Coping, Catastrophizing and Chronic Pain in Breast Cancer

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This cross-sectional study investigated the relationships between individual differences in coping and catastrophizing, and markers of adaptation to chronic pain associated with breast cancer. Sixty-eight breast cancer patients with chronic pain due to either cancer or cancer-treatment were administered self-report instruments that assess active and passive coping, catastrophizing, pain, disability, and mood disturbance. Regression analyses were performed to investigate the unique contribution of differences in coping and catastrophizing to the various markers of adaptation. Both active and passive coping explained unique variance in self-reported disability; active coping was associated with less disability while passive coping was associated with greater disability. Catastrophizing explained unique variance in anxiety and depression scores; higher levels of catastrophizing were associated with greater emotional distress. The results suggest that coping and catastrophizing may contribute to different outcomes in chronic pain in breast cancer patients and provides preliminary evidence that they may be important targets of psychological treatments.

KEY WORDS: breast cancer; chronic cancer pain; coping; catastrophizing; adaptation.

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INTRODUCTION

Chronic pain is a common symptom in breast cancer and can be attributed directly to tumor involvement or treatment-related complications. Surgery is the principal initial treatment for early breast cancer and is sometimes followed with adjuvant radiation or chemotherapy (Kuusk *et al.*, 1992). Although approximately 60% of women will be cured with these methods, between 20 and 50% will develop chronic pain as a result of treatment-related complications, the most common being neuropathic pain syndromes (Carpenter *et al.*, 1998; Stevens *et al.*, 1995; Tasmuth *et al.*, 1995). The prevalence of pain is much higher in patients with advanced disease (Portenoy, 1989). Most commonly associated with metastasis to bone, or nerve compression that results from tumor growth, chronic pain associated with advanced breast cancer has an estimated prevalence of 69 to 94% (Bonica, 1985; Stevens *et al.*, 1995). Recent advances in pharmacology and adjuvant approaches have resulted in highly effective management strategies for a majority of cancer patients, but complete alleviation of pain is rare (Jacox *et al.*, 1994; Zech *et al.*, 1995). Pain, suffering, and disability commonly persist, so psychosocial interventions have been recommended as part of standard care (Brieitbart and Payne, 1998).

There is a high degree of variability in the levels of physical and psychological adaptation to chronic pain in cancer (Padilla *et al.*, 1990; Turk *et al.*, 1998; Turk and Fernandez, 1990). Recent investigations suggest that psychological variables play a modest but important role in pain intensity (Syrjala and Chapko, 1995) and that cognitive–affective and behavioral factors contribute significantly to adjustment (Chia-Chin, 1998; Turk *et al.,* 1998). Identifying individual difference variables that mitigate or exacerbate pain, disability, and mood symptoms may contribute to the development of more effective psychosocial treatments that can facilitate adaptation and improve the quality of life of cancer patients who have chronic pain.

Models of stress and coping are being used increasingly to explain individual differences in adaptation to pain (Fernandez and Turk, 1989; Flor and Turk, 1988; Jensen *et al.*, 1991; Turk and Rudy, 1992). Coping has been defined as the "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus and Folkman, 1984, p. 194). Coping is considered an intentional and effortful process that can be differentiated from more automatic and reactive emotions and behaviors in response to a situation (Schwarzer and Schwarzer, 1996).

It has been shown that patients use a wide range of cognitive and behavioral strategies in their attempt to cope with chronic pain (for a review, see Jensen *et al.*, 1991) and it appears that cancer patients generally

