control over cancer recovery ($\beta = -.05$, n.s.) or Time 3 perceptions of control over cancer recurrence ($\beta = .02$, n.s.) beyond the variance accounted for by baseline (i.e., Time 1) levels of control perceptions of recovery and recurrence ($\beta = .38$, $p < .001$; $\beta = .35$, $p < .001$; respectively). Therefore, these data do not meet Baron and Kenny's second criterion for mediation.

Next, two regression models were estimated to test for the effect of characterological self-blame on control perceptions at Time 2, controlling for perceptions of control at Time 1. Although both models were significant, characterological self-blame did not significantly predict Time 2 perceptions of control over cancer recovery (F [2, 114] = 16.12, $p < .001$, $R^2 = .21$; $\beta = -.09$, n.s.) or perceptions of control over cancer recurrence (F [2, 114] = 14.91, $p < .001$, $R^2 = .21$; $\beta = -.05$, n.s.). Baseline levels of perceptions of control over cancer recovery and control over cancer recurrence were significant predictors of control perceptions at Time 2 ($\beta = .46$, $p < .001$; $\beta = .45$, $p < .001$; respectively). These data also do not meet the second criterion set forth for mediation (Baron and Kenny, 1986). In sum, our results do not support a mediational role played by perceptions of control over cancer recovery or control over cancer recurrence on the relations between self-blame attributions and psychological distress.

DISCUSSION

This study was conducted to examine the role played by self-blame attributions in psychological adjustment to breast cancer. In our first hypothesis, we predicted that both forms of self-blame would be positively associated with psychological distress shortly following a diagnosis. As expected, results showed that both forms of self-blame were linked to distress 4 months following a breast cancer diagnosis. Specifically, correlational analyses revealed that behavioral self-blame was related to both forms of psychological distress at 4 months post-diagnosis, and regression results showed that behavioral self-blame significantly predicted symptoms of anxiety 4 months following a diagnosis. For characterological self-blame, correlational analyses revealed a significant association with symptoms of depression, with regression analysis replicating this finding. These cross-sectional findings support Janoff-Bulman's (1992) contention that psychological distress is an immediate reaction to both forms of self-blame, and they replicate cross-sectional results reported by Glinder and Compas (1999).

Second, we hypothesized that in the months following a breast cancer diagnosis only characterological self-blame would predict psychological distress. Specifically, it was predicted that, over time, behavioral self-blame attributions would enhance perceptions of control, thereby protecting against psychological distress. However, correlational analyses showed that behavioral self-blame was positively associated with both forms of distress approximately one year following a diagnosis. Furthermore, our correlational findings suggest a *trend* that behavioral self-blame is linked to poor adjustment 7 months post-diagnosis, as well. Multiple regression analyses revealed that behavioral self-blame was unrelated to either form of distress 7 months following a diagnosis, but that it predicted symptoms of anxiety 12 months post-diagnosis. It is possible that we did not find significant effects of behavioral self-blame on depressive symptoms at 7 and 12 months post-diagnosis on account of the role played by breast cancer stage (see Table II and Table III); that is, breast cancer stage was the most powerful predictor of depressive symptoms, after baseline symptoms, at both 7 and 12 months post-diagnosis. By themselves, baseline depressive symptoms and breast cancer stage accounted for 62% of the variance in symptoms of depression at 7 months, and they explained 56% of the variance in symptoms of depression at 12 months. This pattern is consistent with previous findings that the severity of a cancer diagnosis, as reflected by stage, is not related to initial distress but emerges as a predictor of later distress (Compas *et al.*, 1999). Overall, these results suggest that behavioral self-blame does not, over time, protect against psychological distress after a breast cancer diagnosis; in fact, our findings suggest that behavioral self-blame negatively affects adjustment throughout the year following a diagnosis.

With regard to characterological self-blame, correlational analyses showed significant associations with depressive symptoms at 4, 7, and 12 months post-diagnosis. Furthermore, correlations between

