

Dispositional and Stressor-Related Emotion Regulation in the Context of a Chronic, Life-Limiting Stressor

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ABSTRACT In the context of efforts to regulate emotion during chronic stressors, both dispositional response tendencies (affect intensity, negative and positive expressivity) and stressor-related coping through emotional approach (processing and expressing emotions) are relevant to adjustment. In women with metastatic breast cancer ($N = 103$), contributions of self-reported emotional processing and expression related to cancer, as well as dispositional expressivity to adaptive outcomes across 3 months were examined. In the context of high dispositional expressivity, an increase in emotional expression predicted improvements in depressive symptoms and life satisfaction. Emotional processing at study entry predicted increased depressive symptoms and intrusive thoughts, and declining life satisfaction among highly expressive women. Increasing emotional processing predicted improved depressive symptoms in the context of high expressivity. Increases in emotional approach coping were associated with a more arduous cancer experience. Findings highlight the importance of the person-situation fit in linking emotion-related constructs to adjustment during unremitting stressors.

The task of managing emotions over the course of profound, chronic stressors poses a host of challenges. In the context of unremitting threat, intentional attempts to express and process emotions related to the experience can confer benefit by engendering social support,

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clarifying priorities and concerns, and facilitating discovery of meaning and cognitive adaptation to the stressor (e.g., Keltner & Gross, 1999; Stanton, Kirk, Cameron, & Danoff-Burg, 2000). Alternatively, prolonged, persistent focus on processing and expressing negative emotions may erode interpersonal and intrapersonal resources over time (e.g., Alferi, Carver, Antoni, Weiss, & Duran, 2001). Defining the conditions under which processing and expressing stressor-related emotions is adaptive carries both theoretical and practical import (Kennedy-Moore & Watson, 2001). The primary goal of the present research was to examine the utility of stressor-specific emotion regulation processes (i.e., emotional expression and processing) and core dispositional emotional response tendencies (i.e., composite of affect intensity, negative expressivity, and positive expressivity) in adjustment to a chronic, life-limiting disease.

In individuals diagnosed with chronic and life-limiting disease, the experiences of relinquishing or altering cherished life goals, contending with difficult and changing medical treatments, confronting mortality, and experiencing effects on intimate relationships all are likely to evoke intense emotions. Metastatic breast cancer (i.e., cancer that has spread from the original site to other parts of the body and that is likely to shorten the life span) represents an unremitting, often uncontrollable, and profound stressor in which stressor-specific emotion regulation processes and dispositional emotional response tendencies are likely to carry adaptive significance. To assess self-reported, stressor-specific emotion regulation, several researchers have used Stanton and colleagues' measures of coping through emotional approach (EAC; Stanton, Danoff-Burg, Cameron, & Ellis, 1994, Stanton, Kirk, et al., 2000), which taps two component emotion regulation processes: *emotional expression* involves active efforts under stressful circumstances to communicate or symbolize emotional experience, whereas *emotional processing* involves attempts to acknowledge and understand stressor-related emotions (Stanton, Kirk, et al., 2000). Cross-sectional data support the hypothesis that coping through emotional approach is associated with less distress, pain, fatigue, and impairment in the context of chronic pain and fibromyalgia (Smith, Lumley, & Longo, 2002; van Middendorp et al., 2008).

Coping through emotional expression with regard to the cancer experience also predicts better adjustment to early-stage breast cancer in longitudinal studies. Stanton, Danoff-Burg, and colleagues

(2000) investigated the role of emotional expression in a 3-month longitudinal study of women who recently had completed medical treatment for early-stage breast cancer. After initial values on dependent variables, participant age, and coping strategies other than emotional expression were controlled statistically, women who were more emotionally expressive regarding the cancer experience evidenced an improvement in vigor and perceived good health, as well as a decline in distress at follow-up (particularly for women high in dispositional hope; Snyder et al., 1991). In addition, women high in cancer-related emotional expression, coupled with high dispositional hope, had fewer medical appointments for cancer-related morbidities during the course of the study. For women who perceived their social environment as highly receptive, coping through emotional expression also predicted enhanced quality of life.

In another longitudinal study, coping through emotional expression approximately four months following breast cancer diagnosis predicted an increase in perceptions of benefit in the cancer experience (e.g., strengthened relationships, enhanced life appreciation) over the next 18 months (Manne et al., 2004; cf. Lechner, Carver, Antoni, Weaver, & Phillips, 2006, Study 2). This relationship was not found for the women's partners, but patients perceived more benefit when their partners reported high emotional expression. These studies suggest that expression of cancer-related emotions is adaptive for women facing early-stage breast cancer. Regarding women with metastatic disease, randomized controlled trials of group interventions designed to promote emotional expression related to the cancer experience have yielded positive effects on such outcomes as depressive symptoms, mood, cancer-related intrusive thoughts, and social functioning (Classen et al., 2001; Goodwin et al., 2001; Kissane et al., 2007). Thus, at least in a supportive context with professional guidance, women with metastatic breast cancer can benefit from cancer-related emotional expression.

The relation of cancer-related emotional processing with salutary outcomes is less consistent. In the Stanton, Danoff-Burg, et al. (2000) longitudinal study of breast cancer patients, emotional processing was related to better adjustment in zero-order correlations, but processing predicted increased distress in regression analyses, when emotional expression was controlled statistically. Lechner et al. (2006, Study 2) reported a significant relation of cancer-related emotional processing and perceiving benefit in the cancer experience

at 2 months after surgery, but early processing did not predict benefit-finding 5 years later. Manne et al. (2004) found that higher emotional processing by partners (but not breast cancer patients) at 4 months after diagnosis predicted maintenance of their own perceptions of cancer-related benefits over time, whereas lower processing predicted declining perceptions of benefit. Certainly, effects of emotional processing might be time-dependent, such that efforts to understand emotions are more likely to be adaptive when they occur early in the stressor trajectory, facilitating efficient emotional expression and goal pursuit. Emotional processing also might be useful to the extent that it is channeled through emotional expression, whereas the variance unique to emotional processing might signify a ruminative component, particularly when processing continues long after stressor onset (Stanton, Danoff-Burg, et al., 2000).