use the same strategies to cope with their pain as patients with noncancer chronic pain (Chia-Chin, 1998). Although the efficacy of specific coping strategies are often dependent upon the individual patient, the nature and chronicity of the pain and the specific situation being confronted (Lazarus and Folkman, 1984; Turner, 1991), there have been consistent findings that the use of active coping strategies is associated with more favorable outcomes than the use of passive coping strategies. Active coping refers to strategies that are employed in an attempt to control pain or to function in spite of it, while passive coping refers to strategies that involve relinquishing the control of pain to others (Brown and Nacassio, 1987). Factor analysis of coping measures suggest that many of the specific coping strategies discussed in the literature can be categorized as active or passive (Brown and Nacassio, 1987; Snow-Turek *et al.*, 1996). Patients who rely on active coping strategies report less pain, depression, affective distress and disability than patients who rely on passive coping strategies (Brown and Nacassio, 1987; Holmes and Stevenson, 1990; Manne and Zautra, 1990; Parker *et al.*, 1989; Phillips, 1987; Spinhoven *et al.*, 1989; Waddell *et al.*, 1993). Further, it appears that there is considerable stability in the extent that individuals utilize active or passive coping strategies, and this is thought to reflect a dispositional response style to pain (Brown and Nacassio, 1987).

The tendency to "catastrophize" has also received considerable attention in recent years. Catastrophizing refers to a negative response style characterized by a tendency to ruminate on aspects of the pain experience, to exaggerate the threat value of pain and to adopt a helpless orientation to pain (Sullivan *et al.*, 1995). Catastrophizing appears to be stable over time (Keefe *et al.*, 1989; Sullivan *et al.*, 1995) suggesting that it reflects an enduring mode of responding to pain. Catastrophizing also appears to be conceptually and empirically distinct from coping—it is neither strategic, nor goal directed, and it does not load on the factor structure of coping measures (Sullivan *et al.*, 1995; Lawson *et al.*, 1990). Catastrophizing has been associated with greater pain intensity (Flor and Turk, 1988; Jacobson and Butler, 1996; Keefe *et al.*, 1989; Sullivan *et al.*, 1998), higher likelihood of presenting with medically incongruent pain (Reesor and Craig, 1988), depression (Keefe *et al.*, 1989; Sullivan and D'Eon, 1990), anxiety (Spinhoven *et al.*, 1989), social impairment (Jensen *et al.*, 1991), and functional disability (Martin *et al.*, 1996; Robinson *et al.*, 1997; Sullivan *et al.*, 1998). Catastrophizing has been shown to predict the level of pain, disability, and depression prospectively over a 6-month period (Keefe *et al.*, 1989) and the tendency to catastrophize during pain, when measured in a pain-free state, predicts pain intensity and emotional distress experienced during subsequent clinical pain procedures (Sullivan *et al.*, 1995, 1998).

Although individual differences in coping and catastrophizing appear to contribute significantly to physical and psychological adaptation to chronic pain, few studies have addressed their *relative* contribution. This issue is important because of its relevance to improving the specificity of clinical interventions. There is some evidence that catastrophizing may be more strongly related to clinical outcomes in chronic pain than coping. For example, people high in catastrophizing appear to use as many coping strategies or use them as frequently as those low in catastrophizing, yet report more pain and emotional distress (Spanos *et al.*, 1979; Sullivan *et al.*, 1995). Further, some studies have shown that improvement in clinical outcomes in chronic pain following psychological interventions are more strongly associated with reductions in catastrophizing, not an increases in the use of coping strategies (Flor *et al.*, 1993; Turner and Clancy, 1986). These and other findings have led some to suggest that targeting catastrophizing may be more important than coping in improving clinical outcomes in chronic pain (e.g., Katz *et al.*, 1996). However, recent evidence suggests that coping and catastrophizing may actually contribute to different clinical outcomes. Turner *et al*. (2000) found that among muscle–skeletal pain patients catastrophizing explained unique variance to depression but not physical disability, while coping strategies explained unique variance to physical disability but not depression. Although preliminary, these results may have important clinical implications. If coping and catastrophizing are indeed independently associated with specific clinical outcomes, then these variables should be selectively targeted by psychosocial interventions.

The primary objective of this study was to examine whether dispositional styles of coping and catastrophizing make independent contributions to various domains of physical and psychological adaptation to chronic pain in breast cancer patients. Although the relation between coping, catastrophizing and adaptation in noncancer chronic pain has been well documented, the contribution of these variables to pain in cancer patients has not been established and it is therefore yet unclear to what extent the findings from noncancer pain can generalize to cancer pain. This cross-sectional study represents a first step toward identifying individual difference variables in subjective pain experience that might represent risk factors for poor adaptation.