characterological self-blame and symptoms of anxiety at 4, 7, and 12 months post-diagnosis were significantly different from the relations found between characterological self-blame and depressive symptoms. These bivariate findings suggest specificity with regard to the effect of characterological self-blame; that is, these results suggest that this form of self-blame negatively impacts depressive symptoms rather than symptoms of anxiety. Multiple regression results revealed a slightly different pattern, however. Although characterological self-blame significantly predicted symptoms of depression 4 months after diagnosis, it was unrelated to depressive symptoms at 7 and 12 months post-diagnosis. Rather, results showed that characterological self-blame significantly predicted symptoms of anxiety 7 months post-diagnosis. It is possible that we were unable to detect significant effects of characterological self-blame on depressive symptoms at 7 and 12 months post-diagnosis because of the powerful role played by breast cancer stage (discussed above), as well as on account of the stability of depressive symptoms from baseline to 7 and 12 months post-diagnosis. Additionally, the significant regression coefficient of characterological self-blame on symptoms of anxiety at 7 months differs from correlational findings, though the magnitude of the beta is similar to the magnitude of the correlation coefficient (which was nonsignificant). Overall, these results support a negative effect of characterological self-blame on adjustment, consistent with findings reported by Malcarne *et al.* (1995) and by Glinder and Compas (1999). Although correlational results suggest specificity with regard to the effect of characterological self-blame on depressive symptoms, multivariate results did not uniformly support this contention, and therefore further research is needed.

In our second hypothesis, we also predicted that perceptions of control would mediate relations between self-blame and distress 7 and 12 months following a breast cancer diagnosis. That is, we expected behavioral self-blame to be positively related to control perceptions, which, in turn, would be negatively associated with distress. Additionally, we predicted that characterological self-blame would be negatively associated with control perceptions, which, in turn, would be negatively related to distress. Our results did not support these predictions. In fact, both forms of self-blame were unrelated to perceptions of control across the three time points of the study (with the exception being a negative association between behavioral self-blame and perceptions of control over cancer recurrence at Time 1, contrary to our prediction). Overall, our results suggest that self-blame does not affect perceptions of control over cancer recovery or perceptions of control over cancer recurrence in the year following a diagnosis.

Taken together, these results suggest that behavioral self-blame negatively affects adjustment throughout the year following a breast cancer diagnosis; that is, behavioral self-blame was associated with both forms of distress, symptoms of depression and symptoms of anxiety. Furthermore, we failed to find enhancements in control perceptions from behavioral self-blame attributions. It is possible that protective effects of behavioral self-blame on adjustment arise after longer periods, as one year may not be sufficient for breast cancer patients to integrate the hypothesized enhancements of control into their assumptive worlds. It also is possible that participants blamed their past behaviors, but did not view these behaviors as modifiable. Alternatively, it is possible that blaming one's past behaviors, and presumably believing future behaviors can be altered, creates feelings of anxiety in patients as they terminate treatment and resume normal, daily activities. It may be psychologically burdensome to monitor one's behaviors for commonly-accepted "risk factors" for breast cancer recurrence, thereby eliciting feelings of uneasiness and tension in recovering patients. With regard to characterological self-blame, our correlational findings suggest specificity in its negative effects. That is, our bivariate relations suggest that characterological self-blame is associated with depressive symptoms only. Our multiple regression findings suggest that its effect may not be limited to symptoms of depression, though additional research is needed. Although this is the first study of which we are aware to measure symptoms of anxiety and depression separately, our findings are consistent with results from other studies using composite measures of distress including depressive and anxiety symptoms (e.g., Malcarne *et al.*, 1995).

This study has several limitations. First, we measured self-blame attributions at only one time. Although attributions of self-blame may be stable over the year following a breast cancer diagnosis (e.g., Malcarne *et al.*, 1995), we cannot comment on the stability of the construct in the current study because self-blame was assessed only once, shortly after diagnosis. In a related vein, measuring self-blame once precludes us from examining the reciprocal processes between self-blame and psychological distress evidenced in other studies (e.g., Glinder and Compas,

1999). Second, the independent and dependent variables in this study were measured via self-reports, and thus share common method variance. Clinical assessments of psychological distress, as well as cross-informant ratings, would reflect methodological improvements for future work. Third, the time span marking this study (1 year following diagnosis) represents a short time in the long period of recovery from breast cancer. Future studies should therefore examine the processes of adjustment to breast cancer over a longer period, and with a larger sample of participants.

In sum, our results suggest that both behavioral and characterological self-blame attributions result in poor psychological adjustment in the year following a breast cancer diagnosis. In fact, our findings suggest that behavioral self-blame negatively affects both symptoms of anxiety and symptoms of depression throughout the year following a diagnosis. On the other hand, our results suggest that characterological self-blame may specifically impact depressive symptoms, though further research on this topic is necessary. Contrary to Janoff-Bulman (1992), our findings did not indicate that blaming one's past behaviors for breast cancer enhances perceptions of control over recovery or perceptions of control over recurrence; therefore, behavioral self-blame did not protect against psychological distress in the year following a breast cancer diagnosis.

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