Overall, research suggests that emotional expression is more likely to have direct effects on adjustment than is emotional processing; this accumulating evidence led us to hypothesize that initially high or increasing emotional expression related to cancer would be adaptive. We also explored the relation of cancer-related emotional processing with adjustment. We focused not only on coping at study entry, but also on increasing engagement in coping, owing to the chronic and potentially fluctuating demands of the stressor. In the event that increases in coping through emotional approach predicted changes in adjustment, we also were interested in identifying factors that predict increased engagement in coping within the context of a chronic stressor. We reasoned that factors indicating a more arduous metastatic cancer experience (i.e., chemotherapy receipt, initiation of a new medical treatment, indication of advancing disease, more recent diagnosis) would prompt an increase in coping through emotional approach.

Evidence for moderating conditions (e.g., personality attributes, social receptivity) on the effects of emotional expression and processing, as well as the likelihood that enduring dispositions might be particularly influential during the experience of chronic adversity, prompted us also to examine the role of dispositional emotional response tendencies in adjustment to chronic disease. Gross and John (e.g., 1995, 1997, 1998) identified dispositional differences in strength of emotional response tendencies (i.e., affect intensity) and their expression (i.e., positive expressivity, negative expressivity). Gross and John (1998) demonstrated that measures of these three facets

form a broader construct reflecting core emotional expressivity. In themselves, strong (or weak) dispositional tendencies toward experiencing and expressing emotions are neither inherently adaptive nor maladaptive (e.g., Kring & Werner, 2004; Mennin, Holaway, Fresco, Moore, & Heimberg, 2007). Instead, personal attributes and situational demands are likely to condition the adaptiveness of emotional response tendencies, such that dispositional expressivity is likely to have moderated rather than direct effects on adjustment.¹ For example, Kashdan and colleagues (Kashdan & Breen, 2008; Kashdan, Volkmann, Breen, & Han, 2007) demonstrated that high expressivity is adaptive specifically for individuals with low social anxiety.

Stress and coping theorists (e.g., Lazarus & Folkman, 1984) contend that concordance of elected coping processes with one's enduring preferences is likely to carry adaptive value. Thus, individuals undergoing chronic and profound stress might be served well by stressor-specific emotional expression or processing *if* coupled with strong dispositional emotional response tendencies. Individuals who manifest enduring tendencies to experience and express emotions might be adept at approaching their emotions in specific stressful contexts, using them as a guide for goal clarification and pursuit, a vehicle for gaining effective interpersonal support, and a pathway for habituating to the stressful experience (Stanton, 2011). A mismatch between response tendencies and stressor-related expression or processing is likely to provoke distress, such as might occur when one typically experiences and expresses emotions strongly, but is constrained from doing so in particular circumstances (e.g., lack of energy owing to medical treatment, social constraint, fear of being a burden to others). Consistent with this hypothesis, van Middendorp et al. (2008) found that fibromyalgia patients with high dispositional affect intensity but low stressor-related emotional processing reported high fatigue and pain relative to women whose dispositional affect intensity and emotional processing were more congruent (also note that stressor-related emotional expression was associated with lower distress; a test of the interaction between emotional expression

1. It also is theoretically tenable that dispositional expressivity affects the selection of coping strategies, which in turn mediate the relations of the disposition with adjustment (e.g., Bolger & Zuckerman, 1995). Although dispositional expressivity was related significantly to coping through emotional approach, it did not by itself predict outcomes, thus making mediation via election of emotional processing unlikely.

and affect intensity on outcomes was not reported). Hence, we hypothesized that congruence between strong dispositional emotional response tendencies and high or increasing engagement in disease-related emotional expression would predict enhanced well-being in women coping with metastatic disease. Strong dispositional tendencies coupled with low emotional expression regarding the cancer experience should be less adaptive. Because previous findings are less consistent for stressor-related emotional processing, we viewed analyses with that variable as more exploratory. We examined hypotheses in a short-term longitudinal study of women living with metastatic breast cancer. Corresponding to the focus on both dispositional expressivity and stressor-specific coping, dependent variables were chosen to include indicators of general adjustment (i.e., depressive symptoms, life satisfaction) and a cancer-specific index (i.e., cancer-related intrusive thoughts and feelings).

METHOD

Participants

Of 178 patients introduced to the research, participants were 115 women (65%; decliners most frequently reported being too sick or too busy; Institutional Review Board restriction prevented additional data collection on decliners) diagnosed with Stage IV metastatic breast cancer (i.e., cancer spread to other parts of the body beyond the breast and axillary lymph nodes). All participants were ambulatory with a life expectancy of at least 6 months in the assessment of the referring physician and were able to complete assessments in English. Patients with locally recurrent disease or with a diagnosis of a new primary cancer were not eligible, and men with breast cancer were not recruited for study, as they constitute less than 1% of breast cancer cases. Women who completed both Time 1 and Time 2 assessments ($n = 103$; 90% of 115) did not differ significantly from women who did not complete Time 2 ($n = 12$) on any demographic, cancer-related, or other variable at Time 1.