METHODS

Population

Participants were women at a large cancer hospital seen for treatment or follow-up in the outpatient breast cancer clinic. The women were approached

by one of two research assistants and asked to participate in a study investigating individual differences in adaptation to chronic pain associated with breast cancer. All women who came for an appointment over a 4-month period were approached in the waiting room of the clinic. They were asked if they experienced chronic pain, which was defined as persistent troublesome pain with a minimum duration of 8 weeks. If they answered yes to that question, an additional set of questions was asked to ascertain eligibility, which included (1) chronic pain due to breast cancer or treatment complications, (2) absence of other pain more troublesome than the pain related to breast cancer, (3) the ability to speak, read, and write English, and (4) a willingness to complete self-report measures and to have their chart reviewed. Participants who met criteria were then asked to provide informed consent. No reimbursement was offered for participation in the study. The diagnosis of chronic pain due to either breast cancer or treatment-related complications was determined based on a chart review by a medical oncologist. A total of 722 women with breast cancer were approached, and 118 patients meet criteria for the study.

Sixty-eight women with confirmed chronic pain due to either breast cancer or treatment-related complications consented to the study. Characteristics of the sample are presented in Table I. Mean age of the participants was 53.4 years (SD = 14.2). Seventy-four percent had completed high school or higher and most (85%) were married. Approximately one third of the participants were employed outside of the home, and one in five participants was on disability at the time of the study. Mean duration of illness was 60.7 months (SD = 71.4) and mean duration of chronic pain was 18.7 months (SD = 26.3). Fifty-three percent of the women had active disease at the time of the study.

MEASURES

Outcome

Outcome measures (dependent variables) included the following. The Brief Pain Inventory (BPI; Daut *et al.*, 1983) was used to assess pain intensity and history. Numeric scales with endpoints (0) *no pain* and (10) *pain as bad as you can imagine* assess pain at its worst and on average. The instrument also provides information on pain quality, location, and impact. This is perhaps the most widely utilized multidimensional pain assessment tool in cancer pain and has very well established validity (Brieitbart and Payne, 1998). The Pain Disability Index (PDI; Pollard, 1984) is a 7-item scale that assesses the degree of pain-related disability in the following areas of

Table I. Descriptive Statistics of the Study Sample ($N = 68$)

Variable	Mean	SD	Minimum	Maximum	Percent
Age (years)	53.4	14.2	32	91	
Marital status					
Single					11.8
Married					73.5
Widowed					8.8
Divorced					5.9
Education					
Grades 0–6					8.8
Grades 7–11					14.7
Completed high school					41.2
Undergraduate degree					10.3
Graduate/professional degree					23.5
Duration of illness (months)	60.7	71.4	2	288	
Duration of pain (months)	18.7	26.3	2	156	
Type of disease					
Local					7.4
Distant					33.9
Local and distant					11.8
None					47.1
Type of surgery					
Mastectomy					58.8
Lumpectomy					36.8
None					4.4
Cause of pain					
Tumor progression					42.6
Treatment					48.5
Uncertain					8.8
Type of pain					
Bone					27.9
Soft tissue					10.3
Neuropathic					33.8
Mixed					2.9
Uncertain					25.0

daily living: self-care, life support, home, social, recreational, work, and sexual functioning. Patients are asked to rate each area of daily living on an 11-point scale with endpoints (0) *no disability* and (10) *total disability*. A total score can be calculated by summing the scores on the seven areas of daily living. The PDI has good reliability (alpha = 0.87) and correlates with objective measures of disability (Tait *et al.*, 1987, 1990). The Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983) is a 14-item self-report measure developed for use with patients with medical illness. The measure includes two groups of seven descriptive statements of nonsomatic anxiety and depression symptoms. Patients select one of four statements below each descriptive statement that best describes the extent that each symptom describes their experience during the previous week. The HADS

yields two reliable subscales reflecting level of anxiety (alpha = 0.82) and depression (alpha = 0.83). The HADS has very well established validity in medical patients including cancer and has been shown to have good sensitivity and specificity to the detection of adjustment disorders, anxiety disorders and major depression (Bjelland et al., 2002).