At Time 1, participants were on average 57.20 years old ($SD = 10.84$, range = 33–91 years), college educated (M years = 15.70, $SD = 2.96$), and married or living as married (67%). Most (64%) were not currently employed. Of those who stated ethnicity ($n = 102$), 82% were Caucasian, 5% were African American, 6% were Asian, 4% were Latina, and 3% were another ethnic group. Participants reported an average of 1.44 ($SD = 1.58$) comorbid medical conditions (e.g., diabetes). On average, women had been diagnosed with a first cancer nearly 8 years previously

($M = 7.88$ years, $SD = 5.55$) and had received a metastatic diagnosis more than 2 years previously ($M = 2.75$ years, $SD = 2.48$; range = 1–126 months). Most women were receiving medical treatment (e.g., chemotherapy; for additional detail, see Stanton, Low, Sullivan, & Moskovich, under review). At Time 2, 53% had learned of some indication of advancing disease (i.e., tumor growth or new metastatic site) since study entry.

Procedure

Women were recruited from UCLA oncology clinics and another group oncology practice (Breastlink Medical Group). A description of recruitment and consent procedures is provided elsewhere (Stanton et al., under review). Consenting women participated in two assessment phases conducted at study entry and 3 months later, which involved questionnaire completion, participation in a structured interview (at study entry only), and diurnal cortisol assessment (not reported here). Women who elected participation were given or mailed questionnaire packets. They were scheduled for interviews, which were conducted in participants' homes, the researchers' lab, or by phone if driving distance was prohibitive. Completed materials were collected at the interview. The interviews were conducted by trained female doctoral students in clinical psychology and postbaccalaureate research assistants. Interviewers asked about women's cancer and treatment history, as well as other variables not pertinent to this report. The questionnaire packets contained measures relevant to the present report, among other measures. Three months later, questionnaire packets were completed and returned by mail.

Measures

Cancer-related coping processes. At both assessment points, participants completed the EAC scales (Stanton, Kirk et al., 2000), embedded in subscales from the COPE inventory (Carver, Scheier, & Weintraub, 1989). Women completed the scales with reference to their current experience of metastatic breast cancer, rating items on a scale from 1 (*I don't do this at all*) to 4 (*I do this a lot*). The two scales each consist of four items that assess emotional processing (e.g., "I take time to figure out what I'm really feeling") and expression (e.g., "I feel free to express my emotions") with reference to stressors. The scales are uncorrelated with social desirability and are positively related to other indices of approach-oriented coping and motivation, including greater resting activation of the left prefrontal cortex (see Stanton, 2011, for a review). At the two assessment points, internal consistency estimates of reliability were $\alpha = .62$ and $.73$ for Emotional Processing and $\alpha = .84$ and $.85$ for Emotional Expression. Change in coping was computed by subtracting the Time 1 emotional processing

and expression score from the relevant Time 2 score, such that higher scores indicated an increase in coping.

Emotional response tendencies. Administered at study entry, the 16-item Berkeley Expressivity Questionnaire (BEQ) assesses individual differences in core emotional expressivity (Gross & John, 1995, 1997, 1998) on three dimensions: negative expressivity (e.g., “Whenever I feel negative emotions, people can easily see exactly what I am feeling”), positive expressivity (e.g., “When I feel happy, my feelings show”), and impulse strength (e.g., “I experience my emotions very strongly”). Computed as an average across the 16 items, the scale possesses adequate internal consistency reliability ($\alpha > .80$) and test-retest reliability ($r = .86$ across two to three months; Gross & John, 1995). Peer correspondence in ratings has been demonstrated ($r = .58$; Gross & John, 1997).

Psychological adjustment. Dependent variables were completed at both assessment points. Participants completed the widely used Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977), a 20-item scale assessing the frequency of depressive symptoms (e.g., restless sleep, sadness). Participants indicated how often they had experienced each symptom in the past week on a scale ranging from 0 (*Rarely or none of the time*) to 3 (*Most or all of the time*).

The seven-item Impact of Event (IES) Intrusion subscale (Horowitz, Wilner, & Alvarez, 1979) was completed with reference to women’s “experience with cancer” over the past 7 days. Sample items assessing intrusive thoughts and feelings include “I had waves of strong feelings about it” and “I thought about it when I didn’t mean to,” and response options range from 0 (*not at all*) to 5 (*extremely*).

Life satisfaction was assessed with the five-item Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), a psychometrically sound scale designed to measure global life satisfaction.

Demographic and cancer-related variables. Assessed via the questionnaire and interview, demographic variables were age, years of education, marital status, employment status, ethnic group, and number of comorbid medical conditions. Disease-related variables at Time 1 were number of months since first cancer diagnosis and diagnosis of metastatic disease, number and location of metastatic sites, and current medical treatment (i.e., chemotherapy, Herceptin, endocrine therapy). At the second assessment, women also were asked to indicate whether they had undergone any additional diagnostic tests or scans and to describe the findings (i.e., no indication of advancing disease vs. indication of advancing disease, such as tumor growth or a new metastatic site).

Analytic Strategy

First, descriptive statistics on major variables and dependent *t*-tests to assess change across time were conducted. Next, zero-order correlations were computed to evaluate the relations of dispositional emotional expressivity, coping processes directed toward emotion regulation, and dependent variables, and demographic and cancer-related variables were examined for inclusion as covariates by assessing their relations with the dependent variables at follow-up. Sample sizes vary slightly in analyses owing to missing data on some measures for some participants.

To evaluate the influence of coping processes, dispositional expressivity, and their interaction on change in outcomes across time, hierarchical multiple regressions for each dependent variable included two blocks of predictors: demographic and medical covariates (after ensuring that the covariates did not interact with the primary predictors), the initial value on the relevant dependent variable (to allow evaluation of the predictors on change in the dependent variables), and main effects for coping through emotional expression or processing and the BEQ score at study entry (Step 1); and the interaction of the relevant emotional approach coping variable and the BEQ (multiplicative term entered at Step 2 to provide a significance test for the interaction; Keith, 2006). Identical regression analyses were conducted to test the predictive utility of change from Time 1 to Time 2 in emotional approach coping strategies (i.e., Time 2 – Time 1 coping score). Beta weights reported are for the unique predictive value of the variable over and above all other predictors in the equation (i.e., simultaneous predictor entry). Coping (and coping change scores) and dispositional variables were centered to facilitate interpretation and reduce multicollinearity, and significant interactions were analyzed via the method of Aiken and West (1991) for continuous variables. Checks for multicollinearity indicated that no variance inflation factor approached the suggested cutoff of 2.0 (all were < 1.4). Preliminary analyses (e.g., studentized residuals, Cook's *D*) also suggested that outliers did not influence the multiple regression findings.

RESULTS*Descriptive Statistics*

Means and standard deviations on major variables, as well as dependent *t* tests on variables assessed at both time points, are displayed in Table 1. Regarding predictor variables, women on average reported that they coped with their experience of cancer through emotional expression and processing a “medium amount,” values very similar

Table 1
Descriptive Statistics and Dependent *t* Tests on Major Variables

Scale	Assessment		<i>n</i>	<i>M</i>	<i>SD</i>	Paired <i>t</i>
	Point					
BEQ	Time 1		113	4.91	0.77	
EAC emotional expression	Time 1		99	2.85	0.71	-1.18
	Time 2		99	2.92	0.72	
EAC emotional processing	Time 1		99	3.00	0.59	-1.17
	Time 2		99	3.07	0.63	
CES-D depressive symptoms	Time 1		102	14.21	9.84	2.17*
	Time 2		102	12.44	8.82	
IES cancer-related intrusion	Time 1		98	10.09	7.64	-0.28
	Time 2		98	10.29	8.25	
SWLS life satisfaction	Time 1		98	22.76	7.47	0.84
	Time 2		98	22.26	7.62	

Note. BEQ = Berkeley Expressivity Questionnaire; EAC = Emotional Approach Coping; CES-D = Center for Epidemiologic Studies-Depression Scale; IES = Impact of Event Scale-Intrusion; SWLS = Satisfaction With Life Scale. For the coping and dependent variables, descriptive statistics displayed are for the sample completing both assessments on each variable.

* $p < .05$.

to those of early-stage breast cancer patients shortly after medical treatment completion (Stanton, Danoff-Burg, et al., 2000; *M* emotional expression = 2.95, *M* emotional processing = 3.00). The BEQ mean was similar to that of young women in Gross and John (1997; *M* BEQ = 5.1).

Regarding dependent variables, 39% ($n = 40$) of women at study entry and 25% ($n = 26$) at 3 months met the CES-D cutoff of 16, which is suggestive of clinical depression (Radloff, 1977), with 18% ($n = 18$) meeting the cutoff at both assessment points. Means on the CES-D were considerably higher than those for a community sample of women (Lewinsohn, Seeley, Roberts, & Allen, 1997; *M* = 8.73 for women aged 50–59 years and 7.83 for women aged 60–69 years). Women reported experiencing intrusive thoughts and feelings related to cancer “rarely” to “sometimes” within the past 7 days, and means were comparable to early-stage breast cancer patients approximately 14 months after diagnosis (Manne et al., 2004). On average, women reported being slightly satisfied with life, and SWLS means were

somewhat lower than those of midlife and older adults, and higher than for those of clinical psychiatric samples (for reviews, see Pavot & Diener, 1993, 2008). Of the major variables, only depressive symptoms evidenced significant change, with improvement across time, although all dependent variables demonstrated considerable within-group variability.

Relations Among Variables and Selection of Covariates

Correlations between predictor and dependent variables are shown in Table 2. Variables examined for potential inclusion as covariates were demographic variables (i.e., age, years of education, employment status [yes/no], marital status [married or living as married/not married], ethnicity [European American/other ethnicity], and number of comorbid chronic conditions) and cancer-related variables (i.e., time since first cancer and Stage IV diagnosis, number of metastatic sites, current cancer-related medications [Herceptin/no Herceptin; chemotherapy/no chemotherapy; endocrine treatment/no endocrine treatment] and indication of advancing disease between Time 1 and Time 2 [yes/no]).

Having a greater number of comorbid diseases (e.g., hypertension, diabetes) was associated significantly with higher Time 2 depressive symptoms and lower life satisfaction ($r = .26-.27$, $p < .05$) but lower cancer-related intrusion ($r = -.20$, $p < .05$). In addition, women with indication of advancing metastatic disease, $F(1, 100) = 5.41$, $p < .05$, $R^2 = .05$; $M = 14.50$, $SD = 9.27$ versus $M = 10.49$, $SD = 7.97$ for no indication of advancing disease, or who were not taking endocrine therapy, $F(1, 99) = 6.05$, $p < .05$, $R^2 = .06$; $M = 13.79$, $SD = 9.76$ versus $M = 9.09$, $SD = 5.00$ taking endocrine therapy, were more depressed at Time 2. Women who were younger ($r = -.30$, $p < .005$) and more educated ($r = .27$, $p < .01$) had more cancer-related intrusion at Time 2. These variables were controlled in relevant regression analyses.