Predictors

The dispositional measures of coping and catastrophizing (independent variables) included the following. The Vanderbilt Pain Management Inventory (VPMI; Brown and Nacassio, 1987) was used to assess coping style. This 28-item questionnaire asks patients to rate the frequency with which they typically engage in various cognitive and behavioural strategies when they have pain on a 5-point scale with endpoints (0) *not at all* and (4) *all the time* . The VPMI yield two internally reliable subscales labeled "active coping" (alpha = 0.71) and "passive coping" (alpha = 0.82). The Pain Catastrophizing Scale (PCS; Sullivan *et al.*, 1995) consists of 13 items describing different thoughts and feelings associated with a catastrophizing response-style. Subjects are asked to reflect on past pain situations and to indicate the degree to which they typically experience each of the 13 thoughts and feelings during pain on a 5-point scale with endpoints (0)*not at all to* (4) *all the time*. Responses are summed to produce a single score reflecting level of catastrophizing. The PCS has been found to be internally consistent (alpha = 0.87) and has high test-retest reliability ($r = 0.70$) over a 10-week period. Its validity is well-established with an invariant factor structure across pain samples (see Van Damme *et al.*, 2002).

Other Measures

A chart review was performed by a medical oncologist to determine the cause of chronic pain and record any relevant medical information including type of breast cancer, type of primary and adjuvant treatment, and pain origin and type (e.g., soft tissue, neuropathic, etc).

PROCEDURES

Participants were taken to an interview room in the clinic area and provided with the above self-report measures. Once the measures were completed, the participants were thanked for their participation and escorted back to the reception area to wait for their appointment.

STATISTICAL METHODS

Independent samples t tests were performed to examine whether patients with chronic pain due to cancer differed on any of the outcome and predictor variables than those with pain primarily due treatment. Correlation coefficients were then examined to determine the degree of intercorrelation between patients' scores on the predicator variables. For each outcome measure (average pain, worst pain, disability, anxiety, and depression), a series of three regression equations was calculated in order to examine the unique contribution of coping (active and passive) and catastrophizing. For each outcome variable, average pain intensity over the last 24 h and worst pain intensity over the last 24 h were included on the first step of the equation in order to control for the associations of these variables to the dependent variable. In the next step, active coping, passive coping, and catastrophizing were entered together. In this manner, the unique contribution of active coping, passive coping, and catastrophizing to the variable of interest could be examined.[5]

RESULTS

Pain Characteristics of the Sample

As shown is Table I, 43% of the women had pain due to cancer, 49% had pain due to treatment, and 9% had of pain of uncertain origin. Twenty-eight percent of the women had primarily bone pain and 10% had soft-tissue pain. Thirty-four percent had primarily neuropathic pain. The remainder of the sample had mixed pain (nociceptive and neuropathic). Women with pain due to cancer did not differ from women with pain due to treatment in terms of average or worst reported pain intensity, self-reported disability or scores on the measure of depression and anxiety (all ps > 0.05). Similarly, women with pain due to cancer did not differ from women with pain due to treatment in terms of their scores on any of the predictor variables (all ps > 0.05). We also examined whether women with active disease differed from women with no evidence of cancer on any of the outcome and predictor variables. No significant differences were found (all ps > 0.05). Table II gives the means, standard deviations, and ranges for the outcome variables for the sample.

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[5]When pain served as the dependent variable, only a single step consisting of active coping, passive coping, and catastrophizing were entered into the equation.

Table II. Outcome Variables as a Function of Pain Origin ($N = 68$)

	Mean	SD	Range
Outcome variables			
Average pain	4.44	1.94	0–10
Worst pain	6.18	2.29	1–10
Disability	33.29	13.61	7–59
Depression	13.12	3.46	8–23
Anxiety	17.41	3.41	12–26

Note. Pain ratings are made on a scale with endpoints "0" and "10." Disability reflects total scores on the PDI; a score of 30 is in the 18th percentile, while a score of 35 is in the 33rd percentile. Cutoff scores for "clinically significant" on the HADS subscales is 13 for each of the subscales (cancer patient norms) and suggests probable adjustment difficulties.

Intercorrelations Among the Predictor Variables

Active and passive coping were significantly and negatively correlated with each other, $r = -.25$, $p < 0.05$. Catastrophizing was significantly correlated with both active coping, $r = -0.34$, $p < 0.001$, and passive coping, $r = 0.73$, $p < 0.001$. A review of the PCS and VMPI passive coping subscale revealed some item redundancy between the two measures. To examine whether the high correlation between the measures can be accounted for entirely by item redundancy, a second correlation coefficient was calculated excluding overlapping items. The measures remained highly correlated, $r = 0.65$, $p < 0.001$, without the redundant items.[6] Since the high correlation between these measures is not due to item overlap, redundant items were retained for all further analyses.[7]

Regression Analyses

Table III summarizes the results of the regression equations for each of the outcome variables to test whether (1) active coping contributes uniquely to the above domains of adaptation beyond the variance accounted for by passive coping and catastrophizing, (2) passive coping contributes uniquely beyond the variance accounted for by active coping and catastrophizing,

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[6]The following overlapping items were removed: (1) "I keep thinking that one cannot do anything to cope with the pain (VPMI) and "There is nothing I can do to reduce the intensity of the pain" (PCS) and (2) "I focus on the location and intensity of the pain" (VPMI) and "I keep thinking about how much it hurts" (PCS).
[7]Analyses repeated without redundant items did not change the pattern of the findings.

Table III. Results of Regression Analyses

Outcome variable	β	r	t	p	Semipartial r
Average pain					
Active coping	−0.22	−0.27	−1.76	0.08	−0.22
Passive coping	0.32	0.29	1.87	0.07	0.23
Catastrophizing	−0.11	0.20	−0.67	0.53	−0.08
Worst pain					
Active coping	0.01	−0.09	0.07	0.94	0.01
Passive coping	0.19	0.30	1.10	0.28	0.14
Catastrophizing	0.16	0.30	0.91	0.37	0.11
Disability					
Step 1					
Average pain	0.20	0.41	1.62	0.11	0.17
Worst pain	0.38	0.49	2.99	0.04	0.32
Step 2					
Active coping	−0.21	−0.35	−2.26	0.03	−0.19
Passive coping	0.60	0.66	4.80	<0.0001	0.40
Catastrophizing	−0.14	0.47	−1.12	0.27	−0.09
Depression					
Step 1					
Average pain	0.12	0.18	0.81	0.42	0.10
Worst pain	0.12	0.18	0.81	0.42	0.10
Step 2					
Active coping	−0.23	−0.39	−2.02	0.02	−0.25
Passive coping	0.18	0.48	1.24	0.22	0.16
Catastrophizing	0.36	0.56	2.51	0.02	0.30
Anxiety					
Step 1					
Average pain	0.04	0.07	0.27	0.79	0.03
Worst pain	0.06	0.08	0.39	0.70	0.05
Step 2					
Active coping	−0.08	−0.08	−0.61	0.54	−0.08
Passive coping	0.09	0.57	0.53	0.60	0.07
Catastrophizing	0.53	0.42	3.01	0.004	0.36

Note. The results of three regression equations are presented with active coping, passive coping, and catastrophizing each entered last.

and (3) catastrophizing contributes uniquely beyond that variance accounted for by active coping and passive coping.

Pain Intensity

Taken together, the three predictor variables explained approximately 13% of the variance in average pain intensity reported on the BPI numeric rating scales ($p < 0.05$), although none of these variables contributed unique variance. The three predictor variables together explained 6% of the variance in worst pain intensity. None of the predictor variables contributed unique variance, however.