Coping Through Emotional Expression and Dispositional Expressivity as Predictors of Outcomes

Hypotheses were that initially high or increasing cancer-related emotional expression would predict salutary outcomes, particularly in the context of high dispositional expressivity. In multiple regression analyses, Time 1 coping through emotional expression, dispositional

Table 2
Zero-Order Correlations Between Independent and Dependent Variables at Time 1 and Time 2

	EE			EP			CES-D			SWLS			IES		
	BEQ	Time 1	Time 2	Change	Time 1	Time 2	Change	Time 1	Time 2	Change	Time 1	Time 2	Change	Time 1	Time 2
BEQ	1	.44***	.35***	-.10	.21*	.26*	.07	.00	-.02	-.01	.03	.19*	.13		
EE	Time 1	—	.66***	-.40***	.59***	.56***	.01	-.25***	.00	.16	.14	.01	.17		
	Time 2	—	1	.43***	.70***	.70***	.36***	-.24*	-.04	.03	.13	-.09	.06		
	Change	—	—	1	-.19	.19	.43***	.02	-.03	-.21*	-.05	-.11	-.12		
EP	Time 1	—	—	—	1	.62***	-.37***	-.21*	.10	.20*	.04	-.01	.20*		
	Time 2	—	—	—	—	1	.50***	-.12	.05	.00	.02	-.08	.12		
	Change	—	—	—	—	—	1	.07	-.07	-.17	.01	-.05	-.10		
CES-D	Time 1	—	—	—	—	—	—	1	.61***	-.48***	-.46***	.48***	.30**		
	Time 2	—	—	—	—	—	—	—	1	-.32**	-.43***	.38***	.40***		
SWLS	Time 1	—	—	—	—	—	—	—	—	1	.68***	-.23*	-.19		
	Time 2	—	—	—	—	—	—	—	—	—	1	-.22*	-.18		
IES	Time 1	—	—	—	—	—	—	—	—	—	—	1	.64***		
	Time 2	—	—	—	—	—	—	—	—	—	—	—	1		

Note. BEQ = Berkeley Expressivity Questionnaire; EE = Emotional Expression; EP = Emotional Processing; CES-D = Center for Epidemiologic Studies-Depression Scale; SWLS = Satisfaction With Life Scale; IES = Impact of Event Scale-Intrusion.
* $p < .05$. ** $p < .01$. *** $p < .001$.

expressivity, and the associated interaction were not significant predictors of change in outcomes over and above the covariates.

When change over time in coping through emotional expression was examined, significant interactions emerged. Results of these multiple regression analyses are displayed in Table 3. For depressive symptoms and life satisfaction, main effects of dispositional and stressor-specific predictors were not significant, over and above the covariates. For both dependent variables, however, the interaction between change in coping through cancer-related emotional expression and the BEQ was significant. Dispositional and stressor-specific emotion variables were not significant predictors of cancer-related intrusion.

Analyses of the simple slopes tested the relation of change in emotionally expressive coping with change in depressive symptoms and life satisfaction as a function of dispositional expressivity at one standard deviation above and below the mean. As displayed in Figure 1, in both cases, an increase in emotionally expressive coping regarding the cancer experience was associated significantly with a decline in depressive symptoms ($p < .01$) and an increase in life satisfaction ($p < .001$) at high levels of dispositional expressivity. When emotionally expressive coping declined in the presence of high dispositional expressivity, predicted scores on the CES-D exceeded the cutoff suggestive of clinical depression (Radloff, 1977), and predicted life satisfaction was in the “slightly dissatisfied” range on the SWLS (Pavot & Diener, 2008). A decrease in emotionally expressive coping predicted a significant decrease in depressive symptoms in the presence of low dispositional expressivity ($p < .05$), but the simple slope was not significant for life satisfaction.

Coping Through Emotional Processing and Dispositional Expressivity as Predictors of Outcomes

In light of the less consistent relations of cancer-related emotional processing with adjustment, our goal was to explore this relation, and we speculated that strong dispositional expressivity coupled with low emotional processing would be less adaptive (van Middendorp et al., 2008). In multiple regression analyses, greater endorsement of coping through cancer-related emotional processing at Time 1 predicted an increase in depressive symptoms ($p < .01$) and an increase in cancer-related intrusion ($p < .05$). As displayed in

Table 3
Results From Multiple Regression Analyses for Initial Values on the Dependent Variable, Covariates, Dispositional Emotional Expressivity, Change in Stressor-Specific Coping Through Emotional Expression (Time 2 - Time 1), and Their Interaction Predicting Dependent Variables at 3 Months

Predictor	Depressive Symptoms			Life Satisfaction				
	ΔR^2	B	SE (B)	β (Final)	ΔR^2	B	SE (B)	β (Final)
<i>Step 1</i>	.45**				.44***			
Time 1 DV		.48	.02	.56***		.65	.08	.63***
Comorbid conditions		1.31	.44	.22**		-.73	.38	-.15
Advancing disease		1.04	1.35	.06		—	—	—
Endocrine therapy		3.77	1.47	.19*		—	—	—
Change in coping through emotional expression		-.07	1.13	-.00		1.25	1.00	.10
Dispositional EXP		1.17	.96	.09		-.09	.83	-.01
<i>Step 2</i>	.06**				.05**			
Coping x EXP interaction		-5.24	1.58	-.27**		4.40	1.37	.25**
Total Adjusted R ²	.51***				.49***			
Final model F(df)	15.17***				19.05***			
	(7, 88)				(5, 88)			

Note. DV = dependent variable; EXP = expressivity. Italicized values represent the amount of change in the adjusted R² due to the corresponding step. Estimates displayed are for the final multiple regression models.
 * $p < .05$. ** $p < .01$. *** $p < .0001$.

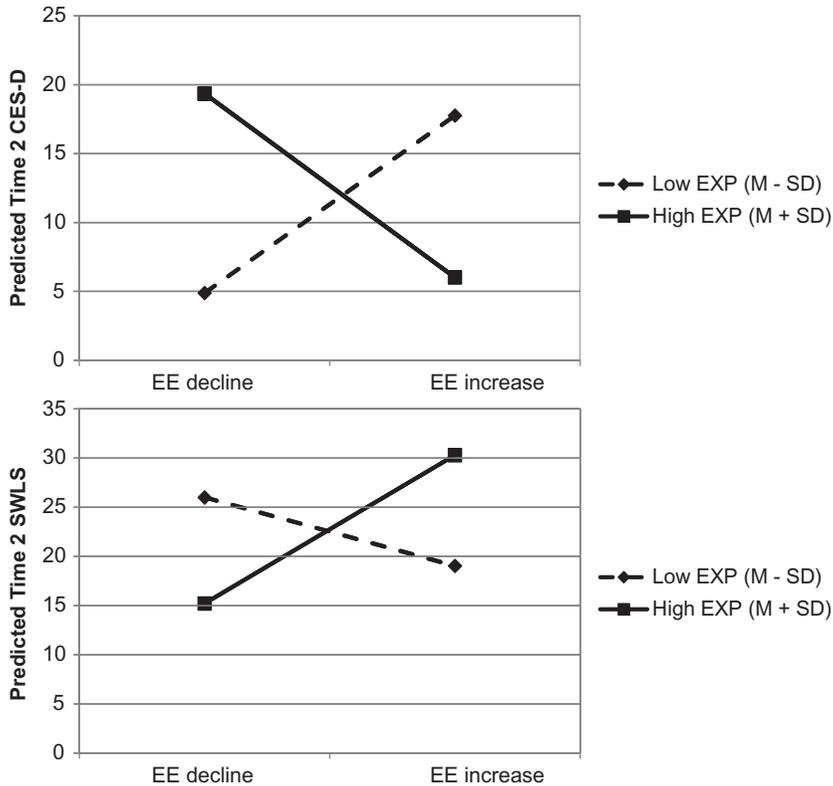


Figure 1
Predicted depressive symptoms (CES-D; Center for Epidemiologic Studies-Depression Scale) and satisfaction with life (SWLS; Satisfaction With Life Scale) at Time 2, controlling for initial values on dependent variables and other covariates, as predicted by interactions of changes in cancer-specific emotional expression (EE) with dispositional expressivity (EXP).

Table 4, Time 1 emotional processing also interacted significantly with dispositional expressivity to predict a change in life satisfaction. As shown in Figure 2, high cancer-related emotional processing at Time 1 was associated with a decrease in life satisfaction at high levels of dispositional expressivity ($p < .01$), with the combination of low emotional processing with high dispositional expressivity yielding the greatest predicted life satisfaction. Thus, cancer-related emotional processing at Time 1 predicted increases in depressive

Table 4
Results From Multiple Regression Analyses for Initial Values on the Dependent Variable, Covariates, Dispositional Emotional Expressivity, Stressor-Specific Coping Through Emotional Processing, and Their Interaction Predicting Dependent Variables at 3 Months

Predictor	Depressive Symptoms			Life Satisfaction			
	ΔR^2	B	SE (B)	β (Final)	B	SE (B)	β (Final)
<i>Step 1</i>	.46***						
Time 1 DV		.47	.07	.47***	.65	.08	.64***
Comorbid conditions		1.49	.45	.26**	-.61	.38	-.12
Advancing disease		1.77	1.32	.10	—	—	—
Endocrine therapy		3.21	1.46	.16*	—	—	—
Change in coping through emotional processing		-1.03	1.21	-.06	-1.62	1.02	-.12
Dispositional EXP		.71	.91	.06	.56	.82	.05
<i>Step 2</i>	.05**						
Coping \times EXP interaction		-6.04	1.94	-.25**	-2.30	1.07	-.16*
Total adjusted R^2	.51***						
Final model $F(df)$	15.06***						
	(7, 88)						

Note. DV = dependent variable; EXP = expressivity. Italicized values represent the amount of change in the adjusted R^2 due to the corresponding step. Estimates displayed are for the final multiple regression models. Change in coping through emotional processing is the predictor for depressive symptoms, and Time 1 emotional processing is the predictor for life satisfaction.

* $p < .05$. ** $p < .01$. *** $p < .0001$.