Disability

Average and worst pain over the past week entered on the first step of the equation together explained 27% of the variance in self-reported disability on the PDI ($p < 0.0001$). The three predictor variables entered on the second step of the equation together explained an additional 30% of the variance ($p < 0.0001$). Both active coping and passive coping explained unique variance to disability scores on the PDI explaining approximately 4% ($p < 0.05$) and 16% ($p < 0.0001$) of the variance, respectively.

The regression analyses were repeated with the pain interference sub-scale on the BPI (which was found to be highly correlated with the PDI, $r = 0.84$; $p < 0.0001$). Average and worst pain together explained 21% of the variance in BSI pain interference scores. The three predictor variables explained an additional 29% of the variance ($p < 0.0001$). In this equation, only passive coping contributed unique variance to disability scores on the BSI explaining approximately 12% ($p < 0.0001$) of the variance.

Anxiety and Depression

Average and worst pain over the past week entered on the first step of the equation did not explain any significant variance in HADS depression scores. The three predictor variables entered on the second step of the equation together explained an additional 35% of the variance ($p < 0.0001$). Both active coping and catastrophizing contributed unique variance to depression, explaining 4% ($p < 0.05$) and 6% ($p < 0.05$) of the variance, respectively.

Average and worst pain over the past week entered on the first step of the equation did not explain any significant variance in anxiety scores. Active coping, passive coping, and catastrophizing entered on the second step of the equation together explained an additional 18% of the variance ($p < 0.05$). Only catastrophizing contributed unique variance to anxiety scores, explaining 12% of the variance ($p < 0.05$).

DISCUSSION

This study investigated the relationships between individual differences in coping and catastrophizing, and markers of adaptation to chronic pain associated with breast cancer. While it might be tempting to make causal inferences, such conclusions would be premature. Aside from the obvious limitations of cross-sectional correlative studies, the relations between pain,

coping, and adaptation is likely dynamic and reciprocal rather than bivariate and unidirectional (Jensen *et al.*, 1991; Turner *et al.*, 2000). Prospective studies are clearly needed in order to investigate how coping style, catastrophizing, pain, disability, and mood disturbance interact sequentially and reciprocally over time to influence various adaptational outcomes.

Interpretation of the results may be further limited by a high rate of refusal to participate in the study by eligible participants. Approximately 42% of patients who meet criteria for the study declined participation. Feeling too ill or fatigued was the most common reason given by patients for declining participation in the study. Some of the more seriously ill patients therefore likely were not represented. This does raise questions about whether the pattern of results might have been different if a more representative sample could have been obtained and highlights the need for additional studies to evaluate the extent that these results generalize to other samples and populations.

With these limits in mind, this is the first study to demonstrate the relative contribution of coping and catastrophizing to important clinical markers of adaptation in chronic pain in cancer patients. The pattern of findings in this study generally replicated those reported by Turner *et al.* (2000) in noncancer (i.e., muscle–skeletal) chronic pain. A commonly held view is that pain reported by cancer patients is fundamentally different from pain reported by noncancer patients, and therefore psychological principles do not apply to cancer pain in the same way that they apply to noncancer pain (Turk *et al.*, 1998; Turk and Fernandez, 1990). As Turk and Fernandez (1990) note, cancer pain is generally placed in a category of its own drawing little generalizability from other types of pain. Our findings add to the growing body of literature (e.g., Chia-Chin, 1998; Jacobson and Butler, 1996; Turk *et al.*, 1998; Syrjala and Chapko, 1995) supporting the position that there are probably more similarities than differences in the relation between psychological factors and physical and psychosocial adaptation in cancer and noncancer pain populations.

That coping would be most strongly associated with disability makes intuitive sense. Active attempts to manage pain or persist in activities despite pain would logically minimize pain-related interference, while relying on others for assistance with pain or with daily activities that are ostensibly limited by pain would increase disability. The current results are consistent with a considerable body of evidence showing that passivity and avoidance of activity can contribute significantly to disability above and beyond pain and other biomedical variables (see Admundson *et al.*, 1999; Vlaeyen and Linton, 2000, for reviews). Catastrophizing was also associated with disability, but it appears that its association may be mediated by coping. Given that catastrophizing reflects a high degree of helplessness in the face of pain

(Sullivan *et al.*, 1995), it is not particularly surprising that catastrophizing would be associated with a coping style characterized by passivity and dependency on others ($r = 0.73$) and less use of active strategies ($r = -0.34$) that might minimize the level of interference due to pain.