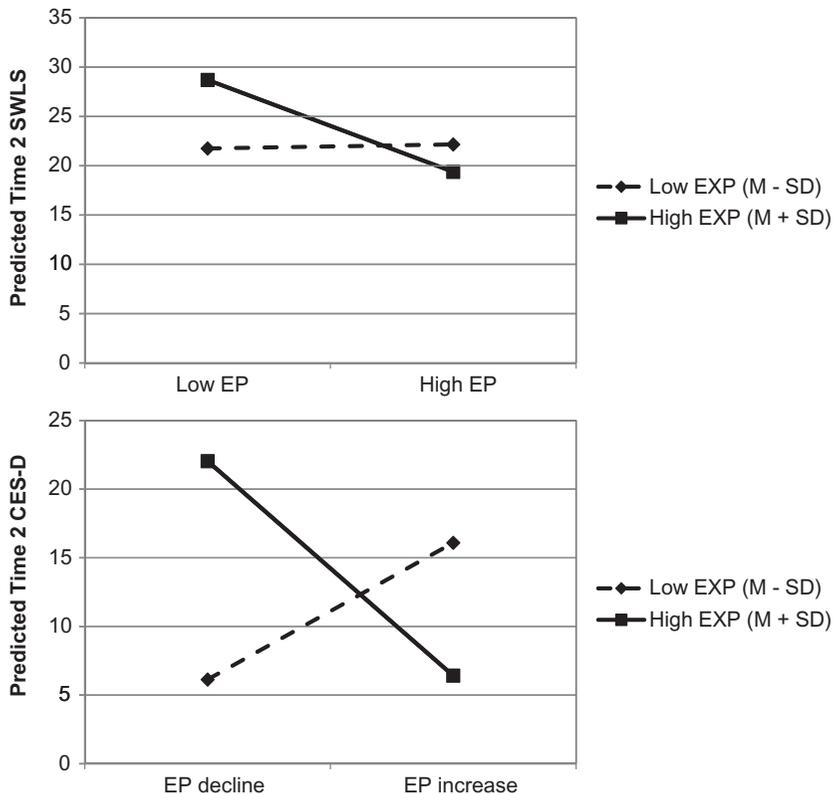


Figure 2
Predicted satisfaction with life (SWLS; Satisfaction With Life Scale) and depressive symptoms (CES-D; Center for Epidemiologic Studies-Depression Scale) at Time 2, controlling for initial values on dependent variables and other covariates, as predicted by the interaction of Time 1 cancer-specific emotional processing (EP) and dispositional expressivity (EXP) for life satisfaction and the interaction of change in EP and EXP for depressive symptoms.

symptoms and cancer-related intrusive thoughts and feelings for the full sample as well as declining life satisfaction under conditions of high dispositional expressivity.

When change in emotional processing was the predictor, a significant interaction emerged. Change in emotional processing interacted significantly with dispositional expressivity (see Table 4), such that when dispositional expressivity was high, an increase in emotional processing was associated with a significant decrease in depressive

symptoms over time (see Figure 2). Thus, an increase in cancer-related emotional processing coupled with high expressivity predicted improvement in depressive symptoms, but no significant effects on life satisfaction or cancer-related intrusion.

Relations of Change in Coping With Other Variables

We speculated that an increase in coping might be prompted by a more difficult cancer experience. Zero-order correlations and *t*-tests were performed with relevant variables (i.e., recent diagnosis [months since first cancer diagnosis and metastatic diagnosis], chemotherapy receipt, initiation of new treatment during the 3-month period, indication of advancing disease at Time 2). Women who were receiving chemotherapy were more likely to increase cancer-related emotional expression ($M = .24$, $SD = .60$) than women who were not ($M = -.10$, $SD = .53$), $F(1, 95) = 8.46$, $p < .005$, $R^2 = .08$, as were women who initiated a new medical treatment during the 3 months ($M = .15$, $SD = .55$) compared to those who had no new treatment ($M = -.10$, $SD = .59$), $F(1, 93) = 4.40$, $p < .05$, $R^2 = .04$. Women who increased their emotional processing had a more recent diagnosis of a first breast cancer, $r = -.20$, $p < .05$. Other relations were not significant.

DISCUSSION

The goal of this study was to examine the role of cancer-related emotional approach coping processes, as well as dispositional emotional expressivity and their interaction, in predicting changes in adjustment to metastatic breast cancer over 3 months. Contrary to the first hypothesis, neither emotional expression at study entry nor increasing expression of cancer-related emotions over time had main effects on psychological adjustment. However, consistent with our second prediction, women who reported strong dispositional expressivity, along with an increase in the expression of cancer-related emotions, exhibited a significant decline in depressive symptoms and an increase in life satisfaction over 3 months. For women low in dispositional expressivity, a decrease in emotionally expressive coping predicted a significant decrease in depressive symptoms (but not life satisfaction). These findings suggest that, when faced with an unremitting, uncontrollable stressor such as metastatic breast cancer, congruence between dispositional tendencies to experience and

express emotions with change in stressor-specific expressive coping is more predictive of adjustment than is either process alone.

Analyses examining the effects of emotional processing on adjustment were less consistent. After adjusting for covariates, cancer-related emotional processing at study entry predicted increasing depressive symptoms and cancer-related intrusion. High coping through emotional processing also predicted declining life satisfaction under conditions of high dispositional expressivity, and the combination of low processing and high dispositional expressivity predicted an increase in satisfaction. These findings suggest that high levels of processing emotions during a chronic, profound stressor may be maladaptive. Only 16% of the sample had been diagnosed with metastatic disease for fewer than 6 months, and 86% had a previous breast cancer diagnosis. Emotional processing in this context might tax psychological resources, involve a ruminative component, or indicate lack of resolution of emotional challenges. The exception to these findings was that women reporting high levels of emotional expressivity who increased their emotional processing exhibited a reduction in depressive symptoms over time.

Why might an increase in emotional expression and processing be adaptive in the context of a chronic stressor? Increased emotional expression and processing by women high in dispositional expressivity might bring about more effective goal clarification and pursuit, recruit interpersonal support, promote habituation to the stressor, or result in balanced emotional experience and expression and hence be unlikely to erode critical intrapersonal and interpersonal resources. In addition, the nature of increased emotional processing among women high in expressivity might be aimed at positive reappraisal or reflective thought rather than negatively valenced rumination, which is associated with poorer adjustment (e.g., Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Rude, Maestas, & Neff, 2007; Segerstrom, Stanton, Alden, & Shortridge, 2003; Trapnell & Campbell, 1999; Watkins, 2008). Perhaps an increase in coping through emotional approach predicted positive adjustment over time, whereas coping at study entry did not because coping that is responsive to contextual features is more adaptive than consistently high, approach-oriented coping in the face of a chronic stressor. We found that coping through emotional approach increased significantly in women who had evidence of a more arduous cancer experience (i.e., initiation of a new medical treatment, receipt of chemotherapy, having a more

recent cancer diagnosis), suggesting that within the context of a chronic stressor, women were responding to particularly adverse circumstances with increased coping efforts.

This study highlights core dispositional emotional expressivity as a key moderator of the benefits of stressor-specific emotional expression and suggests that the fit between personality variables and stressor-related emotional expression is important. Results provide less support for a beneficial fit between emotional processing and dispositional expressiveness; among highly expressive women, cancer-related emotional processing at study entry was associated with poor outcomes, but an increase in emotional processing predicted a decline in depressive symptoms. Determining whether there are subgroups of stressed individuals for whom repetitive emotional processing predicts salutary outcomes will be important (Segerstrom et al., 2003; Watkins, 2008). In addition to dispositional and contextual moderators of the consequences of emotional processing, the nature of processing warrants further study. In a review of various forms of repetitive processing, Watkins (2008) concluded that low-level, concrete processing may be more constructive than high-level, abstract processing. Particularly under conditions that pose shifting and profound barriers to life goals, as can metastatic breast cancer, processing emotions related to concrete and specific situations might promote effective goal clarification and pursuit as well as adaptive disengagement from unattainable goals (Carver & Scheier, 1998; Watkins, 2008). More meticulous assessment of emotional processing is required to illuminate its adaptive and maladaptive forms under chronically stressful conditions.

In interpreting findings, it is important to note a conceptual distinction between the stressor-specific and dispositional predictors in this research. The stressor-specific EAC measure was designed to assess intentionally adopted strategies to regulate emotion (Stanton, Kirk, et al., 2000; e.g., "I take time to express my emotions"), whereas the dispositional BEQ measure was designed to assess emotional response tendencies rather than intentional regulatory strategies (Gross & John, 1997; e.g., "It is difficult for me to hide my fear"). Thus, any benefits of expressing cancer-related emotions were conditioned on general tendencies to express or experience emotions rather than on enduring intentional attempts to do so. It is possible that the obtained interactions might have been stronger or different if both measures had assessed intentional emotion regulation strategies.

Limitations of the study warrant mention. First, although the sample was relatively homogeneous with respect to demographic characteristics and cancer treatment history, there was substantial heterogeneity in time since metastatic diagnosis and current disease status. Increases in emotional expression and processing may mean different things at different phases of the cancer trajectory, and a more careful examination of how emotional processing and expression can be helpful when facing certain adaptive tasks (e.g., dealing with initial diagnosis or worsening prognosis, coping with aversive treatment side effects) versus maladaptive under other circumstances (e.g., living with stable disease). Second, most women had been coping with metastatic cancer for more than a year and exhibited relative stability across time on most dependent variables and the cancer-related coping predictors. Although the measures evidenced sufficient between-individual variability to yield the significant findings reported here, a longer follow-up with newly diagnosed women is warranted in future research. Third, whether findings are generalizable to men and diverse ethnic groups requires examination. Fourth, emotional response tendencies and coping both were self-reported. Particularly to the extent that the participant is reflecting on distal experience, it is possible that such reports are more reflective of more general beliefs about emotional phenomena than of one's own emotional tendencies and behavior (Robinson & Clore, 2002). Although participants all were in the midst of coping with metastatic disease and its treatment and presumably were reporting about their current coping processes, supplementing subjective measures of emotional expression and processing with observational and behavioral data, as well as momentary assessment, could enable examination of generalizability of the current findings to proximal experience (Giese-Davis et al., 2006).

Clinical implications of the findings include the importance of considering naturally occurring individual differences in emotional expressivity when implementing interventions aimed at increasing emotional approach. Emotionally evocative interventions, such as supportive-expressive therapy or expressive writing, might be more effective for individuals who possess established expressive skills or who naturally elect expressive approaches (Austenfeld, Paolo, & Stanton, 2006; Austenfeld & Stanton, 2008; Manne, Ostroff, & Winkel, 2007; Stanton, Kirk, et al., 2000, Study 4). Individuals with low expressivity might derive more benefit from other approaches

(e.g., cognitive-behavioral therapy) or from provision of a compelling rationale for considering emotions, gradual exposure to emotional content, or skills-based instruction in approaching emotions. Results also indicate the need for caution in encouraging individuals facing a chronic, unremitting stressor such as metastatic cancer to focus on emotional processing, unless the stressful experience is recent and a facilitative context is ensured for translation into adaptive goal pursuit and acceptance or resolution of negative emotions. To live well with a serious, life-limiting disease, a flexible approach to coping may be most adaptive, wherein approach-oriented processes such as emotional expression and processing are recruited when stressors are most acute and alternate with coping processes aimed at focused distraction to provide women (and those in their social networks) with a respite from the strains of the stressor. To address these questions, future research will need to move beyond “snapshots” of coping to an experience-sampling approach and other methodologies that capture the intraindividual variability in coping processes and adjustment.

In the context of an unremitting, profound stressor, increasing expression of stressor-related emotions appears adaptive for women with strong dispositional emotional expressivity but has little impact (or a negative impact) on outcomes among women not naturally prone to emotional expression. Initially high cancer-related emotional processing predicted maladaptive outcomes, especially for dispositionally expressive women, although some evidence emerged for the adaptiveness of an increase in emotional processing over time combined with high dispositional expressivity. Findings highlight the importance of both personality and stressor-related features in determining the adaptive significance of coping through emotional approach.

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