The finding that catastrophizing was the variable most strongly associated with anxiety and depression is consistent with cognitive theories of emotion in which negative evaluations of events (e.g., in this case, pain) are thought to precipitate distress reactions (Beck, 1967; Ellis, 1962; Lazarus, 1999). Catastrophizing may reflect primary and secondary appraisal processes (Jensen *et al.*, 1991; Sullivan *et al.*, 1995). Primary appraisal processes involve the initial evaluation of the level of threat when confronted with a stressor such as pain, while secondary appraisal processes yields information about one's ability to manage the threat (Lazarus and Folkman, 1984). The rumination and magnification components of catastrophizing appear to correspond to primary appraisal processes in which respondents focus on and exaggerate the threat of pain. The helplessness component appears to reflect secondary appraisal processes in which the respondent negatively evaluates the ability to cope effectively with the pain. There is evidence that catastrophizing is a precursor to pain-related distress. In several studies catastrophizing strongly predicted pain-related anxiety accounting for unique variance when controlling for pain severity and other biomedical variables (McCracken *et al.*, 1993; Vlaeyen, and Linton, 2000). While active coping also explained unique variance to depression, the amount of variance was marginally smaller than that explained by catastrophizing. Nonetheless, active coping may protect against depression though a similar appraisal process by increasing perceived self-efficacy.

Although there appears to be some considerable overlap between catastrophizing and passive coping, our results are consistent with a growing body of evidence that supports the conceptual and empirical distinctiveness of catastrophizing from coping (Lawson *et al.*, 1990; Thorn *et al.*, 1999). When confounding items were removed from the measures, passive coping and catastrophizing were still highly correlated. More importantly, both constructs contributed uniquely to different markers of adaptation. Passive coping and catastrophizing likely co-occur and the current result raises questions concerning whether there is a common third variable underlying these two constructs. For example, catastrophizing has been shown to be strongly correlated with more basic traits including neuroticism and trait anxiety (Martin *et al.*, 1996; Sullivan *et al.*, 1995). Individuals high in neuroticism may be more prone to both catastrophizing and reliance on passive coping. It may be useful to include measures of more basic personality traits in future studies in order to clarify strong relationships between variables.

The results of the current study suggest that one's general approach to coping may have relevance to adaptation to pain but it does not provide any information about the efficacy of specific coping strategies. While a measure of specific coping strategies might have been included in the current study, there has been much criticism regarding the use of cross-sectional designs to identify and evaluate the effectiveness of specific coping strategies (Coyne and Gotlieb, 1996; Lazarus, 1999; Somerfield, 1996). As we have stated, coping is conceptualized as a dynamic process that is highly context-dependent (Lazarus and Folkman, 1984). Since the effectiveness of specific coping strategies is thought to be dependent on a number of person and situation variables, prospective process-oriented approaches that can identify proximal stressors, coping efforts and adaptational outcomes over time have been strongly recommended (Tennen *et al.*, 2000). However, relatively stable coping styles, such an active or passive approach, ought to influence the selection of specific coping strategies and how much effort is expended in attempts to manage pain. It would be interesting to examine how dispositional coping styles influence specific coping efforts over time, and how these relate to adaptational outcomes.

Given that pain, suffering and disability may persist despite pharmacological management the identification of individuals at risk for poor adaptation is a major concern for clinicians. These results provide preliminary evidence that dispositions in coping and catastrophizing may be important markers to assess in cancer patients with pain and that they should be targeted by psychological treatments. The next obvious step is a prospective study that can investigate the predictive value of these measures and begin to elucidate the processes by which active coping, passive coping, and catastrophizing influence adaptation to chronic pain in cancer. In turn, attention should also be given to whether any resultant improvements in coping and catastrophizing impact on adaptational outcomes.

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